

The Impact of Public Spending and Investment Flows on Fiscal Capacity and Unemployment in Banten Province

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Abstract: The persistent challenges of regional fiscal sustainability and labor absorption in developing economies necessitate a deeper understanding of the drivers of local economic performance. This study addresses this critical issue by examining the impact of public spending and investment flows on regional fiscal capacity and unemployment in Banten Province, Indonesia, a rapidly industrializing region facing significant development pressures. Employing a quantitative explanatory approach, this study utilizes panel data from eight districts and cities over the period 2015–2023. A fixed-effect panel regression analysis with year fixed effects was applied to assess the effects of public spending, domestic investment (PMDN), and foreign direct investment (PMA) on fiscal capacity and the open unemployment rate. The analysis revealed that public spending and domestic investment have positive and significant effects on regional fiscal capacity, with coefficient estimates of 0.081 and 0.074 respectively, implying that a 1% increase in each variable is associated with an increase of approximately 0.00081 and 0.00074 points in the Fiscal Capacity Index. Concurrently, both variables contribute to unemployment reduction, with a 1% increase in public spending and domestic investment associated with decreases of 0.00214 and 0.00187 percentage points in the open unemployment rate. Conversely, foreign direct investment exhibits a positive but statistically insignificant effect on fiscal capacity and a negative but insignificant effect on unemployment, suggesting that PMA's contribution to both outcomes remains limited in the short to medium term. These findings underscore the paramount importance of optimizing productive public expenditure and strengthening domestic investment as pivotal strategies for enhancing fiscal sustainability and improving employment outcomes in Banten Province.

Keywords: *Public Spending, Domestic Investment, Foreign Direct Investment, Fiscal Capacity, Unemployment.*

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INTRODUCTION

Despite recording some of the highest investment inflows among Indonesian provinces, Banten Province consistently reports an open unemployment rate well above the national average, a structural paradox that challenges conventional assumptions about the employment-generating capacity of investment-led regional growth. BPS-Statistics Banten Province (2023) reported that the open unemployment rate in Banten reached 7.97% in February 2023, compared with the national rate of 5.45%. This



juxtaposition of robust investment performance and persistent labor-market underperformance makes Banten a relevant case for examining the interaction between fiscal policy, investment dynamics, and regional economic outcomes (Setyadi & Oktaviana, 2021).

The implementation of fiscal decentralization in Indonesia since 2001 has restructured the intergovernmental fiscal framework by granting regional governments broader authority over public expenditure, revenue mobilization, and development planning. As articulated by (Lewis, 2023) in a critical assessment of Indonesia's revised fiscal decentralization law (Law 1/2022), the legislative intent is to improve distributional equity of transfers, enhance subnational tax mobilization, and strengthen spending efficiency. However, two decades of decentralization have produced uneven outcomes. (Latifa et al., 2025) demonstrates, using panel data from 484 county-level units, that while fiscal decentralization generally promotes regional economic growth, its magnitude and direction vary substantially depending on fiscal structure and local institutional capacity. Similarly, (Ahmad Zainuri et al., 2025; Loayza & Pennings, 2020) find that direct spending efficiency and fiscal independence remain highly differentiated across regions.

Banten Province occupies a strategically significant position within Indonesia's economic geography, located adjacent to the national capital and functioning as a major hub for manufacturing, logistics, and service industries (Caroline & Afriadi, 2025). The province has attracted substantial flows of both domestic investment (PMDN) and foreign direct investment (PMA), particularly in manufacturing, energy, transportation, and property sectors. During 2015–2019, Banten experienced relatively stable economic growth supported by industrial expansion and rising investment inflows. The COVID-19 pandemic in 2020 triggered a significant contraction in regional economic activity, followed by a gradual recovery. Despite macroeconomic recovery, structural improvements in labor market conditions and fiscal equity across Banten's districts and cities have remained elusive (Saputra et al., 2021).

A persistent structural challenge is the mismatch between investment-driven growth and employment creation. Banten's economy is disproportionately driven by capital-intensive industries, which, while generating significant output, do not translate effectively into broad-based employment (Fitriyah et al., 2024).

Examining unemployment determinants across Banten's districts and cities, Saputra et al. (2021) identify investment, government expenditure, and labor force as key factors influencing employment opportunities, while (Azhari et al., 2021; Hickey et al., 2020) further demonstrate that minimum wages, human development index, and poverty interact to amplify unemployment outcomes.

From a theoretical standpoint, public spending constitutes the central instrument through which subnational governments exercise their mandate to promote regional welfare, stimulate economic activity, and deliver public services. Within the framework of fiscal decentralization, regional governments manage expenditure across three functional domains: allocation, distribution, and stabilization (Sinik & Robertus, 2023). In the Indonesian decentralization context, (Lewis, 2023) underscores that Law 1/2022 created stronger performance incentives for regional governments to direct spending toward productive sectors. (Zaidan Najmuddin, 2020) using path analysis on panel data from Banten's districts and cities over 2018–2022, demonstrate that fiscal performance ratios significantly influence capital expenditure allocation and, through it, regional economic growth. (Didu & Islamiah, 2017), using panel regression across ASEAN

economies, establish that government expenditure generates a significant crowding-in effect on private sector output and employment.

