

# Structural Determinants of Regional Poverty in West Nusa Tenggara

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## ABSTRACT

**Research Originality:** This study contributes to the existing literature by examining the structural determinants of regional poverty at the regency and municipal levels in West Nusa Tenggara Province using the most recent post-pandemic panel dataset.

**Research Objectives:** This study aims to analyze the effects of minimum wages, open unemployment rates, income inequality, and educational attainment on poverty rates in West Nusa Tenggara Province.

**Research Methods:** The study uses panel data spanning 2018–2024 and covers 10 regencies and municipalities in West Nusa Tenggara Province. The Fixed Effects Model (FEM), selected based on the Chow and Hausman specification tests, is employed to estimate the relationship between poverty rates and the explanatory variables.

**Empirical Results:** The results indicate that the minimum wage has a negative, statistically significant effect on poverty rates, whereas income inequality has a positive effect. In contrast, the open unemployment rate and educational attainment do not demonstrate statistically significant effects on poverty.

**Implications:** These findings suggest that poverty alleviation strategies should prioritize strengthening wage protection frameworks and mitigating income inequality to foster inclusive and sustainable regional development.

## Keywords:

wage policy; income distribution; labor market dynamics; poverty alleviation; regional disparities

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## INTRODUCTION

Poverty remains one of the most persistent challenges in development economics and continues to occupy a central position in the policy agendas of many developing countries, including Indonesia (Murti & Kurniawan, 2020; Purwono et al., 2021; Sugiharti et al., 2022; Fitriady et al., 2024). Despite the sustained implementation of poverty alleviation programs and fiscal decentralization reforms, substantial regional disparities in poverty reduction persist. Poverty is not solely associated with low income; rather, it reflects multidimensional deprivation, including limited access to education, healthcare services, employment opportunities, and productive assets (Aguilar & Sumner, 2020; Breunig & Majeed, 2020; Hernández & Zuluaga, 2022; Zhu et al., 2022). These conditions constrain human capital formation, reduce productivity, and weaken long-term regional competitiveness.

Contemporary academic debates increasingly emphasize the structural dimensions of poverty. The structuralist perspective posits that poverty is embedded in economic systems characterized by unequal access to resources, labor-market segmentation, and the dominance of low-productivity sectors (Breunig & Majeed, 2020; Amponsah et al., 2023; Fahad et al., 2023). The vicious cycle of poverty theory further suggests that low productivity leads to limited income and savings, thereby constraining capital accumulation and perpetuating underdevelopment (Nguyen & Su, 2021). Similarly, the poverty trap framework highlights how limited human capital, restricted access to credit, and labor market rigidities prevent households from escaping chronic deprivation (Radosavljevic et al., 2021). Collectively, these perspectives underscore that poverty is not merely an outcome of individual characteristics but rather a manifestation of interconnected structural constraints.

Empirically, numerous studies have examined the determinants of regional poverty; however, the findings remain inconclusive and, in some cases, contradictory. Research on minimum wages, for instance, yields mixed results. Some studies find that increases in minimum wages reduce poverty by raising the real income of low-wage workers (Sotomayor, 2021; Démurger et al., 2026). In contrast, other studies report limited or even adverse effects, particularly when minimum wage adjustments suppress labor demand or disproportionately benefit formal-sector workers (Backhaus & Müller, 2023; Hijzen et al., 2026). These divergent findings suggest that the relationship between minimum wages and poverty is highly contingent upon labor market structures and institutional contexts.

The relationship between unemployment and poverty has also been widely examined, although both the magnitude and direction of its impact vary across regions (Ngubane et al., 2023). Income inequality is frequently identified as a structural driver of persistent poverty, particularly when economic growth is not inclusive (Adeleye et al., 2020). Nevertheless, the interplay among economic growth, inequality, and poverty remains contested, particularly regarding whether growth alone is sufficient to reduce poverty in the absence of effective redistributive mechanisms.

Human capital—particularly education—is widely regarded as a primary pathway out of poverty. Empirical evidence indicates that higher levels of education reduce poverty by enhancing productivity and expanding income opportunities (Hofmarcher, 2021; Spada et al., 2024; Leoni, 2025). However, other studies suggest that education does not automatically alleviate poverty when labor markets are unable to absorb skilled workers productively (Mansi et al., 2020; Yassine & Bakass, 2022). These contrasting findings imply that the effects of structural determinants of poverty vary across different economic structures and institutional settings.

