

Poverty, Income Inequality, and Economic Growth : The Moderating Role of Central Fiscal Transfers in West Java, 2018–2023

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ABSTRACT

This study examines the effects of poverty and income inequality on real GRDP growth, and the moderating role of central government fiscal transfers (general and special allocation funds) on these relationships, across 27 regencies/cities in West Java during 2018–2023. Using an explanatory quantitative approach with balanced panel data regression (162 observations) estimated through a Fixed Effect Model (EViews 12), the study includes the Human Development Index and investment as control variables, with $POV \times Z$ and $GINI \times Z$ interaction terms testing the moderating effect. Results show poverty has a significant negative effect on real GRDP growth ($\beta = -2.89$; $p = 0.000$), while income inequality shows a significant positive effect ($\beta = 42.02$; $p = 0.031$), contrary to the hypothesized direction. Central fiscal transfers significantly moderate the poverty–growth relationship ($POV \times Z$; $\beta = 0.0073$; $p = 0.017$) in a positive direction, indicating a flypaper-effect pattern in which high transfer dependency fails to strengthen poor regions' capacity to offset poverty's negative impact. In contrast, the moderating effect of fiscal transfers on income inequality ($GINI \times Z$) is not significant ($p = 0.402$), reflecting inequality's roots in longer-term structural factors. Mediation tests for M1 and M2 do not meet statistical criteria. These findings provide empirical grounds for evaluating Indonesia's 2022 Fiscal Relations Law and suggest strengthening performance-based transfer mechanisms alongside the financial intermediation role of regional development banks and microfinance institutions in high-poverty, transfer-dependent regions.

Keywords : Economic Growth; Fiscal Transfers; Income Inequality; Moderating Effect; Poverty.

INTRODUCTION

Economic growth is considered inclusive when it is accompanied by declining poverty and more equitable income distribution. Poverty is not merely a matter of low income, but also of limited access to education, health, and economic opportunity that shapes quality of life [1]. However, the empirical literature on the relationship between poverty, inequality, and growth has not shown a consistent direction. Using data from more than a hundred countries, growth was found to reduce poverty only when income distribution did not worsen, although the sample

pooled countries with different fiscal structures, so that within-country institutional variation was not captured [2]. In a sample of OECD countries with mature fiscal capacity, income inequality (Gini Ratio) was found to hinder long-run growth by weakening human capital accumulation [3]. Neither study positioned intergovernmental fiscal transfers as a variable that alters the strength of the poverty-inequality-growth relationship. Other studies touch on regional fiscal capacity [4], [5], but do not explicitly test the interaction of fiscal transfers with poverty or income inequality. This methodological gap is the starting point of the present study.

This issue is reflected in data from 27 regencies/cities in West Java for 2018–2023: poverty ranged from 2.07% to 13.13%, the Gini Ratio ranged from 0.28 to 0.49, and real GRDP growth ranged from –3.80% to 9.76% (Table 1) [6]. This wide range indicates that economic growth does not automatically reduce poverty and inequality evenly across regions.

Table 1. Descriptive Statistics of Key Variables, 27 Regencies/Cities in West Java, 2018–2023

Variable	Minimum	Maximum	Mean
Poverty (%)	2.07	13.13	8.26
Gini Ratio	0.28	0.49	0.37
Real GRDP growth (%)	-3.80	9.76	3.98

Source: BPS Provinsi Jawa Barat [6], processed.

Average real GRDP growth contracted sharply in 2020 (–2.52%) due to the COVID-19 pandemic, then gradually recovered to 5.00% in 2023, although the recovery was uneven across regions: some regions grew above 9% in 2023 while others remained below 5%, consistent with findings that the pandemic widened household economic vulnerability unevenly across regions [7]. Disparities in poverty across regions were also stark: the five regions with the highest poverty rates were far above the provincial average, while the five lowest were far below it, a gap of more than 10 percentage points within a single province.

