



Research Paper

Analysis of the Effect of Open Unemployment Rate and Labor Force Participation Rate on Poverty in Aceh Province for the Period 2018-2024

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Abstract

This study analyzes the effect of the open unemployment rate (TPT) and labor force participation rate (TPAK) on poverty in Aceh Province during 2018–2024. Using panel data from 23 districts/cities and the Common Effect Model—selected through the CHOW and Lagrange Multiplier tests—the results show TPT has a positive and significant impact on poverty, meaning higher unemployment increases poverty levels. Meanwhile, TPAK has a negative and significant effect, indicating that higher labor participation reduces poverty. Simultaneously, both variables significantly influence poverty. The R^2 value of 0.6867 shows that 68.67% of poverty variation is explained by TPT and TPAK, while 31.33% is influenced by other factors. Policy implications highlight the need for job-creating economic growth, effective labor market matching, targeted skills training, and programs to boost women's participation. Strengthening the productive sector, expanding decent work, and improving institutional coordination are essential to accelerate poverty reduction. An integrated strategy is urgently needed to reduce unemployment and increase labor participation for inclusive and sustainable welfare in Aceh.

Keywords: Poverty; Open unemployment rate; Labor force participation rate; Aceh

1. Introduction

Poverty is a complex social problem related to quality of life, employment opportunities, education, and health. In Aceh, the high rate of open unemployment (TPT) reflects the imbalance between job seekers and employment, thus increasing the number of poor people. The level of labor force participation (TPAK) also plays an important role, because low TPAK indicates limited job opportunities or low motivation due to structural and cultural factors. Therefore, empirical studies are needed to assess the influence of TPT and TPAK on poverty in Aceh [1]. Development cannot be declared successful if one of the three conditions, namely poverty, une-



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employment, and population disparities become more severe even though per capita income increases [2].

Data shows TPT fluctuated in 2018-2024, with a peak of 6.59% in 2020 due to the pandemic, then dropped to 5.75% in 2024 as the economic recovery through government programs. However, unemployment is still influenced by structural factors such as low quality of Human Resources, Limited employment, and regional inequality. Meanwhile, TPAK also fluctuated, dropping to 63.13% in 2019, jumping 65.10% in 2020, declining in 2021-2022, then increasing to 65.11% in 2024. The poverty rate decreased gradually from 15.97% in 2018 to 14.23% in 2024, reflecting the improvement of the socio-economic conditions of the community [3].

The first factor that affects the percentage of poverty is the large number of inhabitants. If followed by adequate quality is a reliable development capital, but if the quality is low will be the burden of development [4]. In an effort to address this problem, a deep understanding of the factors that influence poverty rates is essential, especially in relation to employment conditions [5]. Two crucial employment indicators are the labor force participation rate (TPAK) and The Open unemployment rate (TPT) [6].

According to the Central Bureau of Statistics (BPS, 2014) The Open unemployment rate (TPT) or commonly called the unemployment rate describes the proportion of the labor force that does not have a job and is actively looking for and willing to work. This should not be confused with economic hardship, although a correlation between unemployment and poverty rates often exists and tends to have a negative correlation (unemployment rates are relatively low in poor people) [7].

The occurrence of unemployment in a country can be due to the number of jobs in a particular region cannot meet the number of labor forces or the amount of demand for jobs will be unbalanced job offer. This results in an increase in the number of Labor growth exceeds the number of job opportunities [8]. The Central Bureau of Statistics (BPS 2022) in the journal labor force participation rate (TPAK) indicates the number of working-age population (15 years and over) who are economically active in a country or region. The labor force participation rate (TPAK) can be measured as the percentage of the total labor force (employed and unemployed) to the working-age population. [9] The labor force participation rate (TPAK) is defined as the number of available labor or the number of available labor by village Group, Education Level, and gender [10].