Despite the extensive body of literature, a critical research gap remains in understanding how these structural determinants interact simultaneously within subnational contexts, particularly in regions characterized by pronounced spatial inequality. Existing studies tend to adopt partial approaches—either focusing on single determinants or relying on national-level aggregates—thereby overlooking the complex and interdependent nature of poverty drivers at the local level.

Moreover, prior empirical studies rarely capture the dynamic evolution of poverty determinants across different economic phases, particularly before, during, and after the COVID-19 pandemic. This limitation creates an important gap in understanding whether structural variables—such as minimum wages, unemployment, inequality, and education—exhibit stable or shifting effects under changing macroeconomic conditions. Another notable limitation is the scarcity of panel data analyses at the district and municipal levels, particularly in less developed regions of Eastern Indonesia. Consequently, the existing literature provides limited evidence on how localized economic structures and institutional capacities shape poverty dynamics within a decentralized governance system.

**Table 1. Number and Percentage of the Poor Population in West Nusa Tenggara Province, 2018–2024**

Year	Number of Poor Population (thousand persons)	Poverty Rate (%)
2018	737.46	14.75
2019	735.96	14.56
2020	713.89	13.97
2021	746.66	14.14
2022	731.94	13.68
2023	751.23	13.85
2024	709.01	12.91

Source: Statistics Indonesia (BPS) and One Data West Nusa Tenggara; compiled and processed by the author (2026).

West Nusa Tenggara Province provides a relevant empirical setting for this analysis. Although poverty rates have been declining, they remain above the national average (see Table 1). Fluctuations observed during the pandemic period indicate structural vulnerabilities that cannot be explained solely by cyclical shocks. Moreover, disparities across districts and municipalities—particularly in North Lombok—reflect variations in regional economic capacity and structural characteristics (see Table 2). These features make

West Nusa Tenggara an appropriate case for examining structural poverty dynamics at the subprovincial level.

Building on these gaps, this study introduces a novel element by integrating multiple structural determinants—minimum wages, open unemployment, income inequality, and education—within a single balanced panel data framework at the district and municipal levels. Unlike prior studies that rely on static or partial analyses, this research explicitly captures temporal dynamics over the 2018–2024 period, encompassing pre-pandemic, pandemic, and post-pandemic phases, thereby enabling a more nuanced understanding of structural resilience and vulnerability.

**Table 2. Poverty Rate by Regency/City in West Nusa Tenggara Province, 2018–2024 (%)**

Regency/City	2018	2019	2020	2021	2022	2023	2024
West Lombok	15.20	15.17	14.28	14.47	13.39	13.67	12.65
Central Lombok	13.87	13.63	13.44	13.44	12.89	12.93	12.07
East Lombok	16.55	16.15	15.24	15.38	15.14	15.63	14.51
Sumbawa	14.08	13.90	13.65	13.91	13.50	13.91	12.87
Dompu	12.40	12.25	12.16	12.60	12.40	12.62	11.59
Bima	14.84	14.76	14.49	14.88	14.50	14.39	13.88
West Sumbawa	14.17	14.00	13.34	13.54	13.02	12.95	12.23
North Lombok	28.83	29.03	26.99	27.04	25.93	25.80	23.96
Mataram City	8.96	8.92	8.47	8.65	8.63	8.62	8.00
Bima City	8.79	8.60	8.35	8.88	8.80	8.67	8.12

Source: Statistics Indonesia (BPS) and One Data West Nusa Tenggara; compiled and processed by the author (2026).

Furthermore, this study contributes to the literature by focusing on a relatively underexplored regional context—West Nusa Tenggara—thereby providing granular empirical evidence that complements national-level findings and advances the discourse on spatially inclusive development. Specifically, this study examines the effects of minimum wages, open unemployment rates, income inequality, and education levels on poverty rates across districts and municipalities in West Nusa Tenggara Province during the 2018–2024 period. By elucidating the structural mechanisms underlying regional poverty, this research contributes to the development economics literature and provides an evidence-based foundation for designing targeted, inclusive poverty-alleviation strategies tailored to regional characteristics.

## METHODS

This study adopts a quantitative research design employing panel data regression to examine the effects of structural determinants on the poverty rate in Nusa Tenggara Barat Province. The structural variables considered include the minimum wage, the open unemployment rate, income distribution inequality proxied by the Gini ratio, and educational attainment proxied by mean years of schooling. A panel data framework was

selected because it simultaneously captures cross-sectional variation across regencies or municipalities and temporal variation over time. Compared to purely cross-sectional or time-series approaches, panel data models generate more efficient and consistent parameter estimates (Anser et al., 2020; Baltagi, 2021). Furthermore, panel estimation techniques allow for controlling for unobserved regional heterogeneity that may influence poverty levels but cannot be directly observed or measured.

