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Analytical Note

Local Fiscal Multipliers of Infrastructure Spending in the Philippines: Evidence from Regional Data[1]

March 11, 2026

Infrastructure development has been central to the Philippines' growth strategy. As national investment remains concentrated in certain regions, assessing how local government capital expenditures affect regional GDP is essential. Using regional data for the Philippines covering 2009-2024, this note finds that higher local infrastructure spending significantly boosts economic growth, consistent with international evidence. In particular, targeting infrastructure spending toward less-developed regions would generate particularly high returns, while governance and implementation capacity constraints need to be carefully addressed.

I. Introduction

1. Infrastructure investment has emerged as a central pillar of the Philippines' economic development strategy over the past decade. The "Build! Build! Build!" program, launched under the administration of President Rodrigo Duterte in 2017, represented the most ambitious infrastructure initiative in the country's modern history, targeting an increase in total investment to 7.3 percent of GDP in 2022 from 5.4 percent in 2017. The program prioritized transformative projects including major expressways, railroad systems, airports, seaports and bridges designed to address decades of infrastructure underinvestment and enhance connectivity across the archipelagic nation. The current "Build Better More" program under the administration of President Ferdinand Marcos Jr continues this infrastructure emphasis while incorporating more diversified projects and funding channels (Table 1).

2. Despite these substantial initiatives, national infrastructure investment in the Philippines has historically exhibited significant geographic disparities. Major public works remain concentrated in Metro Manila and its surrounding regions, alongside other established economic centers such as Cebu and Davao. This spatial imbalance reflects the enduring legacy of centralized planning and the tendency for investment decisions to favor

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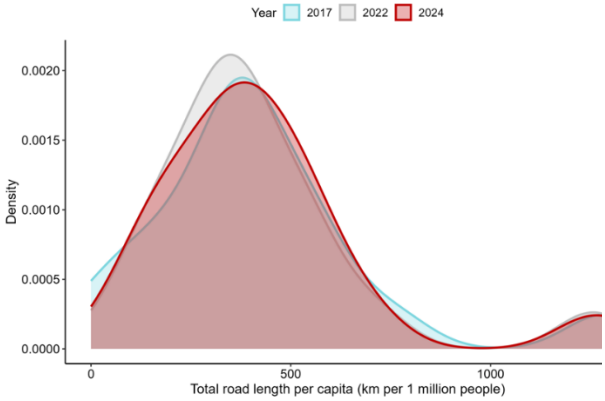
areas with higher administrative capacity, better connectivity, and larger economic bases. As a result, regional disparities have been seen in infrastructure endowment such as road length per capita over the years (Figure 1). Besides, under the current Infrastructure Flagship Projects (IFP) pipeline, Metro Manila and Central Luzon—both relatively infrastructure-rich—still account for about one-quarter of total project costs, leaving other regions to share the remainder. These patterns underscore the challenge of ensuring that the benefits of national infrastructure programs are equitably distributed and highlight the critical role of local governments in bridging infrastructure gaps across regions.

Table 1. Comparison between Two Major Infrastructure Development Programs

	Build! Build! Build! (BBB)	Build Better More (BBM)
Time period/ administration	2016-2022	2022-2028
Objectives	To invest adequately in infrastructure to support and sustain the country's growing economic activities.	To expand and refine the infrastructure push, continuing many BBB projects while introducing new ones, with more diversified funding and emphasis on sustainability.
Focus areas	• Traditional infrastructure including roads, bridges, airports, flood control, etc. • Some expansion toward ICT, health, water projects in later revisions.	• More diversified projects including ICT, water resources, agriculture, health, in addition to transportation infrastructure. • There is also a stronger push for climate adaptation, resilience, and sustainability in project selection.
Budget/ Funding	• Around PHP8-9 trillion in the medium term.	• Around PHP9 trillion in infrastructure spending. • The program also emphasizes more diversified funding channels, including Public-Private Partnerships (PPPs) and foreign financing.
Achievements (not exhaustive)	• 40,080 kilometers (km) of roads were constructed, maintained, widened, upgraded, and rehabilitated. • 6,854 bridges constructed, widened, upgraded, rehabilitated and strengthened.	From July 2022 to May 2023, • Over 4,000 kilometers of roads built, improved, or rehabilitated across various regions. • Nearly 500 bridges constructed, upgraded, or reinforced. • Completion of more than 2,100 flood mitigation structures. • Delivery of 4,038 new classrooms to support public education. • Construction of 216 kilometers of farm-to-market roads and 8 kilometers of farm-to-mill access roads. • Completion of 55 evacuation centers to strengthen disaster preparedness. • Installation of 6,002 rainwater collection systems to promote water conservation and resilience.

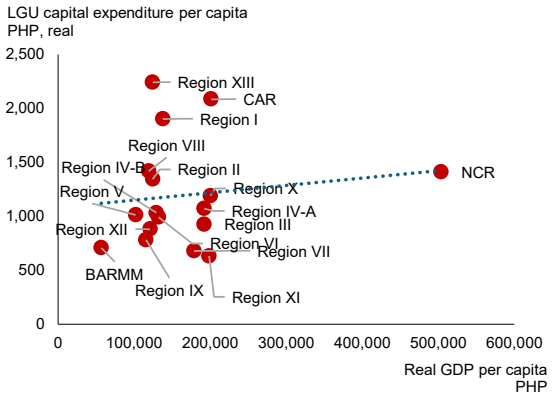
Source: Various media; AMRO staff compilation.

