



## Research Paper

### The Effect of the Open Unemployment Rate and Minimum Wage on Poverty in Sabang City

Muhammad Abdi Surya<sup>1</sup> , Yuliana<sup>1</sup>, Edi Saputra<sup>1</sup>

<sup>1</sup> Development Economics Study Program, Faculty of Economics and Business, Universitas Abulyatama, Aceh Besar 23372, Indonesia

 [Aanjunior49@gmail.com](mailto:Aanjunior49@gmail.com)

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#### Abstract

This study examines the effect of the open unemployment rate and the minimum wage on poverty in Sabang City, Aceh Province, Indonesia. The study used a quantitative approach with annual secondary time-series data for 2000–2024 ( $n = 25$ ) obtained from Statistics Indonesia (BPS). The data were analyzed using multiple linear regression with t-tests and an F-test at a 5% significance level. The results show that the open unemployment rate and the minimum wage simultaneously have a significant effect on poverty in Sabang City, as indicated by a calculated F-value of 41.235, which is greater than the F-table value of 3.443 (sig. 0.000). Partially, the open unemployment rate has a positive and significant effect on poverty, with a coefficient of 0.209 and a calculated t-value of 2.348, which is greater than the t-table value of 2.074 (sig. 0.021). The minimum wage also has a positive and significant effect on poverty, with a coefficient of 0.417 and a calculated t-value of 5.346 (sig. 0.000). The coefficient of determination ( $R^2$ ) is 74.2%, meaning that 74.2% of the variation in poverty in Sabang City is explained by the open unemployment rate and the minimum wage, while the remaining 25.8% is explained by other factors outside the model. The positive effect of the minimum wage indicates that minimum wage increases in Sabang City have not been sufficient to reduce poverty, possibly because many workers are in the informal sector. The study recommends expanding employment and skills training programs and setting the minimum wage in line with decent living needs and local economic conditions.

**Keywords:** Open Unemployment Rate, Minimum Wage, Poverty, Multiple Linear Regression, Sabang City



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## 1. Introduction

Poverty is caused by many factors, such as rising unemployment that is not matched by job creation, income that is insufficient to meet basic needs, and the low quality of life of the community. Statistics Indonesia (BPS) defines the unemployed as people who do not have a job but are looking for work, preparing a business, not looking for work because they feel it is impossible to find a job, or have already been accepted for a job but have not yet started working [1]. Unemployment arises when the skills of job seekers do not match market demand and the number of job vacancies does not keep pace with the growth of the labor force. Higher unemployment reduces living standards and, if it persists, increases poverty in the region [2], [3]. Cross-country evidence shows that growth in average incomes is the main driver of income growth among the poor [4], and that poverty and growth are robustly related [5].

Income can come from various sources, including the wages received by workers. If one source of income declines, welfare also declines, which affects poverty. The minimum wage is the lowest wage that employers must pay to workers, set by the government, and it is generally raised every year [6]. Although minimum wages are expected to raise the income of low-wage workers, their real value may remain low because of inflation, and higher wages can also lead employers to reduce employment [7], [8]. The effect of minimum wages on poverty is therefore an empirical question.

Until now, national and local governments have not fully succeeded in reducing poverty through lower unemployment, because the poor need not only jobs but also sufficient income to meet their needs [9], [10]. Previous studies in Indonesia found that unemployment increases poverty [3], [10], [11], while the minimum wage reduces poverty [10], [11], [12] or has no significant effect [13]. Most of these studies were conducted at the national or provincial level, and studies at the city level in Aceh, particularly in Sabang City, which has a small economy dominated by services and tourism, remain limited. This study therefore aims to analyze the effect of the open unemployment rate and the minimum wage on poverty in Sabang City for the period 2000–2024.

## 2. Literature Review

### Poverty

Poverty is a condition in which a person or group of people cannot meet the minimum basic needs for a decent life, including food, clothing, housing, education, and health. A person is categorized as poor if his or her income or expenditure is below the poverty line, that is, the level of income required to meet minimum basic needs [1]. Poverty can be defined in absolute and relative terms. In Aceh, poverty is influenced by macroeconomic factors, such as unemployment, economic growth, and the minimum wage [11], as well as by population and human development [14], [15].

### Open Unemployment Rate

The open unemployment rate is the percentage of the unemployed in the labor force [1]. Unemployment tends to increase every year and is a major challenge for national and local governments, as one of the indicators of successful development is the ability to reduce poverty and unemployment significantly. Unemployed people have no income from work, so a higher unemployment rate increases the risk of poverty [2], [16]. However, some studies found that the unemployment rate has no significant effect on poverty [17], because some of the unemployed come from non-poor households.

## Minimum Wage

The provincial minimum wage (UMP) is the minimum wage that companies must pay their workers in accordance with government regulations. The amount differs between provinces, depending on the components of decent living needs, inflation, and economic conditions in each region [6]. Higher minimum wages are expected to increase the income of low-wage workers and reduce poverty [7], [8], [12], but the effect may be limited if many workers are in the informal sector or if higher wages reduce employment [7], [9].