The sample comprises all 10 regencies or municipalities in Nusa Tenggara Barat Province over the period 2018–2024, yielding a balanced panel of 70 observations (10 cross-sectional units × 7 years). The selection of the 2018–2024 period is based on three considerations. First, the period ensures data availability and consistency at the regency or municipal level, as standardized statistics were regularly published during these years. Second, the timeframe captures significant structural dynamics, including pre-pandemic conditions, economic contraction during the COVID-19 pandemic (2020–2021), and the subsequent recovery phase (2022–2024). Incorporating this period enables the model to account for structural shocks and post-shock adjustments in poverty dynamics. Third, the use of recent data enhances the policy relevance of the findings, particularly in the context of regional development planning under fiscal decentralization.

The study relies on secondary data obtained from official and authoritative sources. The primary data source is Statistics Indonesia (BPS), including publications on Poverty Statistics, People’s Welfare Indicators, the National Labor Force Survey, Education Indicators, and Income Distribution Statistics. Supplementary data were collected from the official database of the Provincial Government of Nusa Tenggara Barat. All datasets were verified, harmonized in terms of measurement units, and aligned across time to preserve the balanced panel structure. Data collection followed a systematic documentation procedure involving downloading, compiling, and processing quantitative information from official publications and databases (Taherdoost, 2022).

**Table 3. Operational Definitions and Measurement of Variables**

Variable	Operational Definition	Unit	Source
Poverty Rate	Percentage of the population with average per capita monthly expenditure below the poverty line	Percent	Statistics Indonesia
Minimum Wage	Statutory monthly minimum wage is established as the lowest permissible wage for workers in each regency or municipality	Thousand rupiah	Statistics Indonesia
Open Unemployment Rate	The percentage of the labor force that is unemployed	Percent	Statistics Indonesia
Gini Ratio	Indicator of income distribution inequality	Index (0–1)	Statistics Indonesia
Mean Years of Schooling	Average number of years of formal education completed by the population	Years	Statistics Indonesia

The dependent variable is the poverty rate, defined as the percentage of the population whose average per capita monthly expenditure falls below the official poverty

line in each regency or municipality. The independent variables are defined as follows: (1) the regency or municipal minimum wage, measured in thousand rupiah per month; (2) the open unemployment rate, measured as the percentage of the labor force that is unemployed; (3) the Gini ratio, representing income distribution inequality; and (4) mean years of schooling, measured in years as an indicator of educational attainment. To mitigate potential heteroskedasticity and facilitate elasticity-based interpretation of the coefficients, the poverty rate variable was transformed to its natural logarithm.

The empirical specification was estimated using three panel data approaches: Pooled Ordinary Least Squares (Pooled OLS), the Fixed Effects Model (FEM), and the Random Effects Model (REM). Model selection proceeded sequentially. First, the Chow test was employed to compare Pooled OLS and FEM. Rejection of the null hypothesis of homogeneous intercepts indicated the preference for FEM. Second, the Hausman test was conducted to determine the most appropriate specification between FEM and REM. The null hypothesis of the Hausman test states that the REM estimator is consistent and efficient. Rejection of this hypothesis implies that FEM provides more consistent estimates. This selection procedure ensures that the chosen model appropriately accounts for unobserved regional heterogeneity (Baltagi, 2021). The general regression model is specified as follows:

$$\ln(\text{POV})_{it} = \alpha + \beta_1 \text{WAGE}_{it} + \beta_2 \text{OUR}_{it} + \beta_3 \text{GR}_{it} + \beta_4 \text{MYS}_{it} + \varepsilon_{it} \quad (1)$$

Where  $\ln(\text{POV})_{it}$  denotes the natural logarithm of the poverty rate in regency or municipality  $i$  at time  $t$ ;  $\text{WAGE}_{it}$  represents the minimum wage;  $\text{OUR}_{it}$  denotes the open unemployment rate;  $\text{GR}_{it}$  refers to the Gini ratio;  $\text{MYS}_{it}$  indicates mean years of schooling;  $\alpha$  is the intercept;  $\beta_1$ - $\beta_4$  are slope coefficients; and  $\varepsilon_{it}$  is the error term.

Table 4. Multicollinearity Test Results (Correlation Matrix)

Variable	WAGE	OUR	GR	MYS
WAGE	1.000	-0.095	0.145	0.188
OUR	-0.095	1.000	0.334	-0.339
GR	0.145	0.334	1.000	-0.076
MYS	0.188	-0.339	-0.076	1.000

Notes: All pairwise correlation coefficients are below the conventional threshold of 0.80, indicating no serious multicollinearity.