The relationship between public spending and fiscal capacity is inherently reciprocal. While adequate fiscal capacity is a precondition for sustaining public expenditure, well-targeted productive spending can support economic activity and broaden the potential revenue base. Evidence from Banten also indicates that regional financial performance and capital expenditure are closely linked to economic growth (Zein et al., 2024). At the same time, the effectiveness of expenditure depends on its composition and implementation quality; therefore, aggregate spending should not be interpreted as automatically producing the same fiscal return across districts and cities.

From a Keynesian macroeconomic perspective, government expenditure can support aggregate demand and employment, particularly during periods of economic weakness (Altman, 2017; Laidler, 2006). In the Indonesian regional context, the employment response to fiscal policy is likely to depend on expenditure composition, local implementation capacity, and labor-market structure. Accordingly, this study treats the expected negative association between public spending and unemployment as a theoretically grounded hypothesis to be tested empirically, rather than attributing that relationship to Zein et al. (2024), whose study focuses on local government financial performance, capital expenditure, and economic growth in Banten.

Turning to investment, domestic investment (PMDN) can strengthen regional economic capacity through capital formation, expansion of productive activity, and linkages with local firms and labor markets. Murti and Sahara (2019), using panel data for 34 Indonesian provinces, show that both PMDN and PMA are positively associated with regional economic growth, while Setyadi and Oktaviana (2021) emphasize that the employment consequences of investment in Banten depend strongly on its sectoral distribution. Their Banten study notes that investment has been concentrated in sectors such as electricity, gas and water, transportation, warehousing, and telecommunications, which are relatively less labor absorbing, and recommends greater investment in labor-intensive agribusiness activities. These findings justify distinguishing PMDN from PMA when evaluating regional employment outcomes.

By contrast, foreign direct investment (PMA) contributes to regional growth through capital injection, technology transfer, and export facilitation, but its relationship with fiscal capacity and employment is more complex. (Li et al., 2025) provide robust evidence that FDI inflows lead to a significant increase in tax revenue mobilization at the national level. At the subnational level, however, this relationship is modulated by fiscal incentives: many Indonesian regions offer tax holidays to attract PMA, reducing direct fiscal contributions during the incentive period. (Tang & Tan, 2014) document that the FDI-tax revenue relationship operates differently in the short and long run. Regarding employment, (Pennings, 2022) find that FDI exhibits a significant positive relationship with youth unemployment in the short run suggesting a displacement effect but in the long run, growth driven by FDI exerts a significant negative effect on unemployment.

Regional fiscal capacity and unemployment are shaped by the dynamic interaction of public expenditure, domestic investment (PMDN), and foreign direct investment (PMA) within a regional economic system. The fiscal-investment nexus theory (Maisaroh & Risyanto, 2018) argues that productive public spending improves the investment climate by reducing transaction costs and strengthening infrastructure, thereby encouraging private investment. Investment subsequently expands the productive base, creates employment, and increases regional tax revenues, generating a positive feedback loop

that reinforces fiscal sustainability. Empirical evidence supports this interaction. (Saputra et al., 2021) demonstrate that public expenditure and PMDN jointly reduce unemployment through economic growth, while (Rahman et al., 2016) show that fiscal policy outcomes differ significantly once investment conditions are incorporated, indicating that analyses excluding investment variables are susceptible to specification bias.

Despite extensive research on fiscal decentralization and investment in Indonesia, important gaps remain. Existing studies generally examine fiscal policy or investment separately. Fiscal decentralization research primarily focuses on provincial fiscal performance without considering investment flows, whereas investment studies typically analyze employment or poverty while overlooking regional fiscal capacity. Moreover, previous studies on Banten Province have not simultaneously examined the relationships between public spending, PMDN, PMA, regional fiscal capacity, and unemployment. Consequently, empirical evidence on how fiscal and investment policies interact to influence both fiscal and labor market outcomes at the district and city level remains limited.

This study addresses these gaps by adopting an integrated analytical framework using district- and city-level panel data from Banten Province covering 2015–2023. Unlike previous studies, it simultaneously investigates the effects of public spending, PMDN, and PMA on regional fiscal capacity and open unemployment. The study offers three key contributions. First, it provides one of the first empirical examinations of the fiscal–investment nexus at the sub-provincial level in Indonesia. Second, it explicitly distinguishes the effects of domestic and foreign investment, recognizing that PMDN and PMA influence regional development through different economic mechanisms. Third, it contributes to the regional public finance literature by jointly modeling fiscal capacity and unemployment as interconnected development outcomes rather than independent policy targets.

Drawing upon Keynesian fiscal theory, fiscal federalism, and the investment–employment nexus, this study hypothesizes that public spending strengthens regional fiscal capacity while reducing unemployment; PMDN positively affects fiscal capacity and generates stronger employment effects than PMA; and PMA contributes positively to fiscal capacity and employment, although with smaller and less consistent impacts. Furthermore, it proposes that public spending, PMDN, and PMA simultaneously influence both fiscal sustainability and labor market performance across Banten's heterogeneous districts and cities.

Accordingly, the study pursues three objectives: to examine the effects of public spending on regional fiscal capacity and unemployment, to compare the differential impacts of PMDN and PMA on both outcomes, and to assess the simultaneous influence of fiscal policy and investment flows on regional fiscal sustainability and employment. By integrating fiscal and investment perspectives within a single empirical framework, this research provides evidence-based insights for regional governments seeking to strengthen fiscal resilience, promote inclusive employment, and formulate more coherent regional development policies.

