

Macroeconomic Factors Affecting Poverty in Central Java (2018–2023): Post-Pandemic Challenges and Inclusive Growth Perspective

Tiara Rizky Zein Muhammad¹, Retno Febriyastuti Widyawati²

^{1,2} *Economic Development, Faculty of Economic and Business, Universitas Negeri Semarang, Semarang, Indonesia*

*Corresponding author's e-mail: tiarazein97@students.unnes.ac.id

ABSTRACT

This study analyzes the influence of macroeconomic variables on poverty levels in Central Java Province during the 2018–2023 period, which captures the pre-pandemic, pandemic, and post-pandemic phases. Using panel data from 34 regencies/cities and employing a Fixed Effect Model (FEM), this research examines the effects of the open unemployment rate (TPT), minimum wage, Human Development Index (HDI), and Gross Regional Domestic Product (GRDP) on poverty. The results show that TPT does not have a significant effect on poverty, while minimum wage has a positive and significant effect, and HDI and GRDP have significant negative effects on poverty. These findings indicate that improvements in human development and inclusive economic growth are crucial for poverty reduction, while minimum wage policies may generate unintended short-term effects, particularly in regions dominated by informal employment. This study contributes by highlighting post-pandemic regional dynamics and the importance of inclusive development strategies in addressing poverty under conditions of economic uncertainty.

Keywords: GRDP, Human Development Index, Minimum Wage, Open Unemployment Rate, Panel Data, Poverty

Introduction

Development is carried out as one way to achieve prosperity for the community. Development and social issues in a country, such as poverty and unemployment, can be overcome by developing the country's economy. Increased economic growth indicates that the production of goods and services has also increased. To create more goods and services, more workers are needed, which will reduce the unemployment rate and, ultimately, reduce the poverty rate (Puspita, 2015). The poverty rate in Indonesia can be used to measure the welfare of the community. In Indonesia, the overall level of welfare and poverty are negatively correlated. It can be concluded that the poverty rate decreases in line with the welfare of the population (Handayani, 2023).

Poverty remains a major problem in the world, especially in developing countries, including Indonesia (Yacoub, 2012). Indonesia has experienced relatively rapid economic progress in recent years, but the poverty rate in Indonesia is still high, especially in Central Java Province. Central Java is a province that has experienced significant development in terms of infrastructure and economic growth. During the 2018-2023 period, the percentage of the poor population in Central Java fluctuated. According to data from the

Central Statistics Agency before the Covid-19 pandemic, the number of poor people in Central Java Province had reached 11.32% in 2018, and during the Covid pandemic, it increased by 11.79%. In 2023, the percentage of poor people in Central Java Province decreased by 10.77% of the total population. This percentage of the poor population is relatively high and exceeds the national poverty rate of 9.54% (BPS, 2023). Although Central Java Province has experienced economic growth, poverty in Central Java Province remains a major challenge.

Several macroeconomic variables are assumed to influence the poverty rate. A high open unemployment rate is assumed to increase the poverty rate because people who are not working will find it difficult to meet their daily needs. This is in line with research conducted by (Andrietya et al., 2020), which states that high unemployment rates contribute directly to an increase in poverty rates in Central Java. These findings differ from those of (Pramesti, 2023) in North Sumatra Province for the period 2015–2020, which found that the Open Unemployment Rate (TPT) does not affect poverty.

Putri & Prasetyanto (2021) shows that minimum wages play an important role in improving people's welfare and ultimately reducing poverty. Low wages result in low income, which is insufficient to meet basic needs. In contrast, (Safitri et al., 2023) found that poverty is not influenced by either minimum wage or unemployment. In addition, a low Human Development Index will result in low productivity and low income (Megawati & Sebayang, 2018).

Gross Regional Domestic Product is also an important indicator used in planning and regulating the government's success in utilizing available resources and decision-making, one of which is to reduce poverty (Miftahussalam & Rofiuddin, 2021). However, (Jamaliah et al., 2022) found that economic growth does not influence poverty and that economic expansion does not necessarily reduce poverty or improve community welfare.

The problem to be solved in this study is how Open Unemployment Rate (TPT), minimum wage, Human Development Index (HDI), and Gross Regional Domestic Product (GRDP) influence the poverty level in Central Java. Although there have been previous studies examining these factors, there is still a lack of literature linking all these variables together in the context of Central Java. Most previous studies have focused on only one or two variables and have not examined the interaction between these variables. Handayani (2023) and Alma'ruf (2023) have discussed the impact of unemployment and HDI on poverty levels, but no study has comprehensively combined all these aspects to provide a more complete picture of the factors that influence poverty in Central Java. In addition, this study emphasizes the post-pandemic period (2018–2023), where labor market vulnerability and the dominance of the informal sector in Central Java create distinctive poverty dynamics that have not been sufficiently explored in previous studies.

