

THE INFLUENCE OF HUMAN DEVELOPMENT, SOCIAL PROTECTION EXPENDITURE, AND THE MANUFACTURING SECTOR ON POVERTY IN CENTRAL JAVA PROVINCE 2020-2024

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Abstract

This study aims to analyze the empirical impact of human development, social protection expenditure, and the manufacturing sector on poverty levels across 35 regencies and cities in Central Java Province from 2020 to 2024. Utilizing a quantitative approach with panel data regression, this research evaluates the structural parameters of the Random Effect Model (REM) corrected by White Cross-section standard errors to eliminate heteroskedasticity. The empirical results demonstrate that the Human Development Index (HDI), proxying for strategic health and education investments, exerts a statistically significant negative effect on poverty reduction. Similarly, social assistance expenditure, transformed into natural logarithms, functions effectively as an institutional fiscal safety net, significantly mitigating poverty aggregates. Conversely, the manufacturing sector exhibits a statistically nonsignificant effect on poverty alleviation. This phenomenon indicates structural bottlenecks, spatial industrial polarization in specific urban corridors, and a severe skill mismatch that hinders labour absorption for low-skilled demographics. These findings imply that local governments must focus on balancing peripheral human capital infrastructure and fostering inclusive, labour intensive industrial frameworks.

Keywords: Human Development Index, Social Assistance Expenditure, Manufacturing Sector, Random Effect Model, Poverty

INTRODUCTION

Poverty remains a persistent, multidimensional structural impediment to equitable economic development in Central Java Province. As the province consistently records the second-highest poverty rate on Java Island averaging 11.1% over the 2020-2024 period the socio economic dynamics underscore an ironical paradigm where robust regional macroeconomic growth coexists with systemic deprivation. This phenomenon strongly reflects the classical *vicious circle of poverty*, wherein low income restricts capital accumulation and savings, thereby choking productive investments and reinforcing a low productivity equilibrium. Breaking this circular flow requires external institutional interventions rather than relying on market clearing mechanisms.

The contemporary global agenda under the Sustainable Development Goals (SDGs) establishes "No Poverty" as its foremost target for 2030. In developing economies like Indonesia, achieving this objective faces narrower fiscal spaces and higher vulnerability to macroeconomic shocks. During the 2020-2024 timeline, the Indonesian government executed various fiscal shock-absorbers such as the Pre-Employment Card (*Kartu Prakerja*), Village Fund Direct Cash Assistance

(*BLT Dana Desa*), and National Economic Recovery (*PEN*) packages to protect consumption floors. However, aggregate regional indicators reveal severe intra provincial disparities in Central Java. For instance, urban hubs like Semarang and Salatiga maintain low poverty levels (4.03% and 4.57% respectively), whereas peripheral agrarian regencies like Kebumen, Brebes, and Wonosobo still struggle with double digit poverty rates exceeding 15%.

The academic novelty of this study lies in its comprehensive integration of three major developmental pillars: human capital development (via the Human Development Index), localized fiscal distribution tools (via social assistance expenditures), and structural economic transformation (via the manufacturing sector's contribution to GRDP). This study offers an empirical evaluation of these elements across 35 regencies and cities in Central Java during a highly volatile post pandemic period (2020-2024).

LITERATURE REVIEW AND HYPOTHESIS FORMULATION

This inquiry is theoretically anchored in the *Human Capital Theory* pioneered by Schultz (1961) and Becker (1964). This theory posits that budgetary outlays channeled into education and healthcare represent critical individual and social investments. Over time, these investments augment the marginal productivity of labor, generating higher wage premiums and enabling households to escape intergenerational poverty. Hence, the first hypothesis is derived:

H1: Human development exerts a statistically negative effect on poverty levels.

From a macroeconomic perspective, Musgrave's (1989) fiscal framework highlights the *distribution function* of public finance as a tool to correct market driven income inequalities. Social protection outlays specifically social assistance transfers act as direct wealth redistribution mechanisms. By lowering the out of pocket transaction costs for basic needs among vulnerable groups, these transfers immediately elevate household purchasing power. Thus, the second hypothesis is stated:

H2: Social protection expenditure exerts a statistically negative effect on poverty levels.

Furthermore, the *Structural Transformation Theory* formulated by Arthur Lewis (1954) suggests that dualistic economies achieve maturity through the reallocation of surplus labor from traditional, low productivity agrarian sectors to modern, high productivity manufacturing industries. This structural shift raises aggregate wages and eliminates rural underemployment. Therefore, the third hypothesis is established:

H3: The manufacturing sector exerts a statistically negative effect on poverty levels.