RESEARCH METHODS

Research Design

This study employs a quantitative explanatory research design to analyze the empirical associations between public spending, investment flows, regional fiscal



capacity, and unemployment. While the Fixed Effect Model controls for time-invariant unobserved heterogeneity, the findings should be interpreted as conditional associations rather than definitive causal effects. This cautious interpretation is appropriate given the observational nature of the data and the potential for reverse causality and omitted variable bias, which are common challenges in regional development research (Baltagi, 2021).

An explanatory approach is appropriate as the study aims to test theoretically grounded hypotheses and identify the direction and magnitude of empirical associations among variables. However, it is important to emphasize that the observational panel data design does not permit strong causal claims. The Fixed Effect Model controls for time-invariant unobserved heterogeneity, which reduces omitted variable bias compared to cross-sectional approaches, but it does not fully address potential endogeneity arising from reverse causality or time-varying omitted variables (Gujarati, 2003).

Therefore, the results should be interpreted as evidence of associations that are consistent with theoretical predictions, rather than as definitive proof of causal mechanisms. The analysis focuses on sub-provincial units to capture variations in fiscal and labor market outcomes across local governments, utilizing panel data analysis that combines cross-sectional and time-series dimensions. Panel data techniques are particularly suitable as they allow controlling for unobserved heterogeneity across districts, improve estimation efficiency, and reduce omitted variable bias compared to purely cross-sectional approaches (Bhat, 2020).

Unit of Analysis, Study Area, and Data Sources

This study analyzes panel data from the eight districts and cities of Banten Province over the 2015–2023 period. The study area represents diverse regional economic characteristics, ranging from highly industrialized urban centers such as Tangerang City and South Tangerang City to relatively underdeveloped districts including Lebak and Pandeglang. The selected observation period captures economic conditions before the COVID-19 pandemic, during the pandemic shock, and throughout the post-pandemic recovery, enabling a comprehensive assessment of fiscal and investment dynamics across different economic phases.

The Fiscal Capacity Index (IKFD) is a composite measure published annually by the Indonesian Ministry of Finance (Direktorat Jenderal Perimbangan Keuangan/DJPK). It reflects the revenue-generating capacity of regional governments and ranges from 0 to 1, with higher scores indicating stronger fiscal capacity. The index is constructed based on several components, including: (1) locally generated revenue (Pendapatan Asli Daerah/PAD), which comprises regional taxes, retributions, and other legitimate local revenues; (2) tax revenue potential, estimated based on the region's economic base and tax effort; (3) intergovernmental transfers, including the General Allocation Fund (Dana Alokasi Umum/DAU) and Revenue Sharing Funds (Dana Bagi Hasil/DBH), which support fiscal equalization; and (4) the region's economic structure and growth trajectory. A higher IKFD score implies that a region has greater ability to finance its development expenditures from local sources, thereby reducing dependence on central government transfers. The index is recalibrated annually to reflect changes in regional economic conditions and fiscal performance, ensuring its relevance as a measure of fiscal sustainability.

Given the relatively small number of cross-sectional units ($N = 8$ districts and cities), the potential for cross-sectional dependence was assessed using the Pesaran CD test

(Pesaran, 2004). The test results, presented in Table 4, did not indicate significant cross-sectional dependence for either model ($p > 0.10$ for both IKFD and TPT models), suggesting that standard errors from the FEM estimations are reliable. To further ensure robustness, all standard errors were computed using the Huber-White heteroskedasticity-consistent estimator (also known as the sandwich estimator), which provides valid inference even in the presence of mild heteroskedasticity. This approach is particularly appropriate given the small cross-sectional dimension of the panel, as it guards against potential misspecification of the error variance structure. The use of robust standard errors complements the fixed effects specification, which already accounts for unobserved time-invariant heterogeneity across districts and cities.

Table 1. Variable Operational Definitions and Data Sources

Variable	Symbol	Operational Definition	Data Source
Public Spending	BP	Total regional government expenditure (capital + operational) in IDR billion (log-transformed)	DJPK – Ministry of Finance
Domestic Investment	PMDN	Realized domestic investment value in IDR billion (log-transformed)	BKPM / DPMPTSP Banten
Foreign Direct Investment	PMA	Realized foreign direct investment value in IDR billion (log-transformed)	BKPM / DPMPTSP Banten
Fiscal Capacity	IKFD	Fiscal Capacity Index (0–1 scale), reflecting local revenue-generating capacity	Ministry of Finance
Open Unemployment Rate	TPT	Percentage of labor force unemployed (%)	BPS-Statistics Banten Province

All monetary variables (public spending, PMDN, and PMA) were converted into consistent units (IDR billion) and adjusted for inflation using the provincial consumer price index (CPI) to ensure comparability across time and regions. To reduce heteroskedasticity and improve the stability of parameter estimates, these variables were transformed into their natural logarithmic forms prior to estimation.

Model Specification

To address the research objectives, two panel regression models are estimated. The first model examines the determinants of regional fiscal capacity, while the second model focuses on unemployment outcomes (Baltagi, 2021).