## Hypotheses

Based on the theory and previous studies, the hypotheses of this study are as follows: H1, the open unemployment rate has a significant effect on poverty in Sabang City; H2, the minimum wage has a significant effect on poverty in Sabang City; and H3, the open unemployment rate and the minimum wage simultaneously have a significant effect on poverty in Sabang City.

## 3. Method

### Research Approach and Data

This study used a quantitative approach. The research location was Sabang City, Aceh Province, Indonesia, and the period of analysis was 2000–2024. The data were annual secondary time-series data ( $n = 25$ ) on the open unemployment rate, the minimum wage, and poverty, obtained from publications of Statistics Indonesia (BPS) of Sabang City and Aceh Province [1].

### Data Analysis

The data were analyzed using multiple linear regression with the help of SPSS to determine the effects of the open unemployment rate and the minimum wage on poverty in Sabang City. The regression model is formulated as follows:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + e$$

where  $Y$  is poverty,  $\alpha$  is the constant,  $\beta_1$  and  $\beta_2$  are the regression coefficients,  $X_1$  is the open unemployment rate,  $X_2$  is the minimum wage, and  $e$  is the error term. The hypotheses were tested using a t-test (partial) and an F-test (simultaneous) at a 5% significance level. With  $n = 25$  and two independent variables, the t-table value is 2.074 ( $df = 22$ ) and the F-table value is 3.443 ( $df = 2; 22$ ). The coefficient of determination ( $R^2$ ) was used to measure the proportion of variation in poverty explained by the independent variables, and the results were interpreted with attention to the possibility of multicollinearity between the independent variables [18].

## 4. Result and Discussion

### Descriptive Statistics

The descriptive statistics of the variables are presented in Table 1.

**Table 1.** Descriptive statistics

| Variable                    | N  | Minimum | Maximum   | Mean         | Std. Deviation |
|-----------------------------|----|---------|-----------|--------------|----------------|
| Open unemployment rate (X1) | 25 | 1,019   | 4,058     | 2,609.52     | 941.051        |
| Minimum wage (X2)           | 25 | 457,000 | 3,460,672 | 1,436,126.80 | 1,066,718.778  |
| Poverty (Y)                 | 25 | 5,140   | 13,120    | 7,366.44     | 2,610.771      |

Source: Data processed with SPSS, 2025.

Poverty in Sabang City has a minimum value of 5,140, a maximum value of 13,120, a mean of 7,366.44, and a standard deviation of 2,610.771. The open unemployment rate has a mean of

2,609.52 and a standard deviation of 941.051, while the minimum wage ranges from IDR 457,000 to IDR 3,460,672, with a mean of IDR 1,436,126.80.

### Regression Results

The results of the multiple linear regression analysis are presented in Table 2.

**Table 2.** Results of multiple linear regression

| Variable                    | B     | Std. Error | Beta  | t     | Sig.  |
|-----------------------------|-------|------------|-------|-------|-------|
| (Constant)                  | 2.790 | 0.907      |       | 3.080 | 0.005 |
| Open unemployment rate (X1) | 0.209 | 0.089      | 0.332 | 2.348 | 0.021 |
| Minimum wage (X2)           | 0.417 | 0.078      | 0.497 | 5.346 | 0.000 |

*Dependent variable: poverty (Y). Source: Data processed with SPSS, 2025.*

Based on Table 2, the multiple linear regression equation is as follows:

$$Y = 2.790 + 0.209X_1 + 0.417X_2 + e$$

The constant of 2.790 indicates the value of poverty when the open unemployment rate and the minimum wage are constant. The coefficient of the open unemployment rate (0.209) is positive, meaning that an increase in the open unemployment rate is associated with an increase in poverty in Sabang City, assuming the minimum wage is constant. The coefficient of the minimum wage (0.417) is also positive, meaning that an increase in the minimum wage is associated with an increase in poverty, assuming the open unemployment rate is constant. Based on the standardized coefficients, the minimum wage (Beta = 0.497) has a stronger association with poverty than the open unemployment rate (Beta = 0.332).

### Partial and Simultaneous Tests

For the open unemployment rate (H1),  $\beta_1 = 0.209$  ( $\beta_1 \neq 0$ ), and the calculated t-value (2.348) is greater than the t-table value (2.074), with a significance of  $0.021 < 0.05$ . Therefore, H0 is rejected and Ha is accepted, meaning that the open unemployment rate partially has a significant effect on poverty in Sabang City in 2000–2024. For the minimum wage (H2),  $\beta_2 = 0.417$  ( $\beta_2 \neq 0$ ), and the calculated t-value (5.346) is greater than the t-table value (2.074), with a significance of  $0.000 < 0.05$ . Therefore, H0 is rejected and Ha is accepted, meaning that the minimum wage partially has a significant effect on poverty in Sabang City in 2000–2024. The results of the simultaneous test are presented in Table 3.