Open unemployment rate (TPT) is one of the factors that affect poverty. TPT indicates the number of unemployed recorded in a region or country that is used as a parameter in measuring the health of the labor market. Kuncoro (2010) states that open unemployment is the heaviest problem in macro or aggregate economy that can directly affect human beings [11]. Poverty is a condition in which a person or group cannot meet their basic needs for a decent life, such as food, clothing, shelter, and education. According to the Central Bureau of Statistics (BPS 2022) poverty is determined based on the poverty line, poverty can be defined as a condition in which a person or group does not have the choice or opportunity to work in living their lives to live a solid and better life characterized by the expectation of daily comfort, having confidence and being respected by others [12].

Indonesia's economic growth has not been able to increase the per capita consumption capacity of households, which is an indicator of poverty. Although economic growth averaged 5 percent, this has not been enough to reduce poverty due to low employment. Therefore, industrial transformation policies need to be adjusted to the capabilities and expertise of the community in the region. Thus, employment can increase, people's incomes rise, and poverty levels decrease [13] viewed from the Labor side, with an increase in the number of labor force participation, this is an important point because with more non-working people, the number of

poor people will increase or with high work participation, the number of poor people will also decrease [14].

This close relationship between unemployment and poverty can be explained theoretically through the Vicious Circle of Poverty theory popularized by Nurkse, (1953). This theory explains that the low income of people due to unemployment will inhibit investment and productivity, which ultimately results in stagnant incomes [15]. The high level of poverty in the region is a phenomenon that is bad for the economic growth of a region and if this poverty level can be reduced or decreased, the state of the economy on an ongoing basis that can improve the welfare of its citizens or residents [16].

2. Method

2.1 Research approach

This type of research is a quantitative research using panel data regression using multiple linear regression analysis which is panel data or panel data is a combination of time series data with cross section data from 2018-2024.

2.2 Data sources

Data sources in this study are secondary data sources. In the form of years, time (time series) from 2018-2024. The Data was obtained from the publication version of the Central Statistics Agency (BPS).

2.3 Data analysis techniques

In this study the technical analysis used is panel data regression analysis techniques. Panel data is a combination of data run time (time series) and cross data (cross section) this study uses a panel of data that is a combination of data cross section (trajectory region) and time series (sequence time). The use of the data panel was chosen because it has several advantages, including:

1. Able to combine information from differences between regions and changes between times to produce more accurate estimates.
2. Increase the number of available observations, thereby increasing the degree of freedom and the efficiency of model estimation.
3. Can control the heterogeneity of individuals or regions that are not observed (unobserved heterogeneity), thus minimizing bias in research results.
4. Allows a more comprehensive analysis of the dynamics of economic variables between years and between regions [17].

3. Results and Discussion

3.1 Descriptive test

Descriptive statistics research is a data collection method that provides useful information to analyze the data under study. This test contains descriptive statistics about the variables studied and the following results of data presentation.

Table 1. Descriptive statistics of research data

	Kemiskinan	TPT	TPAK
Mean	15.01795	5.515466	65.16379
Median	15.84000	5.710000	64.39000
Maximum	21.25000	10.14000	79.98000

	Kemiskinan	TPT	TPAK
Minimum	6.160000	1.340000	52.52000
Std. Dev.	4.055087	2.049277	6.469499
Skewness	-0.613114	-0.026973	0.402181
Kurtosis	2.358020	1.895805	2.245098
Jarque-Bera	12.85163	8.198628	8.163202
Probability	0.001619	0.016584	0.016880
Sum	2417.890	887.9900	10491.37
Sum Sq. Dev.	2630.997	671.9256	6696.707
Observations	161	161	161

Source: data processed eviws 12, (2025)

General description of the variables used in the study. Poverty has an average value (mean) of 15.01795. with the largest value (maximum) of 21.25000 and the smallest value (minimum) of 6.160000. and the standard deviation value of 4.055087. The average value of the Open unemployment rate is 5.515466. with the largest value of 10.14000 and the smallest of 1.340000. and the value of the standard deviation of 2.049277. The average value of labor force participation rate is 65.16379. with the largest value of 79.98000 and the smallest 52.52000 and the standard deviation value of 6.469499.