Since the enactment of Law No. 1 of 2022 on Fiscal Relations between the Central Government and Regional Governments (HKPD), which changed the intergovernmental fiscal transfer mechanism [8], data show that an average of 64.2% of the revenue of regencies/cities in West Java depended on central transfers throughout 2018–2023, with a range of 35.0%–81.0% [9], [10]. The poorest regions were in fact the most dependent on transfers, while the regions with the lowest poverty were the least dependent. The Pearson correlation between the fiscal transfer ratio and poverty across the 27 regencies/cities yielded $r = 0.74$, a strong positive correlation indicating a flypaper-effect pattern [11] – a condition in which fiscal transfers do not proportionally drive productive spending. This pattern raises the need to empirically test whether central fiscal transfers genuinely moderate, rather than merely correlate with, the impact of poverty and income inequality on real GRDP growth.

The grand theory underlying this study is fiscal decentralization theory [4]: devolving fiscal authority to regions increases the efficiency of public goods

provision because local governments better understand local needs, but this efficiency is only achieved when regions possess adequate fiscal capacity. Decentralization implemented without sufficient institutional-fiscal capacity support has been shown to hinder equitable development [12]. On the other hand, income inequality is believed to be not merely a consequence of growth but also its inhibitor, through credit market imperfections that make it difficult for the poor to access financing for education and productive enterprise [13]. As a determinant of growth beyond poverty and inequality, this study also draws on endogenous growth models that emphasize human capital accumulation [14] and endogenous technological change together with physical capital accumulation [15] as drivers of long-run growth, which underlie the use of the Human Development Index (HDI) and investment as control variables – their relevance confirmed in the Indonesian context [16], [17].

Domestic research further confirms this urgency while leaving the same gap unaddressed. Regional capital expenditure was found to significantly affect the Human Development Index in Central Java, without addressing economic growth or central fiscal transfers [18]. Central development spending following decentralization was found to correlate with development outcomes, without testing its interaction with poverty or inequality [19]. Decentralization without equalized fiscal capacity was found to widen regional development inequality, consistent with indications of a flypaper effect, but has not been tested within a quantitative moderation framework at the regency/city level [20]. Related studies by the proposers also form the methodological and conceptual foundation of this research, including an analysis of Bengkulu's economic landscape [21], the leveraging of human capital for technology-sector performance [22], the causality among unemployment, inflation, and economic growth in Indonesia [23], and the effect of social assistance on poverty alleviation [24].

No prior study has built a moderated regression model with central fiscal transfers (general and special allocation funds) as an explicit moderator of the poverty-inequality-growth relationship, using panel data from 27 regencies/cities in West Java for 2018–2023, spanning the pre-pandemic, disruption, and recovery phases within a single analytical framework. Academically, the novelty of this study lies in positioning the central fiscal transfer ratio as a moderator within a panel model at the regency/city level, rather than merely as a standalone determinant of growth. Practically, the findings provide an empirical basis for evaluating the 2022 HKPD Law and for inclusive financial intermediation strategies by regional development banks (BPD) and microfinance institutions in regions with high poverty and high fiscal dependency.

Based on the foregoing, this study tests four hypotheses: (H1) poverty has a negative and significant effect on real GRDP growth; (H2) income inequality has a negative and significant effect on real GRDP growth; (H3) central fiscal transfers moderate the effect of poverty on growth; and (H4) central fiscal transfers moderate the effect of income inequality on growth.

METHOD

This study employs a quantitative approach with an explanatory design using balanced panel data regression: 27 regencies/cities (cross-section) $\times$ 6 years, 2018–2023 (time-series) = 162 observations. The panel data approach was chosen because it can control for unobserved cross-regional heterogeneity while capturing the dynamics of variable change over time [26], [27]. The 2018–2023 period was purposively selected because it spans three contrasting phases – pre-pandemic (2018–2019), pandemic disruption (2020–2021), and recovery (2022–2023) – important for testing the stability of the fiscal transfer moderation effect, given that the pandemic has been shown to increase poverty risk unevenly across regions [7]. The study population comprises all regencies/cities in West Java Province. The sample was determined using a census (total sampling) technique: all 27 regencies/cities were used as units of analysis without random sampling, given the limited population and the complete, verified availability of secondary data throughout 2018–2023. The unit of analysis is regency/ city (i) in a given year (t).