This study aims to fill this gap by using data from 2018 to 2023 and providing policy recommendations that can be implemented to reduce poverty levels in the region. Through this study, it is hoped that a more complete picture of the dynamics of poverty in Central Java and the factors that influence it can be provided.

Theoretical Framework and Hypothesis

The theoretical framework of this study is based on theories that explain the relationship between macroeconomic variables and poverty levels. First, Keynesian Economic Theory, proposed by John Maynard Keynes, states that unemployment and poverty have a strong causal relationship, whereby high unemployment is a major trigger of poverty because it is caused by macroeconomic failure, which is rooted in a lack of aggregate demand. When aggregate demand declines, companies reduce production, directly causing unemployment. This condition instantly eliminates the main source of household income, plunging them into poverty. The unemployment rate in a region is one of the determining factors for the number of poor people in that region (Anggraini et al., 2023).

Second, the efficiency wage theory developed by Shapiro and Stiglitz in (Blackwell, 2008) explains that paying wages above the market equilibrium level can increase worker productivity, reduce turnover rates, and increase work motivation. When workers receive higher wages, they have greater incentives to keep their jobs and work more productively, which in turn improves welfare and reduces poverty among workers.

Third, the capability approach proposed by Amartya Sen, as cited in (Suryawati, 2005), emphasizes the fulfillment of basic needs and argues that poverty should not be measured solely by low income but also by the limitations of an individual's capabilities to lead a valuable and dignified life. In line with Sen's perspective, poverty arises when individuals experience restrictions or deprivation of capabilities required to live a meaningful life (Indro, 2013). Poverty also includes limited access to education services, health facilities, employment opportunities, and social freedoms that collectively support overall quality of life (Nasution et al., 2024).

Lastly, the economic growth theory explains that economic growth, reflected in the increase of Gross Regional Domestic Product (GRDP), has the potential to reduce poverty through the trickle-down effect, where economic expansion generates new employment opportunities, increases people's income, and eventually decreases the number of individuals living in poverty. The main idea of the trickle-down effect is the belief that economic growth is the primary pathway to addressing poverty (Anggoro, 2024). Todaro and Smith (2015) also emphasize that inclusive and sustainable economic growth is an essential prerequisite for poverty reduction, as economic expansion broadens employment opportunities and enhances productivity.

Hypothesis this study, the first (open employment rate), which is Ho: Open unemployment rate does not have a significant effect on the poverty rate; Ha: The Open Unemployment Rate (TPT) has a significant effect on the poverty rate. The second variable (minimum wage), which is Ho: Minimum wage does not have a significant effect on the poverty rate; Ha: Minimum wage has a significant effect on the poverty rate. The third variable (human development index), which is Ho: Human Development Index (HDI) does not have a significant effect on the poverty rate; Ha: Human Development Index (HDI) has a significant effect on the poverty rate. The last variable (GDRP), which is Ho: Gross Regional Domestic Product (GRDP) does not have a significant effect on

the poverty rate; Ha: Gross Regional Domestic Product (GRDP) has a significant effect on the poverty rate.

Research Methods

Samples and sampling techniques

This research is a quantitative study, and the results are presented using descriptive analysis. The data used in this study consist of secondary data, including the poverty rate, the percentage of the Open Unemployment Rate (TPT), minimum wages measured in millions of rupiah, the Human Development Index (HDI), and the Gross Regional Domestic Product (GRDP) of regencies/cities in Central Java Province from 2018 to 2023, measured in millions of rupiah. All secondary data were obtained from the Central Statistics Agency (BPS) of Central Java Province. This study employs panel data regression as the analytical method, using EViews 12 as the supporting software. Panel data combine time-series and cross-sectional observations and are estimated using the following model:

$$Y = \alpha_0 + \alpha_1 X_1 + \alpha_2 X_2 + \alpha_3 X_3 + \alpha_4 X_4 + \mu \dots\dots\dots (1)$$

Based on this equation, the dependent variable (Y) is the poverty rate, while the independent variables (X) consist of the Open Unemployment Rate (TPT), minimum wage, Human Development Index (HDI), and Gross Regional Domestic Product (GRDP).

Before conducting hypothesis testing using the t-test and F-test, classical assumption tests were performed, as this study uses secondary data and panel data regression. The analysis uses a total of 34 regencies and cities in Central Java, and all 34 regions are included as the full sample of the study. The results show that the data meet the classical assumption criteria, indicating that the model is appropriate for further analysis.