Figure 1. National Road Length per Capita Distribution



Source: Philippine Statistics Authority (PSA); Department of Public Works and Highways; AMRO staff calculations.
Note: The sample group includes 17 regions in Philippines: BARMM, CAR, NCR, Region I, II, III, IV-A, IV-B, V, VI, VII, VIII, IX, X, XI, XII, XIII.

Figure 2. Regional GDP per Capita vs LGU Capital Expenditure per Capita, 2024



Source: PSA; Commission on Audit (COA); AMRO staff calculations.

3. In fact, local governments possess ample fiscal space to enhance infrastructure development and address regional disparities. Over the past three decades, the Philippines' decentralization framework has gradually expanded, granting local government

units (LGUs) greater autonomy and control over resource allocation. The Local Government Code of 1991 first established this foundation by empowering LGUs to plan, finance, and implement their own investment projects. This was further reinforced by the 2022 Mandanas–Garcia ruling, which raised LGUs' share in the National Tax Allotment (NTA) to 40 percent of national revenues. This landmark reform significantly widened the fiscal space of provinces, cities, and municipalities, enabling them to undertake more infrastructure projects tailored to local needs.

4. Given this enhanced fiscal autonomy, assessing the effectiveness of local infrastructure spending has become crucial for understanding how fiscal spending shapes regional growth outcomes. The Philippines' 18 regions vary widely in income and public capital spending (Figure 2). LGUs are responsible for identifying local infrastructure needs, preparing development plans and annual investment programs, and financing projects through local revenues and national transfers earmarked for infrastructure development. Their spending decisions directly influence the quality and accessibility of roads, bridges, water systems, and other basic facilities that support productive activity. In this context, analyzing the growth impact of LGU capital expenditure provides critical insights into how local public investment contributes to reducing regional disparities and improving the overall efficiency of public infrastructure delivery.

5. The remainder of this note proceeds as follows: Section II reviews the literature on fiscal multipliers; Section III describes the empirical methodology and data; Section IV presents the main regression results; Section V conducts robustness checks; and Section VI concludes with key findings and policy implications.

II. Literature Review

6. Fiscal multipliers measure the responsiveness of economic output to changes in fiscal policy, capturing how effectively public spending or taxation stimulates aggregate demand. Conceptually, they are defined as the ratio of the change in real GDP to an exogenous change in government expenditure or tax revenue arising from discretionary fiscal policy, either on an impact basis (within the same year) or a cumulative basis (over multiple years). A multiplier greater than one implies that fiscal expansion generates a more-than-proportional increase in output, indicating strong propagation effects through private consumption, investment, or employment. From a theoretical perspective, the longstanding debate between Keynesian and neoclassical schools centers largely on the expected size of these fiscal multipliers. Keynesian models, highlighting demand shortfalls and nominal rigidities, predict relatively large multipliers—especially during recessions, when public spending can 'crowd in' private activity. In contrast, neoclassical frameworks, emphasizing flexible prices and forward-looking behavior, generally imply much smaller multipliers due to crowding-out effects. In this sense, disagreements over fiscal policy effectiveness fundamentally reflect differing theoretical views on the magnitude and state-dependence of fiscal multipliers.

7. Empirical estimation of fiscal multipliers is complicated by both endogeneity to the business cycle and substantial heterogeneity in their magnitude across countries, regions, and spending categories. To address the endogeneity issue, researchers employ

econometric identification strategies designed to isolate exogenous fiscal shocks. Common approaches include structural vector autoregressions (SVARs) that impose theoretical restrictions on contemporaneous relationships (Blanchard and Perotti 2002; Auerbach and Gorodnichenko 2012), defense-related spending news shocks (Ramey 2011; Ramey et al. 2018), and instrumental-variable (IV) frameworks that exploit predetermined fiscal rules or exogenous variations (Nakamura et al., 2014). For countries where data limitations preclude econometric estimation, Batini et al. (2014) propose a practical "bucket approach" for policymakers that assigns multiplier ranges based on structural characteristics and adjusts these ranges for cyclical conditions and monetary policy constraints.

8. Empirical evidence also shows that fiscal multiplier magnitudes vary widely across countries, reflecting differences in economic structure, policy frameworks, and institutional capacity. At the cross-country level, government spending multipliers for one-year horizon fall in the range of 0.6-1.0 (Batini et al., 2014), with developed countries generally seeing larger multipliers than developing countries (Sheremirov and Spirovska 2022). Specifically, public investment spending multiplier registers a wider range and is inversely related to the existing stock of public capital. Countries with low levels of public capital tend to have multipliers exceeding one, while nations with high initial public capital stocks often have multipliers close to zero, suggesting that public investment in developing countries would carry higher returns (Izquierdo et al. 2019). In the case of the Philippines, Debuque-Gonzales (2021) estimates that a one peso increase in local government capital spending raises regional output by about 1.2 pesos, meaning the local multiplier is greater than one, with spillover effects across regions. Using cross-country panel data, Abiad et al. (2016) and Espinoza et al. (2020) also find that public investment shocks in emerging Asia, including the Philippines, tend to generate sizable short- to medium-term output responses, particularly in economies with infrastructure gaps and relatively strong implementation capacity.