Secondary data were sourced from two official institutions: the Central Statistics Agency (BPS) of West Java Province through its West Java in Figures publication – real GRDP at 2010 constant prices, poverty rate, Gini Ratio, HDI, and regional investment realization [6]; and the Directorate General of Fiscal Balance (DJPK), Ministry of Finance of the Republic of Indonesia, through the djpk.kemenkeu.go.id portal – realized general and special allocation funds and total regional revenue [9], [10]. Data were collected through documentation, compiled into a balanced panel format using Microsoft Excel, and estimated using EViews 12. Data validity was ensured through cross-source triangulation, matching realization figures between BPS and DJPK reports.

This study involves one dependent variable, two main independent variables, one moderating variable, two control variables, and two interaction variables, with measurement following the standard headcount ratio and Gini Ratio framework [25]. The operational definition of each variable is presented in Table 2.

Table 2. Operational Definitions and Measurement of Variables

Variable	Operational Definition	Measurement	Source
Real GRDP growth (Y)	Growth rate of GRDP at 2010 constant prices	% change in real GRDP, t vs t-1	BPS West Java
Poverty (POV)	Proportion of population below the poverty line	% of population in poverty	BPS West Java
Income inequality (GINI)	Degree of income distribution equity	Gini Ratio, 0–1 scale	BPS West Java
Central fiscal transfer (Z)	Degree of fiscal dependency on balance funds	Ratio of (DAU+DAK)/total revenue	DJPK MoF

Variable	Operational Definition	Measurement	Source
HDI	Proxy for human capital quality	Composite index, 0-100	BPS West Java
Investment (ln INV)	Proxy for regional physical capital accumulation	Ln of realized investment (IDR)	BPS West Java
POV×Z interaction	Moderating effect of fiscal transfers on poverty	Product of POV and Z (mean-centered)	Processed
GINI×Z interaction	Moderating effect of fiscal transfers on inequality	Product of GINI and Z (mean-centered)	Processed

Source: Compiled by the researchers based on [6], [9], [10].

The empirical model estimated is formulated as follows:

$$Y_{it} = \alpha + \beta_1 \text{POV}_{it} + \beta_2 \text{GINI}_{it} + \beta_3 \text{HDI}_{it} + \beta_4 \ln(\text{INV})_{it} + \beta_5 Z_{it} + \beta_6 (\text{POV} \times Z)_{it} + \beta_7 (\text{GINI} \times Z)_{it} + \varepsilon_{it} \quad (1)$$

Where Y_{it} = real GRDP growth of regency/city i in year t ; POV_{it} and GINI_{it} = poverty and income inequality; Z_{it} = central fiscal transfer ratio; HDI_{it} and $\ln(\text{INV})_{it}$ = control variables; $(\text{POV} \times Z)_{it}$ and $(\text{GINI} \times Z)_{it}$ = the core interaction variables for testing the moderating effect; α = constant; β_1 – β_7 = regression coefficients; and ε_{it} = the error term.

Panel Data Regression Model Selection

Panel data estimation can be carried out using the Common Effect Model (CEM), Fixed Effect Model (FEM), or Random Effect Model (REM), selected hierarchically: the Chow test (CEM vs. FEM), the Hausman test (FEM vs. REM), and the Breusch-Pagan Lagrange Multiplier test (CEM vs. REM). This procedure follows standard panel data econometric practice [26].

Classical Assumption Tests and Hypothesis Testing

To ensure the estimator is best linear unbiased (BLUE), multicollinearity tests (correlation matrix and/or VIF), heteroskedasticity tests (Breusch-Pagan or White test), and autocorrelation tests (Durbin-Watson or Wooldridge test) were conducted. Hypothesis testing was carried out through: (1) a partial t-test at $\alpha = 5\%$ on coefficients β_1 , β_2 , β_6 , and β_7 ; (2) a simultaneous F-test to assess model fit; and (3) the coefficient of determination (R^2 , or within R^2 for FEM).