In panel data analysis, three estimation models are commonly used: the Common Effect Model, the Fixed Effect Model, and the Random Effect Model. To determine the most appropriate model, several model selection tests were conducted, namely the Chow Test, the Hausman Test, and the Lagrange Multiplier (LM) Test.

Results and Discussion

Before estimating the panel data regression, classical assumption tests were done. The findings show that all classical assumptions were passed, which means the regression model is BLUE (Best Linier Unbiased Estimator), and the results are valid for interpretation.

Chow Test

The Chow Test was conducted to determine the best model between the Common Effect Model (CEM) or the Fixed Effect Model (FEM). The Chow Test was performed using Eviews 12 with the results as shown in Table 1.

Tabel 1. Uji Chow

Effect test	Statistic	d.f	Prob.
Cross-section F	310.968189	(34,171)	0.0000
Cross-section Chi-square	869.490634	34	0.0000

Source: Authors (2025)

The Chi-Square probability value of $0.0000 < 0.5$ indicates that the FEM model is better applied than the CEM model.

Hausman Test

The Hausman Test was conducted to determine the best model between the Fixed Effect Model (FEM) or the Random Effect Model (REM). The Hausman Test was performed using Eviews 12 with the results as shown in Table 2.

Table 2. Hausman Test

Test summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	22.175843	4	0.0000

Source: Authors (2025)

The Chi-Square probability value of $0.0000 < 0.05$ indicates that the FEM model is better applied than the REM model.

Regression Results Analysis

Based on the model suitability tests (Chow Test and Hausman Test), this study will use the Fixed Effect Model (FEM). The regression results using the FEM model are presented in the tables below.

T-test (Partial)

Table 3. T-test

Variable	Coef	t-Stat	Prob.	Sig
Constant	50.70990	3.240	0.001	Significant
X ₁ _TPT	0.007640	0.255	0.799	Not Significant
LOGX ₂ _Minimum_Wage	5.014762	6.264	0.000	Significant
X ₃ _HDI	-0.003162	-2.713	0.007	Significant
LOGX ₄ _GDRP	-5.285545	-4.337	0.000	Significant

Source: Authors (2025)

- Based on table 3. The probability value of the Open Unemployment Rate (TPT) variable is $0.799 > 0.05$ with a coefficient value of 0.007640 so it can be concluded

that the Open Unemployment Rate does not have a significant effect on the Poverty Rate.

- The probability value of the Minimum Wage variable is $0.000 < 0.05$ with a coefficient value of 5.014762 so it can be concluded that the Minimum Wage has a positive and significant effect on the Poverty Rate.
- The probability value of the Human Development Index (HDI) variable is $0.007 < 0.05$ with a coefficient value of -0.003162 so it can be concluded that the Human Development Index has a negative and significant effect on the Poverty Rate.
- The probability value of the Gross Regional Domestic Product (GRDP) variable is $0.000 > 0.05$ with a coefficient value of -5.285545 so it can be concluded that GRDP has a negative and significant effect on the Poverty Rate.

F-test (Simultaneous)

Table 4. F-test

R-squared	0.991845
Adjusted R-squared	0.990032
S.E. of regression	0.340802
Sum squared resid	19.86093
Log likelihood	-50.35003
F-statistic	547.2763
Prob(F-statistic)	0.000000

Source: Authors (2025)

Based on Table 4, the F-statistic probability value of $0.000000 < 0.05$, which show that the variable of Open Unemployment Rate (TPT), Minimum Wage, Human Development Index (HDI), and Gross Regional Domestic Product (GRDP) have a significant impact on the Poverty Rate.

Coefficient of Determination

In Table 4, the Adjusted R-squared value is 0.990032. This indicates that the variable Open Unemployment Rate (TPT), Minimum Wage, Human Development Index (HDI), and Gross Regional Domestic Product (GRDP) can explain the dependent variable, Poverty Rate, by 99%, while the remaining 1% is explained by other variables outside the model.

Discussion

Analysis of the Influence of Open Unemployment Rate (TPT) on the Poverty Rate in Central Java

Based on Table 3, the probability value for the Open Unemployment Rate (TPT) variable is $0.799 > 0.05$, with a coefficient value of 0.007640. These results indicate that

the TPT does not significantly influence the poverty rate in Central Java, thus rejecting H_0 .

Therefore, it is concluded that the high or low open unemployment rate in a Regency/City in Central Java does not guarantee a rise or fall in the poverty rate. This finding supports research (Zuhdiyaty & Kaluge, 2018) which states that the open unemployment rate does not influence the poverty rate. This could be because not all unemployed or jobless people are poor, and they are likely still supported by others with sufficient income, thus not significantly affecting the welfare of the unemployed.

