Vol. 11, No. 1, 2026, pp. 616-624
DOI: https://doi.org/10.29210/30036899000

Contents lists available at Journal ELORA

JRTI (Jurnal Riset Tindakan Indonesia)
ISSN: 2502-079X (Print) ISSN: 2503-1619 (Electronic)

Journal homepage: https://jrti.eloracenter.org/jrti

Subnational welfare dynamics: interaction effects and structural contributions of socioeconomic drivers in post-conflict economies

Yola Kaspia*), Maryam Batubara, Yusrizal
Universitas Islam Negeri Sumatera Utara, Indonesia

Article Info

Article history:

Received Mar 12th, 2026
Revised Jul 16th, 2026
Accepted Jul 25th, 2026

Keyword:

Correction model
Impulse response function
Poverty
Variance decomposition
Vector autoregression

ABSTRACT

Poverty is a multidimensional issue influenced by the interaction of various economic and social indicators. However, most previous studies have relied on static regression approaches, which fail to capture dynamic feedback mechanisms over time. This study analyzes the dynamic interactions among poverty headcount, population, the Open Unemployment Rate (OUR), real Gross Regional Domestic Product (GRDP), and the Human Development Index (HDI) in Aceh Province, Indonesia. Utilizing official provincial-level annual time-series data from Statistics Indonesia (BPS) for 2005–2024 (n=20), this study employs a Vector Autoregression (VAR) framework, including the Engle–Granger cointegration test, Error Correction Model (ECM), Impulse Response Function (IRF), and Variance Decomposition (VD). To preserve degrees of freedom and avoid over-parameterization given the short sample size, optimal lag lengths were strictly constrained based on information criteria. The findings indicate no significant short-run causal relationships among variables, except from poverty to HDI. The ECM estimation reveals that population, OUR, GRDP, and HDI do not significantly affect poverty in the short run, but exert strong cointegrating effects in the long run. IRF shows that shocks gradually return to equilibrium, while VD identifies GRDP and poverty as the most dominant shock drivers in the system. These findings demonstrate that poverty alleviation in Aceh requires long-term structural policies focused on inclusive economic growth, human capital enhancement, and labor market expansion rather than short-term interventions.

Corresponding Author:

Yola Kaspia,
Universitas Islam Negeri Sumatera Utara, Indonesia
Email: Yolakaspia20@gmail.com

Introduction

Poverty is a multidimensional development challenge influenced by economic, social, and demographic drivers that interact dynamically within regional systems (World Bank, 2001). From the perspective of development economics, poverty is not merely a static consequence of low income, but is intrinsically linked to population dynamics, labor market structures, economic growth, and human capital accumulation (Todaro & Smith, 2021). The dynamic poverty trap framework posits that interactions among these socioeconomic dimensions generate self-reinforcing feedback loops that perpetuate poverty over time (Banerjee & Duflo, 2011). Therefore, analyzing poverty requires an analytical approach capable of capturing these dynamic interactions rather than focusing solely on partial, unidirectional effects.

In subnational jurisdictions like Aceh Province, Indonesia, these dynamic interactions present a severe empirical paradox. Despite receiving substantial Special Autonomy Funds (Dana Otonomi Khusus) and exhibiting steady improvements in macroeconomic indicators—such as Gross Regional Domestic Product (GRDP) and the Human Development Index (HDI)—Aceh consistently maintains one of the highest poverty headcounts on Sumatra Island, standing at 14.23% alongside an Open Unemployment Rate (OUR) of 5.56% (BPS Aceh, 2024). Moreover, Aceh's labor market continues to be dominated by informal employment, suggesting that reductions in unemployment do not automatically translate into household welfare gains. This persistent disconnect demonstrates that regional economic growth is not diffusing through a traditional "trickle-down" mechanism (Kuznets, 2019), but rather requires a "pro-poor growth" framework where structural growth benefits reach lower-income strata via high-quality, productive employment and human capability expansion (Ravallion & Chen, 2003; Sen, 1999).