RESEARCH METHODS

This study adopts a quantitative research design utilizing panel data econometric modeling. The data consists of a balanced panel covering 35 regencies and cities within Central Java Province

across a 5 years period (2020-2024), resulting in 175 total observations. The dependent variable is specified as the Poverty Rate (POV), while the independent variables comprise the Human Development Index (IPM), the Natural Logarithm of Social Assistance Expenditure (LNBAN), and the Manufacturing Sector's contribution to GRDP (MAN).

The baseline structural panel regression equation is written as follows:

$$POV_{it} = \beta_0 + \beta_1 IPM_{it} + \beta_2 LNBAN_{it} + \beta_3 MAN_{it} + \varepsilon_{it}$$

Where i denotes the cross-sectional units (35 regencies/cities), t represents the time dimension (2020-2024), β_0 is the intercept, $\beta_1, \beta_2, \beta_3$ are the partial regression coefficients, and ε is the stochastic error term. Formal diagnostic specification tests the Chow Test, Hausman Test, and Breusch-Pagan Lagrange Multiplier Test were conducted to determine the optimal estimator. The diagnostics favored the Random Effect Model (REM). To ensure robust inference against potential heteroskedasticity and cross-sectional correlation, the model was estimated using White Cross-section Standard Errors and Covariance.

RESULTS AND DISCUSSION

The parameter estimations obtained from the Random Effect Model (REM) with White Cross-section corrections are summarized in Table 1.

Variabel	Coefficient	Std. Error	t-Statistic	Prob.	Empirical Status
C	48.89771	8.115105	6.025518	0.0038	Statistically Significant
X1	-0.503153	0.089059	-5.649649	0.0048	Highly Significant (Negative)
LN2	-0.078040	0.019147	-4.075932	0.0151	Statistically Significant (Negative)
X3	-0.038061	0.022028	-1.727896	0,1591	Statistically Nonsignificant
Adjusted R-square	0.634352				
F-statistic	101.0444				
Prob(F-statistic)	0.000000				

Source: Eviews Output (2026)

The econometric results indicate that the independent variables simultaneously serve as vital determinants of poverty in Central Java, as proven by the F-statistic probability ($0.0000 < 0.05$).

The Adjusted R^2 value of 0.6343 implies that 63.43% of the variation in Central Java's poverty rates can be explained by the changes in the studied variables, while the remaining 36.57% is captured by external factors outside the empirical model.

Parsial analysis demonstrates that Human Development Index has a significant negative effect on poverty, with a coefficient of -0.503. This confirms **H1** and proves that a 1-unit increase in the HDI score reduces the poverty rate by 0.503%. This finding emphasizes that long-term human capital investments in educational attainment and public healthcare infrastructure expand economic access for vulnerable populations. Similarly, social assistance expenditure shows a significant negative coefficient of -0.078, validating **H2**. This confirms its role as a short-term fiscal shock absorber that helps maintain consumption smoothing for lower-income households.

In contrast, the manufacturing sector's contribution yields a coefficient of -0.038 but is statistically non-significant ($p\text{-value} = 0.1591 > 0.05$), leading to the rejection of **H3**. Although the manufacturing sector dominates Central Java's economic structure (accounting for 32.29% of GRDP), its poverty reduction capacity is limited. This is primarily caused by two factors: first, a spatial industrial polarization where large scale factories are heavily clustered in select peri-urban zones (e.g., Semarang, Kudus, Cilacap), leaving rural areas dependent on low-value agriculture; second, ongoing automation trends that create a strict skill mismatch, preventing undereducated, low-skilled workers from entering formal industrial employment.

CONCLUSION

This study concludes that human development and social assistance expenditures served as effective institutional tools for poverty reduction in Central Java Province from 2020 to 2024. Conversely, despite its high contribution to regional output, the manufacturing sector has not significantly accelerated poverty alleviation due to structural barriers and spatial imbalances.

Based on these conclusions, the following policy recommendations are directed to the Regional Development Planning Agency (Bappeda) and the Provincial Government of Central Java:

1. Prioritize Equitable Human Capital Infrastructure: Accelerate budgetary allocations for quality education and healthcare access within peripheral regencies to bridge the urban rural human development gap.
2. Optimize Social Registry Precision: Improve the accuracy of the Integrated Social Welfare Data (DTKS) through digitized, real-time monitoring systems to eliminate inclusion and exclusion errors, while coupling direct assistance with technical vocational training.

3. Deconcentrate Industrial Policy: Incentivize labour intensive manufacturing investments in high-poverty rural zones, and establish structural linkages between large-scale enterprises and local Micro, Small, and Medium Enterprises (MSMEs) to maximize local labour absorption.

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