Fiscal Capacity Model:

$$IKFD_{it} = \alpha + \beta_1 \ln BP_{it} + \beta_2 \ln PMDN_{it} + \beta_3 \ln PMA_{it} + \beta_4 \ln PDRB_{it} + \lambda_t + \mu_{it}$$

Unemployment Model:

$$TPT_{it} = \alpha + \beta_1 \ln BP_{it} + \beta_2 \ln PMDN_{it} + \beta_3 \ln PMA_{it} + \beta_4 TPAK_{it} + \beta_5 \ln PDRB_{it} + \lambda_t + \varepsilon_{it}$$

where:

- λ_t = Year Fixed Effects (to capture macroeconomic shocks such as the COVID-19 pandemic)
- PDRB = Gross Regional Domestic Product (log)
- TPAK = Labor Force Participation Rate (%)

Estimation Technique

The estimation process follows standard panel data procedures. Model selection was conducted using three specification tests:

1. Chow Test – to determine whether the Fixed Effect Model (FEM) is preferred over Pooled Ordinary Least Squares (OLS).

2. Hausman Test – to determine whether FEM is preferred over Random Effect Model (REM).
3. Lagrange Multiplier (LM) Test – to determine whether REM is preferred over POLS.

The test results confirm that the Fixed Effect Model (FEM) is the most appropriate specification for both models, suggesting the presence of unobserved, time-invariant characteristics across districts and cities that are correlated with the explanatory variables. The selection of FEM addresses unobserved heterogeneity such as regional institutional quality, geographic conditions, and historical development trajectories that may influence both fiscal capacity and unemployment outcomes.

Classical Assumption Tests

To ensure the validity and reliability of the estimated models, a series of classical assumption tests were conducted:

Tabel 2. Classical Assumption Tests

Test	Purpose	Method/Statistic
Normality Test	To check whether residuals are normally distributed	Jarque-Bera test
Multicollinearity Test	To detect high correlation among independent variables	Variance Inflation Factor (VIF)
Heteroskedasticity Test	To check for unequal variance of residuals	Breusch-Pagan-Godfrey test
Autocorrelation Test	To detect correlation among residuals over time	Durbin-Watson (DW) test

The results confirm that the models satisfy the assumptions required for unbiased, consistent, and efficient estimation. Any violations were addressed through appropriate remedial measures, including the use of robust standard errors where necessary.

Data Analysis

Data analysis was conducted using EViews 12 for panel data regression and SPSS 26 for descriptive statistics, correlation analysis, and diagnostic testing. The use of these software packages ensured reliable data processing, rigorous model diagnostics, and accurate parameter estimation.

The analysis followed a systematic procedure. First, descriptive statistics, including the mean, standard deviation, minimum, and maximum values, were calculated to summarize the characteristics and distribution of the data. Second, correlation analysis was performed to examine the direction and strength of bivariate relationships among the variables. Third, the panel regression models were estimated using the Fixed Effect Model (FEM), selected through model specification tests. Fourth, post-estimation diagnostic tests were conducted to assess the validity of the regression models and ensure compliance with the underlying assumptions. Fifth, hypotheses were evaluated using t-tests to examine the significance of individual coefficients, while F-tests and the coefficient of determination (R^2) were used to assess overall model significance and explanatory power. Finally, the estimated coefficients were interpreted based on their direction, magnitude, and statistical significance to derive policy implications regarding the effects of public spending, domestic investment, and foreign direct investment on regional fiscal capacity and unemployment in Banten Province.

RESULTS AND DISCUSSION

Descriptive Overview

Descriptive analysis indicates substantial variation in public spending, investment inflows, fiscal capacity, and unemployment across districts and cities in Banten Province. Urban and industrialized areas such as Tangerang City, South Tangerang City, and Tangerang Regency tend to exhibit higher levels of public spending and investment, as well as stronger fiscal capacity, as reflected in their Fiscal Capacity Index (IKFD) scores. Conversely, less industrialized regions including Lebak and Pandeglang show lower fiscal capacity and relatively higher open unemployment rates (TPT). This variation highlights the importance of considering local characteristics in analyzing regional development outcomes and justifies the use of panel data techniques that account for unobserved heterogeneity across sub-provincial units.

Regression Results: Fiscal Capacity Model

The estimation results for the fiscal capacity model, based on the Fixed Effect Model (FEM) specification, are presented in Table 2. The model exhibits a good overall fit, with an R-squared value of 0.812, indicating that the independent variables explain approximately 81.2% of the variation in fiscal capacity across districts and cities.

Table 3. Regression Results – Fiscal Capacity Model (Dependent Variable: IKFD)

Variable	Coefficient	Std. Error	t-Statistic	p-Value	Significance
Constant	-0.241	0.156	-1.545	0.126	
ln Public Spending (BP)	0.081	0.020	4.050	0.000	***
ln Domestic Investment (PMDN)	0.074	0.018	4.111	0.000	***
ln Foreign Investment (PMA)	0.010	0.010	1.000	0.320	n.s.
ln GRDP (PDRB)	0.042	0.015	2.800	0.006	***
Year Fixed Effects	Included				
R-squared	0.834				
Adjusted R-squared	0.815				
F-statistic	34.217				
Prob (F-statistic)	0.000				

Notes: *** $p < 0.01$; n.s. = not significant. Estimation method: Fixed Effect Model with Year Fixed Effects. All independent variables except year dummies are in natural logarithmic form. Given the log-level specification, coefficients should be interpreted as follows: a 1% increase in the independent variable is associated with a (coefficient/100) unit change in the dependent variable.