Methodologically, existing literature on subnational poverty in Indonesia suffers from two critical design limitations. First, most empirical studies rely on static cross-sectional or standard panel regressions (OLS, Fixed Effects) that treat socioeconomic determinants as strictly exogenous, thereby failing to capture endogenous feedback loops, lagged transmission mechanisms, and structural shock responses over time. Second, while alternative frameworks like Structural Equation Modeling (SEM) capture simultaneous paths and System Dynamics handle deterministic loops, neither framework adequately isolates short-run dynamic adjustments against long-run cointegrating equilibria in annual macroeconomic time-series data.

To resolve these limitations, this study utilizes a parsimonious macro-econometric time-series framework spanning 2005 to 2024 (n=20 annual observations). We deploy a Vector Autoregression (VAR) framework, Engle–Granger Error Correction Model (ECM), Impulse Response Functions (IRF), and Forecast Error Variance Decomposition (FEVD). This dynamic time-series methodology is specifically selected over panel or structural alternatives because it treats all macroeconomic variables as endogenously determined within a closed system, allowing us to explicitly model bidirectional feedback mechanisms, short-term shock transmissions, and long-term equilibrium convergence. To address statistical power concerns inherent to subnational time-series estimations with limited sample sizes (n=20), the empirical specification strictly constrains lag structures based on information criteria (AIC/HQC) to conserve degrees of freedom and eliminate over-parameterization risks.

By establishing this empirical setup, this study offers a novelty by examining how structural shocks propagate through a subnational economy, offering a transferable framework for evaluating welfare dynamics in post-conflict or special autonomy regions. Specifically, this study aims to (1) Identify cointegrating long-run relationships among poverty headcount, population, OUR, GRDP, and HDI in Aceh Province; (2) Estimate short-run dynamic adjustments and directional causality using the Error Correction Model (ECM); and (3) Quantify the relative dominance of structural shocks across variables via Impulse Response Function (IRF) and Variance Decomposition (VD) analysis. The findings are expected to contribute to the subnational development economics literature and provide empirical grounding for formulating integrated, evidence-based poverty alleviation policies.

Method

This study employs a quantitative macro-econometric time-series research design to examine the dynamic interplay among poverty headcount, demographic dynamics, labor market conditions, economic growth, and human development in Aceh Province, Indonesia. The dataset comprises official annual secondary time-series data spanning from 2005 to 2024 (n = 20 annual observations), retrieved from published macroeconomic reports by Statistics Indonesia (*Badan Pusat Statistik* – BPS) Aceh Province. Rather than applying survey sampling terminology, the study utilizes complete temporal coverage—a census of available annual observations—within the specified macroeconomic timeframe. All variables are operationalized using standardized BPS definitions to ensure construct validity and data consistency: Poverty (POV) is measured as the percentage of the population living below the official provincial poverty line (*Poverty Headcount Index*, P_0); Population (POP) represents the total population count in millions; Open Unemployment Rate (OUR) reflects the proportion of the labor force actively seeking employment in percentage; Gross Regional Domestic Product (GRDP) is measured at real constant basic market prices in trillion IDR to eliminate inflation distortion; and Human Development Index (HDI) is a composite index reflecting health, education, and living standard dimensions on a 0–100 scale. To reduce heteroskedasticity and transform non-linear relationships into linear structures, natural logarithmic transformations (ln) were applied to non-percentage variables (POP and GRDP). Because official statistics from BPS are compiled using internationally benchmarked methodologies—such as UNDP protocols for HDI and the Cost of Basic Needs approach for poverty thresholds—measurement validity and construct reliability are inherently established at the national statistical reporting level.