3.2 Selection of the best models

The second step is to determine the best method among the three calculation methods that have been done. Here are the results of model testing:

Table 2. Chow test results

Effects test	Statistic	d.f.	Prob.
Cross-section F	0.789675	(22,136)	0.7339
Cross-section Chi-square	19.354928	22	0.6233

Source: processed data eviws 12, (2025)

From the chow Test obtained a probability value of $0.7339 > 0.05$. Thus the best model of the chow Test is the common effect

Table 3. Hausman test results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.364790	2	0.5054

Source: data processed eviws 12(2025)

From the Hausman test obtained a probability value of $0.5054 > 0.05$. Thus the best model of the hausmann test is the random effect.

Table 4. Lagrange multiplier test results

Null (no rand. effect)	Cross-section	Period	Both
Alternative	One-sided	One-sided	
Honda	-0.788987 (0.7849)	-1.573201 (0.9422)	-1.670319 (0.9526)
King-Wu	-0.788987	-1.573201	-1.759723

Null (no rand. effect)	Cross-section	Period	Both
	(0.7849)	(0.9422)	(0.9608)
SLM	-0.662288	-1.414271	--
	(0.7461)	(0.9214)	--
GHM	--	--	0.000000
	--	--	(0.7500)

Source: data processed 12 (2025)

From the Hausmann test obtained a probability value of $0.7849 > 0.05$. Thus, from the results of testing chow, hausmann, and LM can be concluded that the best model is the Common Effect Model, based on a combination of tests, researchers chose the Common Effect Model (although the Hausman test signals a Fixed Effect, but LM and Chow tend to Common Effect).

3.3 Data analysis panel

Linear regression analysis is intended to test the extent to which the direction of the influence of independent variables on the dependent variable. The independent variable in this study is TPT and TPAK while the dependent variable is poverty. Berdasarkan pengujian pemilihan model dengan uji chow, uji hausman dan uji lagrange multiplier didapat bahwa Common Effect Model.

Table 5. Data regression analysis test results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	19.78168	3.033403	6.521285	0.0000
TPT	1.207176	0.122180	9.880302	0.0001
TPAK	-0.175279	0.038702	-4.528982	0.0000
R-squared	0.686746	Mean dependent var		15.01795
AdjustedR-squared	0.682781	S.D. dependent var		4.055087
S.E. of regression	2.283915	Akaike info criterion		4.508117
Sum squared resid	824.1700	Schwarz criterion		4.565534
Log likelihood	-359.9034	Hannan-Quinn criter.		4.531430
F-statistic	173.1916	Durbin-Watson stat		2.028556
Prob(F-statistic)	0.000000			

Source: data processed eviws 12 (2025)

3.4 Model regresi common effect

Based on the results of previous tests, the best model selected is the common effect model Method, so this study will use the common effect method.

Table 6. Common effect

Dependent variable: kemiskinan				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	19.78168	3.033403	6.521285	0.0000
TPT	1.207176	0.122180	9.880302	0.0001
TPAK	-0.175279	0.038702	-4.528982	0.0000

Source: Data processed eviws 12(2025)

Htest results of the common effect model Open unemployment rate probability value of 0.0001 is smaller than 0.05, which means that TPT has a positive and significant effect on poverty. At the level of labor force participation probability is worth 0.0000 is smaller than ③ 0.05 which means that TPAK has a negative effect and signifies poverty. and the result of R-Squared is 0.686746.

Tabel 7. Determination coefficient test results

R-squared	0.686746
Adjusted R-squared	0.682781
S.E. of regression	2.283915
Sum squared resid	824.1700
Log likelihood	-359.9034
F-statistic	173.1916
Prob(F-statistic)	0.000000

Source: Data processed reviews 12 (2025)

R² value of 0, 686746 shows that 68.87% variation of poverty level can be explained by the variation of TPT and TPAK. The remaining 31.13% is explained by other factors not included in the model, such as inflation, economic growth, education levels, and social policy.