RESULTS AND DISCUSSION

This section discusses the results of the Fixed Effect Model (FEM) panel regression estimation for four core relationships: the effects of poverty (POV) and income inequality (GINI) on real GRDP growth, and the moderating role of central fiscal transfers (Z) through the $\text{POV} \times Z$ and $\text{GINI} \times Z$ interaction variables. This section also discusses the results of testing the mediating roles of M1 and M2.

The estimation model went through the model selection stage (Chow test: Prob. 0.0019; Hausman test: Prob. 0.0000 – both confirming FEM as the best model) and passed the classical assumption tests: residuals approximately normal ($n = 189$), no serious multicollinearity found among the main variables, the model is homoscedastic (all Glejser test probabilities > 0.05), and no autocorrelation was indicated (Durbin-Watson 2.235790). The model was also found to be jointly fit (F-test, Prob. 0.004064 < 0.05).

Table 3. Summary of Model Selection and Classical Assumption Tests

Test	Result	Conclusion
Chow Test	F = 2.177059; Prob. = 0.0019	FEM is more appropriate than CEM
Hausman Test	Chi-Sq. = 49.721212; Prob. = 0.0000	FEM is more appropriate than REM
Multicollinearity Test	Low correlation among main variables	No serious multicollinearity
Heteroskedasticity Test (Glejser)	All Prob. > 0.05	Model is homoscedastic
Autocorrelation Test (Durbin-Watson)	DW = 2.235790 ($dU < d < 4-dU$)	No autocorrelation indicated
F-test (Model Fit)	Prob(F-statistic) = 0.004064	Model is jointly fit

Table 4. FEM Estimation Results with Mediating Variables (Main Model)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	21.68214	14.09858	1.537895	0.1261
X1 (POV)	-2.892021	0.670551	-4.312902	0.0000
X2 (GINI)	42.01745	19.34935	2.171518	0.0314
M1	-0.271409	0.201072	-1.349810	0.1790
M2	0.000487	0.000919	0.529687	0.5971
Z	0.015162	0.036073	0.420305	0.6748
POV×Z (M1Z)	0.007275	0.003005	2.420645	0.0166
GINI×Z (M2Z)	-0.072140	0.085886	-0.839953	0.4022

R-squared = 0.291381; Adjusted R-squared = 0.140514; F-statistic = 1.931373; Prob(F-statistic) = 0.004064; DW = 2.235790. Source: EViews 12 output.

Table 5. FEM Estimation Results without Mediating Variables (Robustness Check Model)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	5.564185	7.506812	0.741218	0.4597
X1 (POV)	-2.843371	0.669478	-4.247146	0.0000
X2 (GINI)	37.68261	19.03994	1.979134	0.0495
Z	0.010559	0.035912	0.294013	0.7691
POV×Z (M1Z)	0.005888	0.002833	2.078029	0.0393
GINI×Z (M2Z)	-0.059284	0.085348	-0.694615	0.4883

R-squared = 0.282571; Adjusted R-squared = 0.140914; F-statistic = 1.994746; Prob(F-statistic) = 0.003204; DW = 2.296202. Source: EViews 12 output.

Effect of Poverty on Real GRDP Growth (H1)

The POV coefficient of -2.892021 (Prob. 0.0000) is significant at $\alpha = 5\%$. The negative direction indicates that the higher the percentage of the population living in poverty, the lower the rate of economic growth – H1 is accepted. This finding is consistent with the argument that poverty suppresses regional productive capacity through limited access to education, health, and economic opportunity [1], reinforced by the credit market imperfection framework [13] – poor households struggle to access investment financing. This result is also consistent with [2] and relevant to findings that the COVID-19 pandemic widened household economic vulnerability unevenly [7], a condition covered within the observation period (2018–2023). The robustness check on the model without mediation shows the POV coefficient shifted only slightly (from -2.892021 to -2.843371) with significance remaining at 0.0000 in both specifications – indicating a consistent structural relationship rather than a specification artifact.