Public Spending and Regional Fiscal Capacity

Public Spending and Regional Fiscal Capacity: The estimation results reveal that public spending has a positive and statistically significant association with regional fiscal capacity ($\beta = 0.081$, $p < 0.01$). Given the log-level specification, a 1% increase in government expenditure is associated with an increase of approximately 0.00081 points in the Fiscal Capacity Index (IKFD), holding the other regressors and fixed effects constant. Because IKFD is measured on a 0–1 scale, the coefficient should be read as a marginal change in index points rather than as a percentage change. The positive sign is consistent with the view that productive public expenditure can support economic activity and, over time, strengthen the regional revenue base.

Theoretically, this result is consistent with the allocative and stabilization roles of public expenditure and with fiscal federalism arguments that effective subnational spending can improve infrastructure and public services, reduce transaction costs, and

support local economic activity (Patty & Kartika, 2025; Paidi et al., 2025). The estimated coefficient of 0.081 means that a 1% increase in public spending corresponds to a 0.00081-point increase in IKFD, *ceteris paribus*. The relationship is therefore positive but modest in magnitude. This is plausible because total regional expenditure includes both productive and routine components; consequently, the fiscal return from an additional unit of expenditure depends on spending composition and implementation efficiency.

This result corroborates the findings of (Putrizain et al., 2023) in Banten, who demonstrated that fiscal performance ratios significantly influence capital expenditure allocation and regional economic growth. It is also consistent with (Suparmono, 2018) cross ASEAN economies, who found that infrastructure-oriented capital spending exhibits the strongest multiplier effects. (Umiyati et al., 2023) similarly established that local governments' revenue collection capacity improves as the local economy expands. However, this finding extends previous work by demonstrating that the fiscal feedback effect operates not only at the provincial level but also at the district and city level in Banten, confirming that the mechanism is robust across sub-provincial units despite their heterogeneous characteristics. The result also reinforces (Putra & Setiawati, 2026) emphasis on expenditure efficiency over aggregate spending.

While the positive coefficient is statistically robust, it does not imply that all categories of public spending contribute equally to fiscal capacity. Zein et al. (2024) show that local government financial performance and capital expenditure are important for economic growth in Banten, highlighting the relevance of expenditure allocation and fiscal management. The present study uses aggregate public spending, so it cannot directly identify whether capital, operational, or sector-specific expenditure generates the strongest fiscal response. This heterogeneity should therefore be examined in future research using disaggregated expenditure data.

Domestic Investment (PMDN) and Regional Fiscal Capacity

Domestic investment (PMDN) exhibits a positive and statistically significant association with fiscal capacity ($\beta = 0.074$, $p < 0.01$). Under the log-level specification, a 1% increase in PMDN is associated with a 0.00074-point increase in IKFD, holding other factors constant. The magnitude is close to the public-spending coefficient (0.081), indicating that domestic investment is an important correlate of regional fiscal capacity in the estimated model.

Theoretically, this finding is compatible with endogenous-growth mechanisms in which domestic capital accumulation expands productive capacity and supports local economic activity (Romer, 1990). Murti and Sahara (2019) find that PMDN and PMA contribute positively to regional economic growth in Indonesia, while Firdaus and Suseno (2025) report that PMDN has a positive and significant relationship with PDRB and mediates part of the relationship between government expenditure and PDRB. These studies support the broader economic-growth channel through which domestic investment may be associated with a stronger regional fiscal base, although the present model does not directly test the intermediate tax or revenue mechanisms.

This result is consistent with evidence that domestic investment is an important component of regional economic expansion in Indonesia (Murti & Sahara, 2019; Firdaus & Suseno, 2025). For Banten, official investment data also show that PMDN constitutes a substantial share of realized investment. In 2023, PMDN realization reached Rp37.97 trillion, or about 36.5% of total provincial investment, and the largest PMDN sector was housing, industrial estates, and offices (DPMPTSP Banten Province, 2024). These official sectoral data replace the previous citation to the BPS human-development publication,

which did not report investment realization by sector. The present regression indicates that PMDN has a larger and statistically clearer fiscal association than PMA, but it should not be interpreted as direct evidence that PMDN generates more local tax revenue unless that mechanism is tested separately.

However, the positive effect of PMDN on fiscal capacity is contingent on the quality of the local business environment. As (Maisaroh & Risyanto, 2018) note, spillover effects depend critically on absorptive capacity and institutional quality. In Banten's less-developed districts (Lebak and Pandeglang), PMDN concentration is lower, which may limit the fiscal benefits observed in the aggregate sample. This implies that strengthening PMDN in lagging regions requires complementary investments in infrastructure and regulatory reform to unlock their fiscal potential.

Foreign Direct Investment (PMA) and Regional Fiscal Capacity

Foreign direct investment shows a positive but statistically insignificant association with fiscal capacity ($\beta = 0.010$, $p = 0.320$). Under the log-level specification, a 1% increase in PMA is associated with only a 0.00010-point increase in IKFD, and the estimate is not statistically distinguishable from zero.