9. Within countries, multipliers can also differ substantially across regions, as variations in local economic structure, fiscal capacity, and decentralization arrangements shape how effectively government spending translates into growth. In economies with multi-tiered governance structures, subnational fiscal policies often play a critical role in driving local development. Studies from the United States, the European Union, and Latin America find that regional or state-level multipliers can be sizable (Chodorow-Reich and Gabriel, 2019). Theoretical models suggest these regional effects are amplified by factors such as relatively immobile labor, limited trade leakages across regional borders, and strong local demand linkages (Nakamura and Steinsson 2014; Farhi and Werning 2016). In the Philippines, for instance, the design of the NTA allows local government revenues—and thus spending—to vary exogenously across regions, providing a natural setting to identify local fiscal effects.

10. Moreover, the composition of fiscal spending matters: capital or infrastructure investment typically generates larger and more persistent output effects than current expenditures on wages or administration. Capital spending raises the economy's productive capacity and often crowds in private investment, while recurrent spending provides shorter-lived demand support. Cross-country studies, drawing on samples of advanced and emerging market economies across Europe, Asia, and Latin America, find investment

multipliers ranging from 1.0 to 1.5, compared with current-spending multipliers below 0.5 (Izquierdo et al. 2019; Batini et al. 2014). These findings underscore the importance of prioritizing infrastructure-oriented spending, particularly at the local level, where project implementation and absorptive capacity largely determine the magnitude of the ultimate economic benefit.

11. In sum, the size of fiscal multipliers varies widely because a range of macroeconomic and structural factors shape how fiscal policy transmits to output. The literature emphasizes a marked heterogeneity in fiscal multipliers—across countries, regions, and types of spending—reflecting differences in economic structure, institutional quality, and the composition of fiscal policy. See Varela and Ribeiro (2025) for a comprehensive survey of the empirical literature on fiscal multipliers.

- In more open economies or those with flexible exchange-rate regimes, fiscal stimulus tends to have smaller domestic impacts due to import leakages and exchange rate adjustments that offset the fiscal expansion (Ilzetzki et al. 2013; Born et al. 2013; Corsetti et al. 2012).
- Multipliers are typically larger during economic downturns, when idle resources and economic slack reduce the crowding out of private consumption and investment by public spending. Auerbach and Gorodnichenko (2012) find that fiscal policy is considerably more effective in recessions than in expansions, with government spending multipliers reaching approximately 2.5 in recessions compared to 0.6 or less in expansions.
- The efficiency and governance of public investment are equally critical: countries with sound project selection, transparent procurement, and effective implementation frameworks achieve much higher output returns on capital spending (IMF 2015).
- In contrast, weak institutional capacity and governance inefficiencies dilute the impact of fiscal stimulus. The availability of fiscal space and the sustainability of public debt also influence multiplier effects—stimulus tends to be more potent when markets perceive debt to be sustainable and when financing is not constrained, while tax-financed or debt-driven spending under high debt burdens may have muted or even contractionary effects (Batini et al. 2014; Ilzetzki et al. 2013).

III. Data and Methodology

12. This study analyzes three sets of regional data for the Philippines covering 2009-2024 across all 18 regions.[2] The dataset integrates three major sets of indicators that capture fiscal, economic, and structural dimensions of regional development (Table 2). The primary data sources include the Philippine Statistics Authority (PSA), Commission on Audit (COA), Bangko Sentral ng Pilipinas (BSP). This comprehensive panel structure allows for both

[2] The Negros Island Region (NIR) was established in 2015, abolished in 2017 and reestablished in 2024. To maintain a balanced panel dataset, NIR data for 2015, 2016 and 2024, when the region formally existed, was reassigned to Regions VI and VII, consistent with the treatment in all other years.

cross-sectional and time-series variation, providing substantial identifying power for estimating the fiscal multiplier effects across regions with heterogeneous characteristics.

Table 2. Summary Statistics of Key Variables

Region	LGU revenue growth	LGU NTA revenue growth	LGU expenditure growth	LGU current expenditure growth	LGU capital expenditure growth	Real GDP growth	Real GDP per capita growth	Population growth	Population in 2024
Unit	%	%	%	%	%	%	%	%	million
BARMM	9.8	9.8	8.8	8.1	22.5	4.8	2.1	2.6	5.3
CAR	9.8	9.7	7.8	7.5	14.8	4.1	2.9	1.1	1.9
NCR	8.2	8.9	7.9	9.4	7.6	4.4	3.2	1.1	13.8
Region I	15.7	9.3	8.5	6.9	23.7	5.1	4.2	0.9	5.3
Region II	10.5	10.1	8.6	8.5	17.7	5.0	3.8	1.2	3.8
Region III	9.8	10.2	8.1	8.5	12.4	5.8	4.0	1.7	12.9
Region IV-A	10.1	10.6	9.8	10.7	8.3	5.1	2.8	2.2	17.0
Region IV-B	8.8	9.0	8.0	8.0	11.1	4.3	2.9	1.4	3.3
Region IX	7.1	7.4	5.3	6.8	12.4	4.9	3.7	1.2	4.0
Region V	9.9	9.6	8.0	7.3	13.0	5.9	4.8	1.1	6.3
Region VI	9.7	9.5	8.1	7.1	16.8	5.2	4.2	1.0	8.1
Region VII	10.2	9.8	8.2	8.7	9.1	6.2	4.7	1.4	8.3
Region VIII	9.6	9.5	7.3	6.7	14.1	4.4	3.4	1.0	4.7
Region X	9.5	9.8	8.2	8.4	18.5	5.6	4.1	1.4	5.2
Region XI	10.0	9.9	7.9	8.4	13.8	6.1	4.6	1.5	5.5
Region XII	7.2	7.0	5.4	7.5	10.9	4.7	3.1	1.5	4.6
Region XIII	10.0	9.7	8.1	6.3	15.6	6.0	4.6	1.3	2.9

Source: PSA; COA; BSP; AMRO staff calculations.