Source: Processed using EViews 13 (2026).

Following model selection, diagnostic tests were performed to ensure the robustness of the estimations. Multicollinearity was assessed using the Variance Inflation Factor (VIF), while heteroskedasticity was tested using the Glejser procedure. When heteroskedasticity was detected, robust standard errors were applied to ensure consistent statistical inference.

**Table 5. Heteroskedasticity Test Results (Glejser Test)**

Variable	Probability
WAGE	0.256
OUR	0.823
GR	0.211
MYS	0.867

Notes: All probability values exceed 0.05, indicating that the model does not exhibit heteroskedasticity.  
Source: Processed using EViews 13 (2026).

Hypothesis testing involved the F-test to evaluate the joint significance of all explanatory variables and the t-test to assess the partial effects of individual variables at the 1%, 5%, and 10% significance levels. The coefficient of determination ( $R^2$ ) was used to assess the model's ability to capture variation in poverty across regions and over time. All statistical analyses were conducted using EViews 13.

## RESULTS AND DISCUSSION

This study employs panel data regression analysis using three alternative specifications—the Pooled Ordinary Least Squares (Pooled OLS), Fixed Effects Model (FEM), and Random Effects Model (REM)—to examine the effects of minimum wage, open unemployment rate, income distribution inequality, and education level on poverty. The estimation results indicate that the minimum wage and income distribution inequality are statistically significant determinants of poverty. In contrast, the open unemployment rate and average years of schooling do not exhibit statistically significant effects, as shown in Table 7 under the selected Fixed Effects Model.

**Table 6. Model Selection Test Results**

Test	Test Statistic	Probability	Decision
Chow Test (Pooled OLS vs. FEM)	370.865	0.000***	FEM selected
Hausman Test (FEM vs. REM)	10.758	0.029**	FEM selected

Notes: \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.10$ .  
Source: Processed using EViews 13 (2026).

Model selection was conducted through a series of specification tests. The Chow test yielded a probability value of 0.000, leading to the rejection of the Pooled OLS in favor of the FEM. Furthermore, the Hausman test yielded a p-value of 0.029, indicating that the FEM is more appropriate than the REM. These findings confirm the presence of unobserved regional heterogeneity correlated with the explanatory variables, thereby justifying the use of a fixed effects specification (see Table 6).

Prior to interpreting the regression coefficients, classical diagnostic tests were performed. The multicollinearity test reported in Table 4 shows that all pairwise correlation coefficients among the independent variables are below 0.80, suggesting the absence of

serious multicollinearity. In addition, the Glejser heteroskedasticity test in Table 5 indicates that all p-values exceed 0.05, suggesting no evidence of heteroskedasticity. Accordingly, the estimated model satisfies the underlying regression assumptions and is suitable for statistical inference.

Table 7. Panel Data Estimation Results

Variable	Dependent Variable: ln(POV)		
	Coefficient		
	Pooled OLS	FEM	REM
WAGE	-4.036*	-2.406***	-2.436***
OUR	-1.653***	0.100	0.079
GR	-34.867***	5.571**	5.299**
MYS	-3.256	9.666	9.536
Constant	43.279	10.083	10.399
Model Summary Statistics			
R <sup>2</sup>	0.372	0.989	0.454
Adjusted R <sup>2</sup>	0.333	0.987	0.420
F-statistic	9.623	411.342	13.503
Prob (F-statistic)	0.000	0.000	0.000

Notes: \*\*\* p < 0.01; \*\* p < 0.05; \* p < 0.10.

Source: Processed using EViews 13 (2026).

Individually, the minimum wage has a negative effect on poverty. This result indicates that increases in the minimum wage are associated with reductions in poverty levels. Within the wage-led growth framework, higher minimum wages enhance the real income of low-wage workers, strengthen purchasing power, and stimulate aggregate demand. This finding is consistent with a broader body of empirical literature. Duncan (2021), Wang et al. (2023), and Démurger et al. (2026) demonstrate that minimum wage policies contribute to poverty reduction, particularly in regions with a relatively high share of formal-sector employment. Similarly, Lv et al. (2023) and Arranz and Garcia-Serrano (2025) argue that minimum wage increases can improve welfare among low-income workers when labor market distortions are limited. However, some studies, such as Chenarides et al. (2025), highlight potential adverse employment effects, suggesting that the net impact depends on labor market conditions and enforcement capacity. From the perspective of efficiency wage theory, higher wages may also improve productivity and job stability, thereby reinforcing poverty-reducing effects. In segmented labor markets characteristic of many developing economies, minimum wage policy serves as a regional redistributive instrument.