To capture dynamic interactions, lagged transmission mechanisms, and bidirectional causality without imposing endogeneity restrictions, this study employs a Vector Autoregression (VAR) framework, Engle–Granger cointegration testing, and an Error Correction Model (ECM). Given the short temporal span (n = 20), estimating an unrestricted VAR with multiple lags risks severe model over-parameterization and rapid loss of degrees of freedom. To mitigate these threats to statistical power and internal validity, such as specification error and omitted variable bias, the empirical procedure strictly adheres to a multi-step time-series protocol.

First, prior to model estimation, all series are evaluated for order of integration using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests to ensure no series is integrated of order I(2), which would invalidate the cointegration framework. Second, the optimal lag structure (p) is constrained and selected using information criteria, prioritizing the Akaike Information Criterion (AIC) and Hannan-Quinn Criterion (HQC) for small-sample parsimony while eliminating serial correlation in residuals. Third, the long-run equilibrium relationship is evaluated using the Engle–Granger two-step residual-based cointegration test, where stationarity of the OLS regression residuals at levels—tested via I(0) ADF testing—confirms the presence of a stable long-run cointegrating vector among the variables. Fourth, upon establishing cointegration, dynamic short-run adjustments and the speed-of-adjustment mechanism toward equilibrium are estimated using ECM, specified as follows:

$$\Delta Y_t = \alpha_0 + \sum_{i=1}^{p} \beta_i \Delta Y_{t-i} + \sum_{i=0}^{p} \gamma_i \Delta X_{t-i} + \lambda ECT_{t-1} + \varepsilon_t$$

where Δ denotes the first-difference operator, ECT_{t-1} represents the error correction term derived from the long-run residual, and Δ captures the speed of adjustment toward long-run equilibrium. Fifth, Dynamic Innovation Accounting is applied via Impulse Response Functions (IRF) to trace the temporal response of each variable to a one-standard-deviation shock in other system variables over a 10-year horizon, alongside Forecast Error Variance Decomposition (FEVD) to quantify the relative percentage contribution of each structural shock to the forecast error variance of poverty.

Finally, to ensure robustness and guard against model misspecification in small samples, all estimated models are subjected to rigorous post-estimation diagnostic tests, including the Breusch-Godfrey LM test for serial correlation, the White and Breusch-Pagan-Godfrey tests for heteroskedasticity, the Jarque-Bera test for residual normality, and the Cumulative Sum (CUSUM) and CUSUM of Squares tests for structural parameter stability. All econometric estimations and diagnostic evaluations were conducted using EViews 13 software (Enders, 2015; Engle & Granger, 1987).

Results and Discussions

Stasionarity Test

To ensure data stationarity and avoid spurious regression in estimation, all variables were subjected to the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests. As presented in Table 1, at levels (I(0)), test statistics for all macroeconomic series Poverty (POV), Population (POP), Open Unemployment Rate (OUR), Gross Regional Domestic Product (GRDP), and Human Development Index (HDI)—failed to reject the null hypothesis of a unit root at the 5% significance level when incorporating both constant and deterministic trends. Upon taking first differences (Δ), all series became stationary at $p < 0.05$. Consequently, all variables are uniformly integrated of order one, I(1), satisfying the essential prerequisite for Vector Autoregression (VAR) estimation and Engle–Granger cointegration modeling.

Table 1 <Results of the Augmented Dickey–Fuller (ADF) Unit Root Test>

Variable	Level Prob	Status	First Diff. Prob.	Integration Order
Poverty (POV)	1,240	Non-Stationary	131	I(1)
Population (lnPOP)	1,044	Non-Stationary	305	I(1)

Open Unemployment Rate (OUR)	1,894	Non-Stationary	386	I(1)
Real GRDP (lnGRDP)	4,926	Non-Stationary	70	I(1)
Human Development Index (HDI)	9,298	Non-Stationary	73	I(1)

Source: Processed using EViews 13 by the authors (2025).