- **The first set of indicators captures LGU fiscal performance across multiple dimensions.** Local tax revenue reflects the internally generated resources from property taxes, business taxes, and other local levies, representing the autonomous fiscal capacity of regional governments. External revenue from the NTA measures intergovernmental transfers from the national government, which constitute a significant portion of LGU budgets and provide relatively exogenous variation in regional fiscal resources.[3] Current expenditure encompasses recurrent spending on personnel services, maintenance and operations, and other day-to-day expenses, while capital expenditure captures development spending on infrastructure, equipment, and other fixed assets.[4] These fiscal variables exhibit considerable heterogeneity across regions: average annual growth rates range from 7.0 percent (Region XII) to 10.6 percent (Region IV-A) for NTA revenue, and from 5.3 percent (Region IX) to 9.8 percent (Region VII) for current expenditure. Capital expenditure displays even more pronounced variation, with growth rates spanning from 7.6 percent (National Capital Region, NCR) to 23.7 percent (Region I), reflecting divergent regional priorities in infrastructure development and the lumpy nature of capital projects.
- **The second set consists of annual regional GDP data, which serves as the primary outcome variable for assessing the macroeconomic impact of fiscal interventions.** Real GDP growth rates average 4.8 percent nationally, with regional variation ranging from 4.1 percent (CAR) to 6.1 percent (Region XI). Real GDP per

[3] NTA transfers to LGUs follow a fixed rule, with 23 percent going to the province, 23 percent to cities, 34 percent to municipalities, and 20 percent to barangays.
[4] The capital expenditure here refers to only the purchase or construction of property, plant and equipment. Expenditures for the purchase of debt securities of other entities and the granting of loans to other entities are not included.

capita growth shows similar patterns, averaging 2.9 percent nationally with regional values between 2.1 percent (BARMM) and 4.6 percent (Region XIII).

- **The third set reflects regional structural characteristics such as population that potentially moderate fiscal multiplier effects.** Population growth rates range from 0.9 percent (Region I) to 2.6 percent (BARMM), while population density measured in persons per square kilometer varies from 1.9 (CAR) to 869.8 (NCR), capturing substantial differences in urbanization and economic geography.

13. To estimate the short-run local government spending multipliers, we employ a panel regression model with fixed effects. Following the relevant literature including Debuque-Gonzales (2021), we construct a panel regression model to primarily examine the impact of LGU capital expenditures on economic growth, with supplementary regressions assessing the effects of total and current LGU expenditures. The model specification is provided in Figure 3, where Y_{it} is output in region i in year t, G_{it} is the government spending in region i in year t. C_{it} represent relevant controls at the regional level, such as the population growth rate and the growth of local tax revenue. The regional fixed effects and year fixed effects are captured by γ_i and λ_t, with some regressions also including the region-year interaction ($\gamma_i \times \lambda_t$) to capture the region-specific time trends. [5]

Figure 3. Model Specification for Local Government Spending Multipliers

$$\frac{Y_{it} - Y_{it-1}}{Y_{it-1}} = \alpha + \beta \frac{G_{it} - G_{it-1}}{Y_{it-1}} + \pi C_{it} + \gamma_i + \lambda_t + \varepsilon_{it}$$

Regional output change; Regional gov capex change; Population and local tax revenue change

$$Z_{it}^{(1)} = \dot{T}_t \times D_i \qquad Z_{it}^{(2)} = \left(\frac{s_{it-1}^{G}}{s_{it-1}^{Y}}\right) \dot{T}_t$$

IV - IRA; Regional dummies; IV - Bartik; Region's share of national transfer / region's share of national income

where

$$\dot{T}_t = \frac{T_t - T_{t-1}}{Y_{t-1}}$$

National transfers change (total)

Source: AMRO staff illustration.

[5] The COVID-19 pandemic period (2020-2021) poses unique challenges for fiscal multiplier estimation. Recent literature documents that fiscal policy during the pandemic differed substantially from normal periods in both composition and effectiveness. First, pandemic-era fiscal responses emphasized cash transfers and emergency relief programs rather than traditional public investment. Second, contemporaneous fiscal multipliers were dampened by supply-side constraints and lockdown restrictions that limited households' ability to utilize funds in the short term. Ideally, one would estimate separate models for pre-pandemic (2009–2019) and pandemic/post-pandemic (2020–2024) periods to assess potential structural breaks in fiscal multipliers. However, the current sample does not permit a clean separation: multipliers during 2020–2021 may have been affected by implementation disruptions, while the three-year lag in NTA allocations means that 2023–2024 LGU budgets still reflect the depressed national revenues of 2020–2021. Consequently, the post-pandemic period is not yet sufficiently long to yield robust standalone estimates. Our specification—which includes year fixed effects to absorb common aggregate shocks—should thus be interpreted as providing average multiplier estimates across the full sample period.