In contrast, income inequality has a positive effect on poverty. This finding reinforces the inequality–poverty nexus, indicating that higher levels of inequality diminish the poverty-reducing impact of economic growth. Elevated inequality constrains low-income groups' access to economic opportunities, productive assets, and social services, thereby

increasing vulnerability. This result is consistent with Wan et al. (2021), Adeleye et al. (2020), and Delgado et al. (2025), who report that rising inequality significantly exacerbates poverty. In addition, Adeleye et al. (2020) and Breunig and Majeed (2020) emphasize that high inequality reduces the elasticity of poverty with respect to growth, meaning that economic expansion becomes less effective in alleviating poverty. The relative deprivation perspective further suggests that structural inequality limits social mobility and undermines the inclusiveness of economic growth. These findings collectively confirm that, without equitable distribution mechanisms, growth alone is insufficient to achieve meaningful poverty reduction.

The open unemployment rate does not exert a statistically significant effect on poverty. This outcome implies that the relationship between unemployment and poverty at the regional level is not necessarily direct. In many developing economies, a substantial share of the labor force is absorbed into the informal sector, which provides alternative—albeit low-productivity—sources of income. Consequently, poverty appears to be more closely associated with income quality and stability rather than open unemployment status per se. This finding aligns with studies such as Benavides et al. (2022) and Misra et al. (2024), which emphasize the dominant role of informal employment in shaping livelihood strategies in developing countries. Although this result differs from Ngubane et al. (2023) and Zaman et al. (2023), who document a significant positive relationship between unemployment and poverty, it supports the argument that conventional employment indicators may not adequately capture household economic vulnerability in economies dominated by informal employment. Therefore, underemployment and vulnerable employment may constitute more appropriate indicators for explaining poverty dynamics.

Similarly, education level, proxied by average years of schooling, does not have a statistically significant effect on poverty. While human capital theory posits that education enhances productivity and income potential, empirical results suggest that improvements in formal education do not automatically translate into poverty reduction in the absence of sufficient labor-market absorption. This finding contrasts with Apergis et al. (2022) and Spada et al. (2024), but is supported by Yassine and Bakass (2022), who argue that education expansion without corresponding job creation may lead to “educated unemployment.” Furthermore, Goczek et al. (2021) highlight that the quality of education, rather than years of schooling alone, plays a crucial role in determining economic outcomes. Structural constraints such as skill mismatches, limited industrial diversification, and weak demand for skilled labor further hinder the effective transmission of educational attainment into higher income and sustained poverty alleviation.

Overall, the findings underscore that structural and distributive factors—particularly wage policy and income inequality—play a more decisive role in shaping poverty dynamics than labor quantity indicators or formal educational attainment. This conclusion is consistent with the broader development literature, including Alekhina and Ganelli (2023) and Saher et al. (2024), which emphasizes the importance of inclusive

growth and equitable distribution. The policy implications highlight the need to strengthen minimum-wage enforcement, promote more equitable income distribution, and advance an economic transformation capable of generating productive and decent employment. In addition, complementary policies—such as improving education quality, expanding social protection, and formalizing the informal sector—are crucial to maximizing the effectiveness of poverty reduction strategies. Such an integrated and multidimensional approach is essential for achieving sustainable poverty reduction at the regional level.

## CONCLUSION

This study examines the effects of key structural determinants—namely the minimum wage, open unemployment rate, income inequality, and educational attainment—on regional poverty in West Nusa Tenggara over the 2018–2024 period. The empirical results from the Fixed Effects model indicate that the minimum wage and income inequality are the primary determinants of poverty. The minimum wage exerts a negative effect on poverty, suggesting that higher wage standards contribute to poverty reduction by improving income levels and purchasing power. In contrast, income inequality has a positive effect, indicating that a more unequal income distribution exacerbates poverty. Meanwhile, the open unemployment rate and average years of schooling do not exhibit statistically significant effects, suggesting that poverty is more strongly shaped by income structure than by labor market participation or educational attainment alone.

Based on these findings, several policy recommendations are proposed. The government should strengthen minimum wage policies through consistent enforcement and effective monitoring, particularly in sectors dominated by vulnerable workers, to ensure adequate income protection. In addition, efforts to reduce income inequality should be intensified through the expansion of targeted social protection programs, the implementation of progressive fiscal policies, and support for micro and small enterprises to enhance income distribution. Furthermore, development policies should prioritize the creation of productive and inclusive employment opportunities aligned with regional economic potential, thereby enabling more equitable economic growth and more effective poverty alleviation.

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