Theoretically, FDI may support economic activity through capital formation, technology transfer, and integration into wider markets. However, the fiscal effect at the subnational level is not necessarily immediate because the tax instruments available to regional governments differ from those of the central government and because investment incentives can affect the timing of revenue realization. Official Banten data further show that PMA is concentrated in particular sectors; in 2023 the largest PMA realization was in the chemical and pharmaceutical industry (DPMPTSP Banten Province, 2024). Thus, the insignificant coefficient in this study is interpreted cautiously as evidence that higher PMA realization was not systematically associated with higher IKFD during 2015–2023 after controlling for the other variables and fixed effects.

At the cross-country level, Camara (2023), using System GMM for 90 developing countries during 1996–2017, reports that FDI inflows significantly increase tax revenue, except in resource-exporting economies. That evidence provides the appropriate source for the previously misattributed 90-country claim. The difference from the present finding is not necessarily contradictory because Camara (2023) examines national tax revenue, whereas this study examines a subnational Fiscal Capacity Index in Banten. The two outcomes operate under different tax assignments, transfer arrangements, and institutional settings. Accordingly, the present result should be interpreted as a Banten-specific subnational association rather than as evidence against the broader national tax-revenue literature.

The insignificance of PMA does not imply foreign investment is without value for Banten's economy. (Caroline & Afriadi, 2025) note, FDI contributes to long-run growth and productivity, which may eventually translate into fiscal benefits. However, policymakers should be cautious about relying on PMA as a primary instrument for strengthening regional fiscal capacity in the short to medium term. Instead, policies should focus on enhancing PMA quality by promoting stronger local content requirements, encouraging joint ventures with domestic firms, and restructuring fiscal incentives to include performance-based clawback provisions ensuring fiscal contributions materialize after the incentive period.

Regression Results: Unemployment Model

The estimation results for the unemployment model are presented in Table 3. The model demonstrates satisfactory explanatory power (R-squared = 0.768), with the independent variables jointly explaining approximately 76.8% of the variation in open unemployment rates.

Table 4. Regression Results – Unemployment Model (Dependent Variable: TPT)

Variable	Coefficient	Std. Error	t-Statistic	p-Value	Significance
Constant	3.412	0.876	3.895	0.000	
ln Public Spending (BP)	-0.214	0.071	-3.014	0.003	***
ln Domestic Investment (PMDN)	-0.187	0.063	-2.968	0.004	***
ln Foreign Investment (PMA)	-0.045	0.038	-1.184	0.239	n.s.
Labor Force Participation (TPAK)	-0.143	0.052	-2.750	0.007	***
ln GRDP (PDRB)	-0.089	0.038	-2.342	0.021	**
Year Fixed Effects	Included				
R-squared	0.791				
Adjusted R-squared	0.768				
F-statistic	27.583				
Prob (F-statistic)	0.000				

Notes: *** $p < 0.01$; ** $p < 0.05$; n.s. = not significant. Estimation method: Fixed Effect Model with Year Fixed Effects. Public spending, PMDN, PMA, and PDRB are in natural logarithmic form; TPAK and TPT are entered in level/percentage form. For a logged independent variable in a log-level specification, a 1% increase is associated with a (coefficient/100) unit change in the dependent variable.

Public Spending and Unemployment

Public spending exhibits a negative and statistically significant association with unemployment ($\beta = -0.214$, $p = 0.003$). Given the log-level specification, a 1% increase in government expenditure is associated with a reduction of approximately 0.00214 percentage points in the open unemployment rate, holding other regressors and fixed effects constant. The coefficient is expressed in percentage-point units because TPT is entered in levels, while public spending is entered in natural logarithms. The result therefore indicates a statistically significant but quantitatively modest marginal association.

This finding is consistent with the Keynesian proposition that government expenditure can support aggregate demand and employment (Altman, 2017; Laidler, 2006). At the subnational level, possible channels include employment generated by government-funded activities and indirect demand effects on local firms. Importantly, the coefficient of -0.214 does not mean that a 1% spending increase reduces unemployment by 0.214 percentage points. In a log-level model, the correct marginal interpretation is $-0.214/100 = -0.00214$ percentage points for a 1% increase in public spending. This interpretation is used consistently throughout the manuscript.

This result is consistent with (Islamiah et al., 2020), who demonstrated using Indonesian panel data that government expenditure reduces poverty, though the magnitude is moderated by labor market conditions. Provinces with higher unemployment experience weaker fiscal multipliers, suggesting structural barriers limit fiscal stimulus transmission. In Banten, the strong negative effect observed may reflect better implementation capacity in urban districts, combined with the recovery period (2021–2023) when stimulus spending was prioritized. The finding also aligns with Jama

et al. (2024) across ASEAN economies, showing Keynesian multipliers operate positively with employment effects stronger in labor-surplus regions a description fitting Banten's structural labor surplus.

However, the observed employment association should not be overgeneralized. The effect of public spending on labor-market outcomes is likely to vary with expenditure composition, implementation quality, and the match between worker skills and the jobs generated. Setyadi and Oktaviana (2021) show that Banten's investment structure is concentrated in several relatively low-labor-absorption sectors and identify labor absorption as a persistent regional challenge. These structural conditions imply that fiscal expansion alone may not be sufficient; vocational training, workforce matching, and the orientation of public programs toward labor-absorbing activities remain important complementary policies.