14. However, endogeneity from reverse causality poses a fundamental identification challenge in estimating fiscal multipliers. Since local government expenditures often respond endogenously to economic conditions—expanding during booms and contracting during downturns—ordinary least squares (OLS) estimates would confound the causal effect of fiscal policy with reverse causation and omitted variable bias. Without proper identification, estimated multipliers could reflect either the impact of spending on growth or the automatic response of fiscal variables to changes in local economic activity, making causal inference problematic. This endogeneity issue is particularly acute in cross-sectional settings where regional economic shocks may simultaneously affect both fiscal decisions and output growth.

15. To isolate exogenous variation in local spending, this note constructs IVs that capture exogenous variations in local fiscal spending unrelated to contemporaneous economic fluctuations. Following the approach of Debuque-Gonzales (2021), the instruments exploit cross-regional differences in how LGU spending responds to changes in the NTA, which constitutes the largest and most predictable funding source for local governments. Under the Philippine Local Government Code, LGUs collectively receive 40 percent of national internal revenue collections from three years prior, with allocations determined by a formula based on population size (50 percent), land area (25 percent), and equal sharing (25 percent).[6] Crucially, because this allocation formula does not consider local fiscal capacity, revenue performance, or economic conditions, the NTA provides a plausibly exogenous source of variation in local government resources. The three-year lag in the allocation base further insulates NTA transfers from contemporaneous regional economic shocks, strengthening the case for exogeneity.

16. More specifically, two IVs are constructed by interacting regional NTA growth with regional specific factors (Figure 3). Following the approach of Debuque-Gonzales (2021), the first instrument, called "IV-IRA", is computed as growth in national transfers or internal revenue allotment (IRA), interacted with region dummy variables ($\dot{T}_t \times D_i$), where $\dot{T}_t = \frac{T_t - T_{t-1}}{Y_{t-1}}$. The second instrument, called "IV-Bartik" is based on Bartik (1991), modifies the first instrument by involving a scaling of growth in national transfers by the region's share of national transfers during the previous year (s^G_{it-1}) relative to the region's share of national income (s^Y_{it-1}) in the previous year.

17. The validity of this identification strategy rests on the exogeneity of NTA allocations to regional economic performance. First, because NTA allocations follow a fixed formula based on population, land area, and equal sharing, the national government does not increase transfers to regions experiencing economic downturns or reduce them for better-performing regions. Second, while regional governments may respond differently to changes in NTA transfers—which fluctuate with the national business cycle—these differential spending responses are plausibly unrelated to local economic conditions. This is because national revenue collections, which determine the overall NTA pool, are predominantly driven

[6] Following the Mandanas-Garcia ruling in 2022, the base was broadened so that the 40 percent share would apply to all national taxes, including customs duties.

by economic activity in the NCR rather than by individual regions' performance, effectively insulating local NTA receipts from region-specific output shocks.

IV. Regression Results

18. The OLS estimation results indicate that increases in LGU capital expenditure are positively associated with regional GDP growth (Table 3). The baseline OLS specification in column (1), yields a point estimate of 2.66, suggesting that a 1 percent of regional GDP increase in local government capital spending would lead to a 2.66 percent increase in regional GDP over the first year.[7] Adding year fixed effects in column (2) produces a similar estimate of 2.91. When both region-year fixed effects are included in column (3) to absorb region-specific time trends, the coefficient moderates to 1.33, which represents the most conservative OLS estimate after accounting for unobserved heterogeneity in regional growth trajectories. Column (4), which adds region-year interactions with separate region and year effects, yields an estimate of 1.64. The consistent positive and statistically significant coefficients across specifications suggest a genuine positive association between local capital spending and economic growth, though the magnitude is sensitive to the inclusion of fixed effects that control for differential regional trends.[8]

Table 3. Estimates of Fiscal Multipliers of Local Government Capex Spending

	Dependent Variable: Regional GDP growth					
	(1)	(2)	(3)	(4)	(5)	(6)
Variables	LS	LS	LS	LS	IV - IRA	IV - Bartik
Region capex spending change	2.657***	2.906***	1.327**	1.642**	1.957***	2.383**
	(0.868)	(0.890)	(0.575)	(0.643)	(0.555)	(0.950)
Population growth	0.002	0.002	-0.003**	-0.003	-0.003**	-0.003**
	(0.002)	(0.002)	(0.001)	(0.002)	(0.001)	(0.001)
Local tax revenue growth	0.001*	0.001*	0.000	0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Region FE	No	Yes	Yes	Yes	Yes	Yes
Year FE	No	No	Yes	Yes	Yes	Yes
Region-Year FE	No	No	No	Yes	No	No
Observations	255	255	255	255	255	255
Number of regions	16	16	16	16	16	16
R2	0.059	0.087	0.787	0.810	0.786	0.786
F-stat (1st stage)	-	-	-	-	5.67	44.37

Source: AMRO staff estimates.

Note: 1) The regressions cover only 16 regions, as the data of Negros Island Region (NIR) has been reassigned to Regions VI and VII, and the Region XIII data has been automatically removed because of collinearity; 2) The figures in parentheses are standard errors; 3) Statistical significance levels are denoted as follows: *** p < 0.01; ** p < 0.05; * p < 0.10; 4) First stage F statistics show that the IV-Bartik is unlikely to be a weak IV. 5) We test the sensitivity of the baseline estimates by excluding observations with extreme year-on-year changes (GDP growth exceeding ±30 percentage points or fiscal and infrastructure growth exceeding ±200 percentage points). Re-estimating the panel regressions yields highly similar coefficients (Column (1): 2.66 vs. 2.58; Column (3): 1.33 vs. 1.41), and the main results remain robust.