**Table 3.** Results of the simultaneous test (ANOVA)

| Model      | Sum of Squares | df | Mean Square   | F      | Sig.  |
|------------|----------------|----|---------------|--------|-------|
| Regression | 93,852,870.42  | 2  | 46,926,435.42 | 41.235 | 0.000 |
| Residual   | 11,868,550.82  | 22 | 539,479.58    |        |       |
| Total      | 111,253,838.24 | 24 |               |        |       |

*Source: Data processed with SPSS, 2025.*

For the simultaneous test (H3), the calculated F-value (41.235) is greater than the F-table value (3.443), with a significance of 0.000. Therefore, H0 is rejected and Ha is accepted, meaning that the open unemployment rate and the minimum wage simultaneously have a significant effect on poverty in Sabang City in 2000–2024. The coefficient of determination ( $R^2$ ) is 74.2%, meaning that 74.2% of the variation in poverty is explained by the open unemployment rate and the minimum wage, while the remaining 25.8% is explained by other factors outside the model.

## Discussion

The positive and significant effect of the open unemployment rate on poverty is consistent with Batubara *et al.* [3] and Dewi and Juanda [11], who found that unemployment increases poverty in Aceh Province, and with Prasetyo and Arifin [10] and Fayza *et al.* [16], who found the same result in Java and across Indonesian provinces. A high open unemployment rate means that many members of the labor force have no income from work, which increases the risk of poverty because they cannot meet their basic needs. This finding differs from Bahtia *et al.* [17], who found no significant effect of unemployment on poverty at the national level, which suggests that the effect of unemployment on poverty is stronger in small local economies such as Sabang City.

The positive effect of the minimum wage on poverty differs from the theoretical expectation and from studies that found that the minimum wage reduces poverty in Aceh [11], Java [10], [12], and Maluku [9]. Several factors may explain this result. First, the minimum wage applies only to formal-sector workers, whereas many workers in Sabang City are employed in the informal sector, such as small-scale trade, fisheries, and tourism services, so minimum wage increases do not reach many poor households. Second, higher minimum wages can reduce formal employment, and the poverty-reducing effect of minimum wage increases tends to fade over time [7], [8]. Third, both the minimum wage and the number of poor people in Sabang City increased over the study period, so the positive coefficient may partly reflect common time trends rather than a causal effect. This result is partly consistent with Welang *et al.* [13], who found that the minimum wage did not reduce poverty in North Sulawesi.

## Limitations

This study has several limitations. It uses only two explanatory variables and a relatively small number of annual observations ( $n = 25$ ) for a single city, so other determinants of poverty, such as economic growth, inflation, education, and human development, are not captured. The analysis also does not report diagnostic tests for the classical regression assumptions or stationarity tests, which are important for time-series data, so the possibility of spurious regression cannot be ruled out [18]. The results should therefore be interpreted with caution.

## 5. Conclusion

The open unemployment rate and the minimum wage simultaneously have a significant effect on poverty in Sabang City, with a calculated F-value of 41.235, which is greater than the F-table value of 3.443 (sig. 0.000). Partially, the open unemployment rate has a positive and significant effect on poverty ( $\beta_1 = 0.209$ ;  $t = 2.348 > 2.074$ ; sig. 0.021), meaning that higher unemployment increases poverty. The minimum wage also has a positive and significant association with poverty ( $\beta_2 = 0.417$ ;  $t = 5.346 > 2.074$ ; sig. 0.000), indicating that minimum wage increases have not been sufficient to reduce poverty in Sabang City. Together, the two variables explain 74.2% of the variation in poverty.

The government is expected to expand job creation and skills training programs to reduce the open unemployment rate more effectively, and to adjust the minimum wage periodically in line with decent living needs and local economic conditions, so that workers' welfare improves without burdening businesses. The government should also strengthen social protection for vulnerable groups, including informal workers who are not covered by the minimum wage. Communities are encouraged to improve their skills and education to increase their competitiveness in the labor market and to make use of business opportunities, including in the informal sector. Future research should include other determinants of poverty, such as economic growth, inflation, and human development, and use time-series methods that account for non-stationary data.

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## Authors' contributions and responsibilities

Muhammad Abdi Surya: conceptualization, data collection, formal analysis, writing – original draft. Yuliana: supervision, methodology, writing – review & editing. Edi Saputra: supervision, validation, writing – review & editing.

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## Availability of data and materials

The data used in this study are secondary data published by Statistics Indonesia (BPS) and are publicly available. The processed data are available from the authors upon reasonable request.

## Competing interests

The authors declare no competing interest.

## Ethical approval

Not applicable. This study used publicly available secondary data and did not involve human participants.

## Additional information

No additional information from the authors.

## Declaration of Generative AI and AI-Assisted Technologies

During the preparation of this manuscript, Claude (Anthropic) was used to improve the language and readability of the English text and to format the manuscript, tables, equations, and references according to the journal template. The tool was not used to generate research data, perform the analysis, or draw conclusions. The authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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