As shown in Table 1, none of the variables were stationary at the level form. After first differencing, all variables became stationary, indicating that they were integrated of order one, I(1). These results satisfy one of the key prerequisites for estimating the VAR model and conducting the Engle–Granger cointegration analysis. Accordingly, the analysis proceeded to the optimal lag selection stage.

Optimal Lag Selection

Determining the optimal lag length is critical to balance lag dynamics against loss of degrees of freedom in small-sample time series (n=20). As shown in Table 2, multiple information criteria—including the Akaike Information Criterion (AIC), Schwarz Criterion (SC), Hannan-Quinn Criterion (HQ), and Final Prediction Error (FPE)—consistently identified lag order 1 (p=1) as optimal.

Table 2 <Optimal Lag Length Selection Results>

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-17,39462	NA	7,27E-06	2,357328	2,605865	2,399391
1	**79,41887**	**132,4816***	**4,24E-09***	**-5,201986***	**-3,710766***	**-4,949612***

Source: Processed using EViews 13 by the authors (2025).

The VAR(1) system satisfied mathematical stability conditions. As reported in Table 3, all modulus roots of the characteristic polynomial strictly lie within the unit circle ($|z| < 1$, maximum modulus = 0.9593), confirming that the VAR specification is stationary, invertible, and structurally stable for Impulse Response Function (IRF) and Forecast Error Variance Decomposition (FEVD) estimations.

Table 3 <Results of the VAR Stability Test>

Root	Modulus
0,959348	0,959348
0,793733 − 0,120337i	0,802803
0,793733 + 0,120337i	0,802803
0,350477	0,350477
0,242852	0,242852

Source: Processed using EViews 13 by the authors (2025).

Granger Causality Test

The pairwise Granger causality test evaluated short-run directional causality among the system variables (Table 4). At $p < 0.05$, short-run causal feedback is absent across most macroeconomic pairs. The sole statistically significant relationship is a unidirectional Granger causality running from Poverty (POV) to the Human Development Index (HDI) ($X^2 = 7.8245$, $p = 0.0052$). This indicates that short-term shocks to poverty directly precede changes in human capabilities, whereas macroeconomic growth (GRDP) and labor market conditions (OUR) do not exert immediate short-run causal pressures on poverty reduction.

Table 4 <Results of the Granger Causality Test>

No	Null Hypothesis	χ^2 Statistic	Prob.
1	JP does not Granger Cause KEM	0.007262	0.9321
2	TPT does not Granger Cause KEM	0.695047	0.4045

3	PDRB does not Granger Cause KEM	0.714756	0.3979
4	IPM does not Granger Cause KEM	0.467337	0.4942
5	KEM does not Granger Cause JP	0.508492	0.4758
6	TPT does not Granger Cause JP	0.793564	0.3730
7	PDRB does not Granger Cause JP	2.785111	0.0951
8	IPM does not Granger Cause JP	3.119912	0.0773
9	KEM does not Granger Cause TPT	2.292158	0.1300
10	JP does not Granger Cause TPT	1.548699	0.2133
11	PDRB does not Granger Cause TPT	0.760772	0.3831
12	IPM does not Granger Cause TPT	0.040737	0.8400
13	KEM does not Granger Cause PDRB	1.186508	0.2760
14	JP does not Granger Cause PDRB	0.008380	0.9271
15	TPT does not Granger Cause PDRB	0.043297	0.8352
16	IPM does not Granger Cause PDRB	0.756050	0.3846
17	**KEM does not Granger Cause IPM**	**7.824527**	**0.0052**
18	JP does not Granger Cause IPM	0.054131	0.8160
19	TPT does not Granger Cause IPM	0.306412	0.5799
20	PDRB does not Granger Cause IPM	1.411990	0.2347

Source: Processed using EViews 13 by the authors (2025).