19. The IV estimation results indicate even larger multiplier effects for local public spending, confirming the robustness of the spending-growth relationship. Using the IRA-based instrument in column (5), the coefficient is 1.96 with a first-stage F-statistic of 5.67, not meeting conventional thresholds for instrument relevance and indicating it has weak IV

[7] Or it means that a 1-peso rise in spending in regions generates a rise of roughly 2.66 peso in regional GDP.

[8] Infrastructure projects often have multi-year planning and construction cycles, so the economic effects may not materialize contemporaneously. For the regressions in this analytical note, however, we focus more on the first-year effects.

issue. However, the Bartik-style shift-share instrument in column (6) produces a larger point estimate of 2.38 with a substantially stronger first-stage F-statistic of 44., indicating a more powerful instrument that better predicts local capital spending variation. The IV estimates are broadly consistent with the most conservative OLS estimate. These results suggest that local government capital spending—primarily directed toward infrastructure and fixed assets—provides a meaningful and statistically robust boost to regional economic activity.

20. To assess the impact of fiscal spending composition, we further estimate multipliers for current and total expenditure, respectively. This decomposition is theoretically motivated and empirically important for several reasons. Capital expenditure—which primarily finances infrastructure, equipment, and fixed assets—is widely hypothesized to generate larger multipliers than current expenditure due to its direct contribution to productive capacity and potential to crowd in private investment (IMF 2015; Ilzetzki et al. 2013). In contrast, current expenditure, which covers personnel services, maintenance, and operations, may have smaller output effects as it does not directly expand the public capital stock and may be more susceptible to crowding out or leakages through savings. However, current spending could still stimulate demand through wage payments and public service provision, particularly if beneficiaries face liquidity constraints. By estimating separate multipliers for these spending categories, we can test whether the composition of fiscal stimulus matters for its effectiveness. Total expenditure regressions provide an overall assessment of LGU fiscal policy impact, aggregating across spending types and offering a benchmark comparable to national-level multiplier estimates.

21. Current expenditure reveals no significant causal effect on regional growth (Table 4). The OLS estimate with region and year fixed effects is positive but collapse to near zero (0.13) with large standard errors (0.53), becoming statistically indistinguishable from zero. More tellingly, the instrumental variables estimates although big but statistically insignificant. These results provide evidence that current spending may not generate meaningful short-run stimulus effects on regional output, likely because recurrent expenditure does not expand productive capacity, may face higher leakages as public employees save or consume outside their region, and could crowd out private sector wages without adding to the capital stock.

Table 4. Estimates of Fiscal Multipliers of Local Government Current Spending and Total Spending

	Dependent Variable: Regional GDP growth			
	(1)	(2)	(3)	(4)
Variables	LS	IV - Bartik	LS	IV - Bartik
Region government current spending change	0.128	2.028		
	(0.529)	(1.231)		
Region government total spending change			0.409	1.097**
			(0.472)	(0.516)
Population growth	-0.003*	-0.003*	-0.003*	-0.003*
	(0.002)	(0.002)	(0.002)	(0.002)
Local tax revenue growth	0.000	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Region FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Region-Year FE	No	No	No	No
Observations	255	255	255	255
Number of regions	16	16	16	16
R2	0.785	0.786	0.786	0.786
F-stat (1st stage)	-	15.37	-	56.5

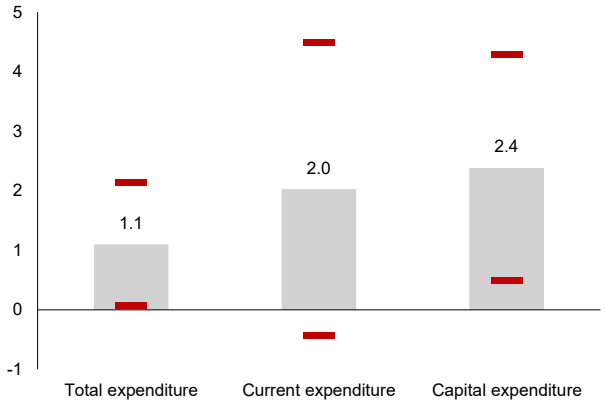
Source: AMRO staff estimates.

Note: 1) The regressions cover only 16 regions, as NIR data has been reassigned to Regions VI and VII, and the Region XIII data has been automatically removed because of collinearity; 2) The figures in parentheses are standard errors; 3) Statistical significance levels are denoted as follows: *** p < 0.01; ** p < 0.05; * p < 0.10; 4) First stage F statistics show that the IV-Bartik is unlikely to be a weak IV.

22. Total LGU expenditure yields a moderate multiplier of approximately 1.1, intermediate between the negligible effect of current spending and the robust impact of capital investment. (Table 4). Like the regression for current expenditure, the OLS estimate with region and year fixed effects is positive but relatively small (0.41) with large standard errors (0.47), becoming statistically. However, the instrumental variables estimate provide the most credible causal evidence: the Bartik instrument produces a larger estimate of 1.1 (significant at 5 percent) with a stronger first-stage F-statistic of 56.5. The IV estimate confirms that total government spending has a positive but moderate impact on regional growth—considerably smaller than our main capital expenditure multipliers of 1.3-2.4, which is mechanically sensible given that total expenditure combines high-multiplier infrastructure spending with lower-multiplier current spending.