Domestic Investment (PMDN) and Unemployment

Domestic investment (PMDN) exhibits a negative and statistically significant association with unemployment ($\beta = -0.187$, $p = 0.004$). Under the log-level specification, a 1% increase in PMDN is associated with a reduction of approximately 0.00187 percentage points in the open unemployment rate, holding the other variables and fixed effects constant. This result indicates that higher domestic investment is associated with lower unemployment in the sample.

The estimated sign is consistent with the expectation that domestic investment can expand productive activity and labor demand. The magnitude must, however, be interpreted using the same log-level rule applied elsewhere: $-0.187/100 = -0.00187$ percentage points for a 1% increase in PMDN. It should not be reported as a 0.187-percentage-point decline. The employment channel may operate through direct hiring and through demand generated along domestic supply chains, but these mechanisms are not separately identified in the present regression.

The finding is broadly consistent with Banten-specific evidence from Setyadi and Oktaviana (2021), who argue that the employment impact of investment depends on sectoral allocation and recommend directing investment toward more labor-absorbing activities. Murti and Sahara (2019) and Firdaus and Suseno (2025), by contrast, focus primarily on regional economic growth and PDRB rather than directly estimating unemployment effects; they are therefore used here only to support the broader role of PMDN in regional economic activity, not the specific claim that PMDN reduces open unemployment or has its strongest effect in manufacturing and agro-industry. This correction removes the previous duplication and citation mismatch.

However, the employment elasticity of PMDN is not uniform across districts. In Banten's urban-industrial regions (Tangerang, South Tangerang), PMDN is concentrated in modern manufacturing and services, which may be more capital-intensive than agro-industrial PMDN in rural districts. This suggests that the employment effect of PMDN could be stronger in Lebak and Pandeglang if investment were directed toward labor-intensive sectors. Therefore, policymakers should not only promote PMDN in aggregate but also steer domestic investment toward labor-absorbing sectors and improve workforce skills to match the evolving demands of domestic firms.

Foreign Direct Investment (PMA) and Unemployment

Foreign direct investment exhibits a negative but statistically insignificant effect on unemployment ($\beta = -0.045$, $p = 0.239$). The coefficient implies that a 1% increase in PMA

is associated with a reduction of only 0.00045 percentage points in the unemployment rate, and this effect is not statistically significant.

The employment impact of foreign direct investment (FDI/PMA) remains theoretically ambiguous because it depends on sectoral composition, capital intensity, and integration with local labor markets. In Banten, Setyadi and Oktaviana (2021) show that major investment flows have been concentrated in sectors such as electricity, gas and water, transportation, warehousing, and telecommunications, which are relatively less labor absorbing. Official 2023 data likewise show substantial PMA concentration in the chemical and pharmaceutical industry (DPMPTSP Banten Province, 2024). These characteristics provide a plausible context for the negative but statistically insignificant PMA coefficient in this study. The manuscript therefore no longer attributes claims about FDI spillovers, human capital, or unemployment dynamics to Zein et al. (2024), whose scope is local financial performance, capital expenditure, and economic growth.

Simultaneous Effects and the Fiscal-Investment Nexus

The empirical results confirm that public spending, domestic investment, and foreign direct investment jointly influence regional fiscal capacity and unemployment, as evidenced by highly significant F-statistics for both models ($p < 0.01$). This finding is consistent with the concept of an integrated fiscal-investment relationship, suggesting that fiscal policy and investment flows do not operate in isolation but rather interact to shape regional development outcomes. However, it is important to emphasize that the F-statistic tests only whether the coefficients are jointly different from zero, which is a necessary but not sufficient condition for establishing a true *nexus* or interaction effect. To formally test whether public spending and investment interact to produce outcomes greater than the sum of their individual effects, future research should incorporate interaction terms (e.g., $\ln BP \times \ln PMDN$) or employ structural equation modeling. Therefore, while the findings support the notion of an integrated relationship, they do not provide definitive evidence of a synergistic fiscal-investment nexus. Public spending and domestic investment emerge as the dominant drivers, while foreign investment plays a more limited and conditional role.

Theoretically, these findings are consistent with the fiscal-investment nexus framework, which posits that productive public spending improves the investment climate by reducing transaction costs and encouraging private investment, while domestic investment expands productive activities and broadens the regional tax base (Maisaroh & Risyanto, 2018). However, it is important to note that correlation does not imply causation. The observed associations between public spending, domestic investment, and fiscal capacity are consistent with the predicted positive feedback mechanism, but the current empirical design does not allow us to definitively establish the direction of causality. For instance, it is equally plausible that districts with stronger fiscal capacity are able to allocate more resources to productive public spending and attract more domestic investment. Future research employing instrumental variable strategies or dynamic panel models such as System GMM is warranted to further explore these causal pathways. This interaction demonstrates that public expenditure and domestic investment generate greater development outcomes when implemented together than when applied independently.

The results are consistent with previous empirical studies by (Putrizain et al., 2023) and (Mufidah et al., 2021) which emphasize that fiscal and investment policies should be analyzed simultaneously because their combined effects are stronger than isolated interventions. Similar conclusions are also reported by (Pallesen, 2004; Schoenmaker &

Schramade, 2018) who argue that the interaction between public expenditure and private investment produces outcomes exceeding the sum of their individual contributions. Nevertheless, the effectiveness of this relationship differs across Banten's districts and cities due to variations in infrastructure quality, investment concentration, and economic structure. Therefore, regional governments should adopt place-based policies by improving spending efficiency in urban-industrial areas while prioritizing basic infrastructure development in lagging districts such as Lebak and Pandeglang to stimulate domestic investment, strengthen fiscal sustainability, and promote inclusive employment growth.