Cointegration and Error Correction Model (ECM)

The Engle–Granger two-step residual-based cointegration test confirmed a long-run equilibrium relationship among the variables ($t_{statistic}$ = -4.128, p = 0.0081, rejecting the null hypothesis of no cointegration at 1%). Table 5 presents short-run and long-run dynamics derived from the ECM estimation. In the short run, none of the differenced explanatory variables (ΔPOP, ΔOUR, ΔGRDP, ΔHDI) exert statistically significant effects on poverty ($|t| < 1.96$). The Error Correction Term (ECT_{t-1} coefficient is positive and statistically insignificant ($\lambda = 0.2085$, t = 1.2176), demonstrating that short-term disequilibrium adjustments to poverty are sluggish within a one-year timeframe. Conversely, the long-run equation reveals strong, statistically significant equilibrium drivers ($|t| > 1.96$). In the long run, population growth (β= 47.7515, t = 17.1397), unemployment (β = 0.3228, t = 7.1641), real output (β=56.9508, t = 35.8750), and human capital development (β = 1.5029, t = 51.8508) all demonstrate persistent cointegrating relationships with subnational poverty levels.

Tabel 5 <Error Correction Model (ECM) Estimation Results>

Independent Variable	Short-Run Coeff.	Short-Run t-stat	Long-Run Coeff.	Long-Run t-stat
Population (lnPOP)	-96,205	-5,475	477,515	17.1397*
Unemployment (OUR)	4,503	1.3377	3,228	7.1641*
Real GRDP (lnGRDP)	-312,146	-18,721	569,508	35.8750*
Human Dev. Index (HDI)	1,301	6,604	1.5029	51.8508*
ECTt−1	2,085	1.2176	—	—

Source: Processed using EViews 13 by the authors (2025)

Innovation Accounting: IRF and FEVD

The Impulse Response Function (IRF) traces system shocks over a 10-year horizon. Responses across all endogenous variables exhibit initial short-term fluctuations before asymptotically converging to zero equilibrium by Period 6, confirming structural model stability. Poverty and open unemployment exhibit high initial volatile responses to external shocks, whereas GRDP and HDI adjust smoothly.

Table 8 <Forecast Error Variance Decomposition (FEVD) Results>

Variabel	Shock Internal Periode 1	Shock Internal Periode 10	Kontributor Eksternal Terbesar Periode 10
KEM	100,00	50,55	PDRB (31,26%)
JP	99,95	58,22	PDRB (36,81%)
TPT	95,57	62,11	KEM (28,14%)
PDRB	99,48	79,54	JP (13,43%)
IPM	98,82	13,39	KEM (53,51%)

Source: Processed using EViews 13 by the authors (2025).

Forecast Error Variance Decomposition (FEVD) in Table 6 demonstrates that while own-shocks explain 100% of variance in Period 1, long-run variance (Period 10) is heavily driven by system interdependencies. Real GRDP is the single largest external shock driver for poverty (31.26%) and population (36.81%). Notably, poverty acts as the dominant exogenous driver explaining the variance of HDI (53.51%) and OUR (28.14%), positioning poverty and aggregate output as the twin structural anchors of Aceh's macroeconomic system.

The empirical findings challenge simplified "trickle-down" growth paradigms (Kuznets, 2019) in subnational, post-conflict economies. The lack of short-run Granger causality running from GRDP growth to poverty reduction aligns with findings from developing regions in Sub-Saharan Africa and Southeast Asia (Adams, 2004; Fosu, 2017; World Bank, 2022). Economic expansion in Aceh—heavily propelled by government expenditure and resource extraction—suffers from low employment elasticity. This confirms Ravallion and Chen's (2003) pro-poor growth condition: aggregate growth fails to alleviate poverty unless accompanied by structural transformations that absorb informal labor into high-productivity sectors.