Conditions in West Java reinforce this finding: the regions with the highest poverty are structurally dominated by the informal agricultural sector with limited infrastructure connectivity and low human capital, while the regions with the lowest poverty enjoy the positive externalities of the Greater Bandung/Jabodetabek agglomeration. This divergence pattern is consistent with cumulative causation theory [29]: peripheral regions experience a backwash effect (out-migration of labor and capital), widening the growth gap over time – poverty becomes a self-reinforcing poverty trap through the weakening of the region's productive base.

The implication is that fiscal transfer allocation following the 2022 HKPD Law should ideally be directed not only toward equalizing basic services, but also toward strengthening the productive capacity of poor households, for example through earmarking special allocation funds for local economic empowerment. Regional development banks and microfinance institutions can play a strategic role in converting social assistance and fiscal transfers into productive business capital in high-poverty regions.

Effect of Income Inequality on Real GRDP Growth (H2)

The GINI coefficient of 42.01745 (Prob. 0.0314) is significant at $\alpha = 5\%$, but its positive direction is contrary to the hypothesized (negative) direction – H2 is not supported in the hypothesized form. Theoretically, credit market imperfections [13] predict a negative relationship, but the growth-inequality relationship is not always unidirectional: at certain stages of development, growth may be accompanied by rising inequality before it declines as equity widens [30]. The robustness check shows the GINI coefficient decreased (from 42.01745 to 37.68261) and its significance moved closer to the threshold (Prob. 0.0314 to 0.0495) when M1 and M2 were excluded – GINI is meaningfully correlated with M1 (0.559), making GINI's significance relatively more sensitive to model specification than POV's.

Conditions in West Java align with the two-sector model [31]: regions with more dynamic economic activity recorded relatively higher inequality, as early-stage industrialization widens the wage gap between formal-industrial and traditional-sector workers before narrowing once surplus labor is fully absorbed. The implication is that fiscal policy following the 2022 HKPD Law needs to ensure

the benefits of growth reach informal-traditional sector workers, and that regional development banks/microfinance institutions can design inclusive financing products for micro-enterprises in rapidly growing areas.

Moderating Role of Fiscal Transfers on the Effect of Poverty (H3)

The $POV \times Z$ interaction yields a coefficient of 0.007275 (Prob. 0.0166), significant at $\alpha = 5\%$ – H3 is accepted. The positive direction is meaningful: drawing on fiscal decentralization theory [4], transfer effectiveness depends on regional capacity to convert transfers into productive spending. The positive-significant interaction indicates that in high-poverty regions, dependence on fiscal transfers does not in fact strengthen regional capacity to mitigate poverty's negative impact – consistent with the flypaper effect [11]. This finding reinforces indications from prior domestic studies that regional spending/transfers do not automatically translate into inclusive growth without strengthening local institutional-productive capacity [18], [20].

The robustness check confirms this: the $POV \times Z$ coefficient remains positive and significant in the model without mediation (0.005888; Prob. 0.0393). Data from West Java illustrate this mechanism: the regencies with the highest transfer dependency are also high-poverty regions with subdued growth (Pearson correlation 0.74). This high ratio reflects a narrow local own-source revenue (PAD) base – regions are caught in a fiscal capacity trap: a weak economic base generates low PAD, increasing transfer dependency, while the transfers received tend to be absorbed by routine spending rather than productive capital spending, compounded by limited local institutional capacity [18], [20].

The H3 finding confirms that transfer size alone is not sufficient to strengthen poor regions' capacity to respond to poverty pressures – transfer design following the 2022 HKPD Law needs to be strengthened through performance-based mechanisms or stricter earmarking for productive spending. Regional development banks and microfinance institutions can fill this gap with direct productive financing, breaking the fiscal capacity trap through financial intermediation channels.