Analysis of the Impact of Minimum Wage on Poverty Rate in Central Java

The probability value for the Minimum Wage variable is $0.000 < 0.05$, with a coefficient value of 5.014762. These results indicate that the Minimum Wage has a positive and significant effect on the Poverty Rate in Central Java, thus rejecting H_0 . This means that a 1% increase in the Minimum Wage will increase the Poverty Rate in Central Java by 5.014762 percentage points assuming *ceteris paribus*. This positive relationship may indicate short-term adjustment effects, particularly in regions dominated by informal employment. In such conditions, increases in minimum wages are not always followed by proportional productivity improvements, potentially leading firms to reduce labor demand or shift workers into informal arrangements.

The minimum wage is a government policy designed to ensure workers receive a minimum income based on a legal wage. This is considered a form of worker protection, ensuring they receive a decent wage sufficient to sustain their lives. However, the minimum wage tends to apply only to formal sector jobs, thus benefiting only a select group. Therefore, (Alma'ruf, 2023) stated that the minimum wage variable has no impact on poverty reduction. (Démurger et al., 2025) conducted research on the impact of minimum wages in urban China and found that minimum wage policies have an inconclusive impact on poverty reduction. Higher minimum wages in China will improve the well-being of some people, while simultaneously pushing others into poverty. This may be because individuals who receive minimum wage increases are not necessarily from poor households, so minimum wage policies often produce distinct groups of winners and losers.

Analysis of the Influence of the Human Development Index on Poverty Rate in Central Java

The probability value for the Human Development Index (HDI) variable is $0.007 < 0.05$, with a coefficient value of -0.003162. These results indicate that the Human Development Index (HDI) has a negative and significant effect on the Poverty Rate in Central Java, thus rejecting H_0 . This means that a 1% increase in the Human Development Index (HDI) will reduce the Poverty Rate in Central Java by 0.003162 percentage points assuming *ceteris paribus*.

When the HDI increases, it indicates that the population of a region is in good condition, healthy, and has received sufficient education. This growth leads to policies that support the poor to increase productivity and earn a more decent income. This finding aligns with research by (Prasada et al., 2020) and Amartya Sen's human development theory. Sen argues that development is not only measured by economic growth but also by increasing individual abilities to live a better life.

Analysis of the Influence of Gross on Poverty Rate in Central Java

The probability value for the Gross Regional Domestic Product (GRDP) variable is $0.000 < 0.05$, with a coefficient value of -5.285545 . These results indicate that the Human Development Index (HDI) has a negative and significant effect on the Poverty Rate in Central Java, thus rejecting H_0 . This means that a 1% increase in Gross Regional Domestic Product (GRDP) will reduce the Poverty Rate in Central Java by 5.285545 percentage points with the assumption of *ceteris paribus*. (Puspita, 2015) in her research revealed that when GRDP decreases, it will lead to an increase in the number of poor people. This is in line with economic thinking that states that stagnant or negative economic growth will disrupt public welfare. The trickle-down effect theory assumes that economic growth, measured by GRDP, can have an impact on reducing poverty rates, namely when such growth is able to provide direct benefits to the population, such as employment absorption and economic turnover from the results of investment made in a region. According to (Gupta et al., 1998) through investment in public goods and services from government spending, it will also encourage the creation of a workforce in the community, which can reduce unemployment and poverty.

Conclusion, Implications, Suggestions, and Limitations

This study shows that the open unemployment rate (TPT) does not have a significant effect on poverty in Central Java, while the minimum wage has a significant positive effect, and both the Human Development Index (HDI) and GRDP have significant negative effects on poverty reduction. These findings indicate that improvements in human capital and inclusive economic growth play an important role in lowering poverty levels. However, the positive effect of minimum wage on poverty suggests that wage policies need to be designed more inclusively so that their benefits can reach informal workers, who are often less protected.

The results of this study are expected to provide valuable input for policymakers, particularly in strengthening education and health services to improve human capital quality, as well as in formulating more equitable labor policies. Nevertheless, this study has limitations due to the relatively limited set of variables and the short observation period, which may not fully capture the complexity of poverty dynamics. Therefore, future research is encouraged to incorporate additional variables, such as infrastructure

conditions, the effectiveness of social policies, and access to finance, and to apply qualitative approaches to better understand community perceptions of economic policies.

Poverty reduction strategies should not only emphasize economic growth but also prioritize inclusive development to ensure that the benefits of growth reach vulnerable and informal workers. In this context, minimum wage policies should be accompanied by productivity enhancement programs and labor protection mechanisms to prevent unintended increases in poverty.

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