Furthermore, the unidirectional short-run causality from Poverty to HDI ($X^2 = 7.82$, $p = 0.005$) and the fact that poverty shocks account for 53.51% of long-run HDI variance strongly substantiate Sen's (1999) Capability Approach. Rather than human capital improvements automatically lifting households out of poverty in the short term, economic deprivation actively inhibits capability building by constraining household investments in education and nutritional health (Klasen, 2002; Thorbecke, 2013). This finding corroborates empirical studies in decentralized Indonesian provinces (e.g., Balisacan et al., 2003; McCulloch & Sjahrir, 2008; Suryahadi et al., 2009), which demonstrated that liquidity constraints at the household level neutralize the short-term benefits of public social expenditure.

The long-run cointegrating vectors and FEVD structural dominance of GRDP (31.26% contribution to poverty variance) mirror endogenous growth models (Lucas, 1988; Romer, 1990). Similar long-run dynamics have been observed in empirical macroeconomic studies across developing and emerging economies (e.g., Agénor, 2004; Dollar et al., 2013; Fleisher et al., 2010; Hassan et al., 2011; Majeed, 2014; Perera & Lee, 2013). In Aceh, the large long-run positive coefficient of GRDP on poverty in the ECM equation reflects a "growth-poverty paradox" common in rentier or grant-dependent regional economies (Resnick & Tarp, 2017). Capital-intensive macroeconomic growth without structural labor absorption can increase regional output while simultaneously widening welfare distribution gaps (Bourguignon, 2003; Wan et al., 2006).

To maintain academic rigor, several methodological limitations inherent to this subnational estimation must be acknowledged. First, although the VAR(1) specification successfully passed AR polynomial stability conditions and post-estimation diagnostic checks—including tests for serial correlation and heteroskedasticity—the sample size of 20 annual observations limits statistical power. Robustness checks employing alternative lag structures ($p = 2$) resulted in severe model over-parameterization, thereby reinforcing the necessity of maintaining a parsimonious VAR(1) and ECM setup. Second, due to these degree-of-freedom constraints, key macroeconomic control variables such as special autonomy fiscal transfers (*Dana Otonomi Khusus*), inflation rates, and income inequality metrics (Gini ratio) were necessarily excluded from the dynamic system, introducing potential omitted variable bias. Third, relying exclusively on provincial-level aggregates risks

masking significant intra-regional disparities and localized socioeconomic dynamics across Aceh's 23 regencies and cities (*kabupaten/kota*).

Based on these empirical findings, policy interventions in Aceh must pivot away from short-term fiscal transfers toward building structural, long-term capabilities. Because poverty directly restricts human development improvements, social welfare programs—such as conditional cash transfers—should be strictly tied to secondary and vocational education retention to break generational poverty traps. Furthermore, regional economic policy needs to drive a pro-poor structural transformation by shifting focus from capital-intensive infrastructure toward agricultural modernization and value-added agro-industry, thereby increasing the employment elasticity of regional GRDP. Finally, future research should extend this analytical framework by utilizing regional panel data methodologies—such as Panel VAR or Panel GMM across regencies—to capture spatial spillovers, integrate local fiscal autonomy metrics, and evaluate disaggregated micro-level household survey data (SUSENAS).

Conclusions

This study demonstrates that subnational poverty dynamics in Aceh Province are governed by long-run structural interdependencies rather than immediate short-run economic adjustments. Methodologically underpinned by a parsimonious VAR(1) framework selected via the Akaike Information Criterion (AIC) and confirmed by Engle–Granger residual cointegration ($t = -4.128$, $p = 0.0081$), the empirical analysis justifies the long-run versus short-run distinction. In the short run, the Error Correction Model (ECM) indicates that none of the macroeconomic predictors (Δ POP, Δ OUR, Δ GRDP, ΔHDI) exert statistically significant effects on poverty ($|t| < 1.96$), with an statistically insignificant adjustment speed ($\Delta = 0.2085$, $t = 1.2176$). Conversely, the cointegrating long-run vector establishes highly significant structural relationships at the 95% confidence interval ($|t| > 1.96$), driven by population ($\beta = 47.7515$, $t = 17.1397$), unemployment ($\beta = 0.3228$, $t = 7.1641$), real GRDP ($\beta = 56.9508$, $t = 35.8750$), and human capital development ($\beta = 1.5029$, $t = 51.8508$).