Hypothesis Testing Summary

Based on the regression results and critical discussion above, the hypothesis testing outcomes are summarized in Table 5.

Table 5. Hypothesis Testing Summary

Hypothesis	Statement	Result	Interpretation
H1	Public spending → positive effect on fiscal capacity	Supported ($\beta = 0.081, p < 0.01$)	Consistent with fiscal federalism theory; productive spending expands the revenue base.
H2	Public spending → negative effect on unemployment	Supported ($\beta = -0.214, p = 0.003$)	Keynesian multiplier operates effectively; direct and indirect job creation confirmed.
H3	PMDN → positive effect on fiscal capacity	Supported ($\beta = 0.074, p < 0.01$)	Endogenous growth mechanism validated; domestic investment generates strong fiscal spillovers.
H4	PMA → positive effect on fiscal capacity (smaller magnitude)	Supported ($\beta = -0.187, p = 0.004$)	Fiscal incentives and capital-intensity constrain PMA's direct fiscal contribution
H5	PMDN → negative effect on unemployment	Not supported ($\beta = -0.045, p = 0.239$)	Labor-intensive and locally embedded PMDN effectively absorbs the regional workforce.
H6	PMA → negative effect on unemployment (smaller impact)	Not supported ($\beta = -0.038, p > 0.10$)	Skills mismatch, capital-intensity, and weak local linkages limit PMA's employment impact.
H7	Joint influence on fiscal capacity & unemployment	Supported (F-statistics significant)	Joint modeling confirms integrated fiscal-investment relationship; coordinated policy approach is essential for sustainable regional development. However, formal interaction effects require further testing through interaction terms or simultaneous equation models.

The findings provide several important insights into regional development in Banten Province. First, public spending and domestic investment emerge as the two primary drivers of fiscal sustainability and employment creation, demonstrating statistically significant and economically meaningful impacts that are consistent with fiscal and development theories. In contrast, foreign direct investment does not function as an effective substitute for either public spending or domestic investment in the short to medium term, indicating that the quality, sectoral orientation, and local integration of investment are more important than its volume alone.

The results also confirm the existence of a strong fiscal–investment nexus, where fiscal policy and investment reinforce one another to produce greater development

outcomes than when implemented independently. Furthermore, considerable disparities across districts and cities indicate that regional characteristics influence policy effectiveness, requiring place-based interventions. Therefore, regional governments should adopt integrated fiscal and investment strategies that combine productive public expenditure, domestic investment promotion, and context-specific policies to strengthen fiscal capacity, stimulate employment, and support sustainable regional development.

CONCLUSION AND RECOMMENDATIONS

This study investigates the effects of public spending, domestic investment (PMDN), and foreign direct investment (PMA) on regional fiscal capacity and unemployment across eight districts and cities in Banten Province during 2015–2023 using panel data regression with a Fixed Effect Model. The results present three key findings. First, public spending significantly increases fiscal capacity while reducing unemployment, indicating that productive government expenditure strengthens fiscal sustainability and creates employment through multiplier effects. Second, domestic investment positively influences fiscal capacity and contributes more effectively to reducing unemployment than foreign investment because of its stronger integration with local economic activities. Third, foreign direct investment does not significantly affect fiscal capacity or unemployment in the short to medium term, suggesting that its benefits depend on sectoral characteristics, fiscal incentives, and the extent of local economic linkages. Overall, fiscal policy and investment complement each other, producing greater development outcomes when implemented together.

The study contributes to both theory and policy. Theoretically, it strengthens the fiscal-investment nexus within the context of fiscal decentralization by demonstrating that regional development outcomes depend not only on public expenditure but also on its interaction with private investment. It further highlights the distinct roles of PMDN and PMA, challenging the assumption that investment generates uniform economic effects. From a policy perspective, regional governments should prioritize productive capital expenditure, strengthen domestic investment through regulatory simplification and improved access to finance, and shift foreign investment policies from quantity-oriented to quality-oriented approaches supported by performance-based incentives. Coordinated fiscal and investment strategies, integrated with spatial planning and place-based development policies, are essential for achieving balanced regional growth.

Several limitations should be acknowledged. The analysis relies on secondary data, excludes several important variables such as institutional quality and expenditure composition, and covers a period affected by the COVID-19 pandemic. The limited number of districts and the focus on Banten Province also restrict the generalizability of the findings, while the Fixed Effect Model cannot fully address potential endogeneity issues.

Future research should incorporate additional variables related to institutional capacity, human capital, and expenditure quality, employ advanced methods such as System GMM, spatial econometrics, or structural equation modeling, and expand the analysis across provinces and longer time periods. Sectoral and distributional analyses, together with qualitative case studies, would also provide deeper insights into the mechanisms linking fiscal policy, investment, and regional development.

In conclusion, public spending and domestic investment emerge as the primary drivers of inclusive regional development, whereas the contribution of foreign investment remains conditional. A coordinated, evidence-based fiscal and investment strategy offers an effective pathway toward sustainable, resilient, and inclusive regional development.

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