23. Synthesizing the estimation results across all three expenditure types reveals a clear and theoretically coherent hierarchy of fiscal multipliers (Tables 3 and 4). Capital expenditure generates the largest and most robust multipliers (1.3 to 2.4), with all estimates positive and statistically significant. Total expenditure produces moderate multipliers (0.4 to 1.1), while current expenditure yields estimates statistically indistinguishable from zero despite large point estimates around 2.0. Particularly, using the preferred IV-Bartik estimate with 95 percent confidence interval, Figure 4 illustrates the hierarchy of different fiscal multipliers. Capital spending shows a precisely estimated multiplier of 2.4 with narrow confidence bands, while current spending exhibits a similarly-sized point estimate (2.0) but with intervals so wide they encompass zero. Total spending falls between these extremes at 1.1, statistically significant but less precisely estimated than capital expenditure.

Figure 4. Estimated Local Spending Multipliers by Type of Expenditure (Based on IV-Bartik)



Source: AMRO staff estimates.
Note: Point estimates for total, current, and capital expenditure are shown as grey bars, with red line markers indicating the upper and lower bounds of the 95 percent confidence intervals, based on Tables 3 and 4.

V. Robustness Checks

24. The first robustness check excludes the country's capital region from the sample. The NCR is an extreme outlier in both economic size and fiscal structure: it accounts

for more than one-third of national GDP, has by far the highest income per capita, and receives the smallest share of capital expenditure relative to its economic base. Including such a disproportionately large and structurally unique region may distort cross-regional regressions by inflating within-sample heterogeneity and mechanically weakening the identification strategy. This concern is well-documented in the fiscal-multiplier literature, where highly urbanized core regions often behave differently from the rest of the country in terms of leakages, absorptive capacity, and responsiveness to local public spending.

25. Excluding the NCR—an outlier due to its exceptional wealth and urbanization—strengthens our main findings and confirms their robustness (Table 5). The IV-Bartik estimate for capital expenditure rises from 2.38 to 2.92 with F-statistic at 39.5, while the total expenditure multiplier increases from 1.10 to 1.38 with F-statistic at 47.3, both remaining statistically significant and states the IV-Bartik are unlikely to be a weak IV. This suggests that infrastructure spending generates even larger growth effects in less-developed regions, likely reflecting higher marginal returns where infrastructure deficits are more acute. Current expenditure remains insignificant (coefficient = 2.60, standard error = 1.72). The consistency of these patterns confirms that our conclusions are not driven by NCR's unique characteristics.

Table 5. Estimates of Fiscal Multipliers (Excluding NCR)

	Dependent Variable: Regional GDP growth					
	(1)	(2)	(3)	(4)	(5)	(6)
Key Independent Variable	Capital Expenditure		Current Expenditure		Total Expenditure	
Variables	LS	IV - Bartik	LS	IV - Bartik	LS	IV - Bartik
Region government spending change	1.455**	2.921***	0.165	2.604	0.481	1.378**
	(0.594)	(0.944)	(0.528)	(1.716)	(0.468)	(0.630)
Population growth	-0.003*	-0.003**	-0.003*	-0.004*	-0.003*	-0.003*
	(0.002)	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)
Local tax revenue growth	0.000	0.000	0.000	-0.000	0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Region FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Region-Year FE	No	No	No	No	No	No
Observations	240	240	240	240	240	240
Number of regions	15	15	15	15	15	15
R2	0.777	0.776	0.775	0.776	0.776	0.786
F-stat (1st stage)	-	39.5	-	12.3	-	47.3

Source: AMRO staff estimates.
Note: 1) The regressions cover 15 regions, as NCR data has been excluded; 2) Statistical significance levels are denoted as follows: *** p < 0.01; ** p < 0.05; * p < 0.10; 3) First stage F statistics show that the IV-Bartik is unlikely to be a weak IV.

26. To examine whether the growth impact of local public investment depends on a region's existing level of infrastructure, we incorporate initial capital stock—proxied by national road length per capita in 2015—as a dimension of heterogeneity.[9] Road infrastructure is the most fundamental and consistently measured component of public capital across Philippine regions, and, importantly, it is largely planned and executed by national agencies rather than LGUs. Using the pre-treatment year 2015 ensures that the measure captures initial endowments. The theoretical motivation comes from the public investment

[9] Due to data limitations, 2015 is the earliest year for which national road statistics are available.

literature, which predicts that fiscal multipliers may differ depending on whether new local projects complement an already adequate network (raising marginal productivity) or instead must overcome severe infrastructure bottlenecks (potentially lowering effective returns due to absorptive capacity constraints). Splitting the sample at the median of the national road-per-capita distribution allows us to compare "infrastructure-rich" and "infrastructure-poor" regions.

27. Fiscal multipliers vary dramatically by regional infrastructure endowment, with capital spending generating large growth effects only in infrastructure-poor areas (Table 6). In infrastructure-rich regions (9 regions with above-median infrastructure), the multiplier is insignificant plagued by weak instruments (F-stat = 3.8). In contrast, infrastructure-poor regions (7 regions) exhibit a highly significant multiplier of 2.60 with a strong instrument (F-stat = 34.4), indicating that a 1 percent increase in capital spending raises GDP growth by 2.6 percentage points. This stark difference reflects diminishing marginal returns to public capital: well-endowed regions experience minimal additional productivity gains from incremental spending, while infrastructure-deficient areas face binding constraints that public investment directly alleviates—unlocking private sector activity, enabling market integration, and crowding in complementary investment. These results align with cross-country evidence that investment multipliers are inversely related to existing capital stocks (Izquierdo et al., 2019) and support targeting fiscal resources toward less-developed regions where marginal returns remain high.