The classification of GRDP and poverty as "dominant" system drivers is statistically justified by Forecast Error Variance Decomposition (FEVD) at a 10-year horizon. By Period 10, real GRDP constitutes the single largest external shock driver for poverty variance (31.26%), while poverty itself accounts for the majority of forecast error variance in the Human Development Index (53.51%) and the Open Unemployment Rate (28.14%). Impulse Response Function (IRF) trajectories confirm system stability, as structural shocks produce temporary fluctuations that asymptotically converge to equilibrium by Period 6. These quantitative magnitudes bridge the gap between empirical estimation and policy translation. Because poverty directly constrains 53.51% of human development variance, policy interventions must move beyond short-term fiscal stimulus and prioritize targeted human capability enhancements, particularly by linking *Dana Otonomi Khusus* to conditional cash transfers for secondary and vocational education retention. Furthermore, given that GRDP drives 31.26% of long-run poverty variance yet fails to generate short-run poverty reduction, regional economic planning must shift from capital-intensive infrastructure toward labor-absorptive sectors—specifically agricultural modernization and agro-industry—to maximize the employment elasticity of growth in Aceh.

Acknowledgments

The authors would like to express their sincere gratitude to the Central Statistics Agency (BPS) of Aceh Province for providing access to the statistical data used in the study. The authors also thank the supervisors for their valuable guidance and constructive suggestions throughout the research process. This research was self-funded by the authors and received no external financial support from any institution, grant, or sponsoring body.

References

Abdullah, & Wibowo, M. G. (2024). The Effect of Human Development Index (HDI), Inequality and Consumption on Poverty Levels in All Provinces in Indonesia. *Jurnal Ilmu Ekonomi Terapan*, *9*(2), 257–269. https://doi.org/10.20473/jiet.v9i2.59249

Badan Pusat statistik Aceh. (2004). *Provinsi Aceh Dalam Angka 2024*. https://aceh.bps.go.id/publication

badan Pusat Statistik Provinsi Aceh 2024. (2004). *keadaan Ketenagakerjaan Provinsi Aceh 2024*. https://aceh.bps.go.id/publication

Banejee, A. V, & Duflo, E. (2011). *poor economics : A Radical Rethinking of The Way To Fight Global Provery* (first Edit). PublicAffairs.

Creswell, J. W., & Creswell, J. D. (2023). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. SAGE Publications, Incorporated. https://books.google.co.id/books?id=nBSEzwEACAAJ

Dicky Anggoro1, A. K. (2023). *Analysis of the Effect of Gross Regional Domestic Product, Unemployment and Human Development Index on Poverty in East Java Province in 2010-2021. Indonesian Journal of Advanced Research*, *4*(1), 383–394. https://doi.org/10.55927/ijar.v2i5.4138

Fajriah, N. A. (2021). *Analysis of the Effect of Gross Regional Domestic Product, Number of Population, Regional Minimum Wage, Open Unemployment Rate, and Human Development Index on Poverty in 2010-2020 East Java Province*. *Jurnal Ilmu Ekonomi Terapan*, *6*(2), 171. https://doi.org/10.20473/jiet.v6i2.27778

Handayani, L. (2023). *Analysis of The Influence of The Unemployment Rate and HDI on Poverty Levels in Province of Central Java*. *Jee*, *12*(1), 125–132. http://journal.unnes.ac.id/sju/index.php/jeec

Kuznets, S. (2019). *Economic growth and income inequality. The Gap Between Rich and Poor: Contending Perspectives On The Political Economy of Development*, *45*(1), 25–37. https://doi.org/10.4324/9780429311208-4

Lee, S., Schmidt-Klau, D., Weiss, J., & Chacaltana, J. (2020). Does economic growth deliver jobs? Revisiting Okun's Law. *International Labour Organisation*, *10*(1), 1–22.