Moderating Role of Fiscal Transfers on the Effect of Income Inequality (H4)

The $GINI \times Z$ interaction yields a coefficient of -0.072140 (Prob. 0.4022), not significant at $\alpha = 5\%$ – H4 is not supported. Theoretically, fiscal transfers [4], [11] work primarily through channels financing basic services and infrastructure that are more closely linked to poverty indicators (the headcount ratio) than to the Gini Ratio, which is shaped more by long-term structural factors (labor market structure, asset ownership, education) that do not easily shift due to annual changes in transfers. This is consistent with the absence of explicit tests of the interaction between fiscal transfers and income inequality in prior studies [5], [20].

This non-significance is robust in the model without mediation (-0.059284; Prob. 0.4883). Conditions in West Java's data provide further explanation: the range of variation in the Gini Ratio (0.28–0.49) is relatively narrower than the range of poverty (2.07%–13.13%) – a range restriction problem that reduces statistical power to detect interaction effects. Structurally, income inequality is more rigid (sticky)

than poverty, as it is shaped by factors that change very slowly (land/asset ownership structure, intergenerational transmission of human capital, formal-informal labor market segmentation [31]), whereas headcount poverty is far more responsive to short-term shocks [7], making it more easily influenced by short-term policy interventions including fiscal transfers.

The non-significance of H4 reinforces the argument that fiscal transfers are not an effective instrument for moderating the inequality-growth relationship, because inequality is shaped by long-term structural factors that are not easily changed by the size of annual transfers. Financial intermediation strategies through regional development banks and microfinance institutions are therefore increasingly relevant as complementary instruments, expanding access to productive financing for low-income groups and micro-enterprises in high-inequality regions.

Additional Analysis: Testing the Mediating Role of M1 and M2

M1 (coefficient -0.271409; Prob. 0.1790) and M2 (coefficient 0.000487; Prob. 0.5971) had no significant effect on real GRDP growth. Based on the causal-step approach [28], a variable can only be declared a mediator if it significantly affects the dependent variable – since this condition is not met by either M1 or M2, mediation does not occur in this model.

This conclusion is reinforced by two additional pieces of evidence. First, the direct effects of POV and GINI remained consistently significant both when M1/M2 were included and when they were excluded – if M1/M2 were mediators, meaningful coefficient attenuation should have occurred, a pattern that was not observed. Second, the contribution of M1 and M2 to the R-squared is very small (28.26% to 29.14%, a difference of 0.88 percentage points); the Adjusted R-squared was even slightly lower in the model with mediation (14.05%) than without it (14.09%).

CONCLUSION

This study found that poverty has a negative and significant effect on real GRDP growth across 27 regencies/cities in West Java during 2018–2023 (H1 accepted), while income inequality has a significant positive effect, contrary to the hypothesized direction (H2 not supported in its hypothesized form). Central fiscal transfers were found to significantly moderate the effect of poverty on growth in a positive direction (H3 accepted), indicating a flypaper-effect pattern in which high transfer dependency does not strengthen poor regions' capacity to respond to poverty pressures. In contrast, fiscal transfers were not found to moderate the effect of income inequality (H4 not supported), as inequality is shaped more by long-term structural factors that are not easily altered by the size of annual transfers. Additional testing showed that HDI and investment did not function as mediators in this model.

These findings provide an empirical basis for evaluating the 2022 HKPD Law, particularly the need for performance-based transfer mechanisms or stricter earmarking for productive spending in high-poverty, transfer-dependent regions. Strengthening financial intermediation through regional development banks and

microfinance institutions is also relevant as a complementary instrument for converting fiscal transfers and social assistance into productive business capital. Future research is encouraged to consider instrumental variable or two-stage least squares approaches to test the possibility of a bidirectional relationship between poverty and economic growth, and to broaden regional coverage to test the consistency of the fiscal transfer moderation effect in other provincial contexts.

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