Table 6. Estimates of Fiscal Multipliers (Differentiate the Capital Stock Level)

	Dependent Variable: Regional GDP growth			
	(1)	(2)	(3)	(4)
Features	Sub-sample for infra-rich		Sub-sample for infra-poor	
Variables	LS	IV - Bartik	LS	IV - Bartik
Region government spending change	1.037	-1.296	1.005	2.596***
	(1.191)	(4.473)	(1.079)	(0.677)
Population growth	-0.002***	-0.001	-0.006**	-0.005**
	(0.000)	(0.001)	(0.002)	(0.002)
Local tax revenue growth	0.000	0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)
Region FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Region-Year FE	No	No	No	No
Observations	135	135	120	120
Number of regions	9	9	7	7
R2	0.756	0.755	0.849	0.850
F-stat (1st stage)	-	3.8	-	34.4

Source: AMRO staff estimates.
Note: 1) Statistical significance levels are denoted as follows: *** p < 0.01; ** p < 0.05; * p < 0.10; 2) First stage F statistics show that the IV-Bartik is unlikely to be a weak IV in the regression (4).

VI. Policy Discussions

28. The results show that LGU capital spending meaningfully boosts regional economic activity, consistent with international evidence. This finding underscores the importance of local public investment as a complement to national infrastructure programs. By channeling resources to LGUs, capital outlays can be more responsive to local development priorities and reduce regional disparities. In this context, securing adequate capital

expenditures at the regional level is critical to maximizing growth dividends and strengthening the overall effectiveness of the Philippines' infrastructure strategy.

29. Targeting infrastructure spending toward less-developed regions would generate particularly high returns, as fiscal multipliers exhibit pronounced heterogeneity depending on existing infrastructure endowments. Infrastructure-poor regions experience multipliers much higher than infrastructure-rich regions, reflecting diminishing marginal returns where connectivity and basic services are already adequate. This pattern aligns with cross-country evidence that investment multipliers are inversely related to existing capital stocks (Izquierdo et al., 2019) and highlights the efficiency case for geographically differentiated fiscal policy. National programs such as the IFP should prioritize allocations to infrastructure-deficient regions where public investment alleviates critical bottlenecks, unlocks private sector activity, and enables market integration. Similarly, the formula governing NTA distributions could be adjusted to incorporate infrastructure gaps as an allocation criterion, or taking into consideration of the absorptive capacity in various regions and the institutional capacity of local governments, ensuring that fiscal transfers flow disproportionately to areas where marginal returns remain highest and regional convergence can be accelerated.

30. However, realizing these high potential returns in infrastructure-poor regions requires addressing governance and implementation capacity constraints. The literature suggests that weak institutional quality, procurement inefficiencies, and limited technical capacity can severely diminish fiscal multipliers even in settings with large infrastructure deficits (IMF 2015; Tanzi and Davoodi 1997). The Philippines faces documented governance challenges—rent-seeking behavior, fragile rule of law, and recent corruption scandals in public works projects—that threaten to dilute the growth impact of expanded LGU spending (Gochoco-Bautista, 2025). To prevent leakages and ensure that capital outlays translate into productive assets rather than waste, simultaneous reforms to strengthen public investment management are essential. Priority interventions include: (i) professionalizing local procurement through digital systems and standardized cost-estimation methods; (ii) strengthening the central government's oversight function in national infrastructure planning and coordination, including maintaining a comprehensive inventory of ongoing and planned major projects across all LGUs—as recommended in the 2019 Public Investment Management Assessment (PIMA)[10]; (iii) institutionalizing multi-year investment programming to improve project sequencing and avoid the lumpy, stop-start patterns that undermine infrastructure quality—currently, the Philippines lacks a formal multi-year budgeting framework for public investment projects at the line department level, limiting the ability to establish indicative ceilings for ongoing and new projects and to transparently account for future-year commitments (PIMA 2019); (iv) expanding technical assistance from national agencies to support project preparation, feasibility studies, and engineering design in capacity-constrained LGUs; and (v) enhancing transparency and accountability through independent project monitoring, strengthened internal audit functions, and public disclosure of contracts and expenditures. These governance reforms would not only increase the efficiency of each peso

[10] There is a more updated PIMA but it is not publicly available yet.

spent but also build public confidence in fiscal expansion and sustain political support for infrastructure-led development.

31. Finally, infrastructure spending in more developed regions should emphasize projects with high externalities, network effects, or coordination benefits rather than simply scaling up investment volumes where diminishing returns have already set in. In financially deeper regions with well-established credit markets, public spending risks crowding out private investment by competing for scarce resources or raising local borrowing costs, thereby dampening net multiplier effects (Ilzetzki et al., 2013). Given the substantial variation in financial depth across Philippine regions—with outstanding loans per capita differing by an order of magnitude—policy should be tailored accordingly. In infrastructure-rich, financially developed areas such as Metro Manila and Central Luzon, LGU capital budgets should target projects that complement rather than substitute for private activity. These investments address coordination failures or provide public goods that private markets underprovide, maximizing social returns while minimizing crowding-out effects. This differentiated approach—prioritizing volume and basic connectivity in infrastructure-poor regions, while emphasizing quality and externalities in developed areas—would optimize the overall effectiveness of the Philippines' decentralized infrastructure strategy.

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