Lucas Jr, R. E. (1988). Lucas 1988. In *Journal of Monetary Economics* (Vol. 22, Number 1, pp. 3–42).

MW, & Enders, W. (1995). Applied Econometric Time Series. *Journal of the American Statistical Association*, *90*(431), 1135. https://doi.org/10.2307/2291367

Nadapdap, J. K. A., & Anistasari, M. (2025). The Effect of Human Development Index (HDI), Population, Unemployment Rate and GRDP on Poverty Level in 2017-2023 (Study of 10 Big Cities in Java Island). *Asian Journal of Applied Business and Management*, *4*(3), 1287–1298. https://doi.org/10.55927/ajabm.v4i3.375

Ngubane, M. Z., Mndebele, S., & Kaseeram, I. (2023). Heliyon Economic growth , unemployment and poverty : Linear and non-linear evidence from South Africa. *HLY*, *9*(10), e20267. https://doi.org/10.1016/j.heliyon.2023.e20267

Ochi, A. (2023). Inequality and the impact of growth on poverty in sub-Saharan Africa: A GMM estimator in a dynamic panel threshold model. *Regional Science Policy and Practice*, *15*(6), 1373–1394. https://doi.org/10.1111/rsp3.12707

Peláez-Herreros, Ó. (2025). Unboxing Okun's Relation Between Economic Growth and Unemployment Rate: Evidence from the United States, 1948–2024. *Economies*, *13*(3). https://doi.org/10.3390/economies13030059

Ragnar Nurkse. (1960). In *Political Science Quarterly* (Vol. 75, Number 1).

Ravallion, M., & Chen, S. (2003). Measuring pro-poor growth. *Economics Letters*, *78*(1), 93–99. https://doi.org/10.1016/S0165-1765(02)00205-7

Rifka Alkhilyatul Ma'rifat, I Made Suraharta, I. I. J. (2024). No Title 済無No Title No Title No Title. *Econometrica*, *2*(2), 306–312. https://doi.org/None

Romer, P. M. (1990). Human capital and growth: Theory and evidence. *Carnegie-Rochester Confer. Series on Public Policy*, *32*(C), 251–286. https://doi.org/10.1016/0167-2231(90)90028-J

Sabardin, Shabur, U., Hidayat, R., & Dly, M. W. A. (2025). The Impact of Human Development Index and Population Number on Economic Growth in South Sumatra Province 2018-2022. *Jurnal Ilmu Ekonomi Terapan*, *10*(1), 1–10. https://doi.org/10.20473/jiet.v10i1.54828

Salfina, L., Sonia, Z., & Murni, Y. (2025). Effect of Gross Regional Domestic Product And Unemployment on Poverty Levels in Indonesia. *Asean International Journal of Business*, *4*(2), 240–255. https://doi.org/10.54099/aijb.v4i2.1387

Sen, A. (1999). *Development as Freedom*. Alfred Knopf.

Suci, L. E., Muhammad Isbad Addainuri, & Abidin, M. (2023). The Effect Of Economic Growth, Education, Unemployment, And Human Development Index On Poverty In The Special Region Of Yogyakarta For Period 2015-2021. *Jurnal Ekonomi Dan Bisnis Digital*, *8*(2), 284–296. https://doi.org/10.55927/ministal.v2i3.5831

Sugiyono. (2022). *Metode Penelitian Kuantitatif* (5, Ed.; 5th ed.). Alfabeta.

JRTI (Jurnal Riset Tindakan Indonesia)
Vol. 11, No. 1, 2026, pp. 616-624

Todaro, M. P., & Smith, S. C. (2021). *Economic Developent* (13th ed.). Pearson Education,

World Bank, 2001. (2001). *Evelopment 2000.*