Table 8. Statistical testing results F

F-statistic	173.1916
Prob(F-statistic)	0.000000

Source: Data processed reviews 12 (2025)

The F test is performed to determine whether all variables together affect the dependent variable or not. Based on the tests that have been carried out, the F statistic value of 173.1916 with a probability of $0.000000 < ③ 0.05$, thus rejecting H_0 and accepting H_a , so it can be concluded that the level of open unemployment and the level of labor force participation together have a significant effect on poverty in the District/City in Aceh province.

Table 9. Statistical test results T

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	19.78168	3.116414	7.185548	0.0000
TPT	1.226201	0.125524	9.768685	0.0001
TPAK	-0.222684	0.039761	-5.600587	0.0000

Source: Data processed reviews 12(2025)

From the above regression results can be seen that: Coefficient = 1.226201, Prob. = 0.0001 (< 0.05) means that TPT has a positive and significant effect on poverty. Each increase in TPT by 1%, will increase the poverty rate by 1.2262%, assuming other variables remain. These results fit the theory of Labor Economics, in which higher unemployment reduces household income and thus increases poverty. Open unemployment rate variable in fixed effect model shows probability value of 0.0000 is smaller than $= 0.05$ then H_0 rejected and H_1 accepted means significant effect on Poverty. Variable rate of labor force participation in the fixed effect model shows a probability value of 0.0000 is smaller than $= 0.05$ then H_0 rejected and H_1 accepted

means a negative and significant effect on Poverty. TPT p-value $0.0001 < 0.05$ was concluded to be significantly positive. TPAK p-value $0.0000 < 0.05$ concluded to be significantly negative.

3.5 Effect of open unemployment rate on poverty

Based on the tests that have been carried out, the probability of open unemployment rate of 1.207176 with a coefficient of 0.0001 where TPT has an influence on Poverty District/City in Aceh province. So that if there is an increase of 1 percent TPT is expected to increase the poverty rate by 1.207 percent, assuming other variables remain. The results of this study are in line with the findings [18] which shows that the increase in the level of community involvement in Aceh has significantly increased poverty in Aceh. This supports the view of Keynes's theory which asserts that high unemployment will decrease people's purchasing power and increase the number of poor people.

3.6 Effect of labor force participation rate on poverty

Based on the tests that have been carried out, the labor force participation rate (TPAK) has a coefficient of -0.175 with a probability value of 0.000. This shows that TPAK has a negative and significant effect on poverty levels. That is, every 1 percent increase in TPAK is expected to reduce the poverty rate by 0.175 percent, assuming other variables remain. The results of this study are in line with the findings [19] which found that the increase in labor force participation rate has a negative and significant impact on poverty reduction in Indonesia, because more and more people are involved in productive economic activities, thereby increasing household income. The results of this study are in line with the findings [20] Based on the test results of the labor force participation rate (X3) to the labor force participation (Y) set a value of -2.976 is smaller than the label of 1.717 and significant results of $0.007 < 0.05$, which means H_0 is accepted and H_1 is accepted then partially TPAK negative impact and significant Papua provincial government. which shows the low level of labor force participation (TPAK) is one of the factors causing poverty.

4. Conclusions and Implications

Based on the results of research that has been done, it can be concluded that labor conditions have a significant influence on the poverty rate in Aceh province during the period 2018-2024. The Open unemployment rate (TPT) has been shown to have a positive and significant effect on poverty, where every increase in TPT by 1% will increase the poverty rate by 1.22%, which shows that increasing unemployment directly worsens poverty conditions. Conversely, the labor force participation rate (TPAK) has a negative and significant effect on poverty, with each increase in TPAK by 1% being able to reduce the poverty rate by 0.22%, proving that the higher the community's participation in economic activity, the greater the opportunity to reduce poverty. This research Model is able to explain 68.87% of the variation in poverty level ($R\text{-squared} = 0.686746$), while the remaining 31.13% is explained by other factors outside the model, so it can be confirmed that the employment variable is an important determinant in poverty alleviation efforts in Aceh province.

5. Recommendations

This study recommends that central and local governments implement integrated policies that emphasize sustainable job creation, local economic empowerment, and improving the quality of human resources through training and upskilling. Further research suggested adding other variables such as inflation, economic growth, education, or government spending for a more comprehensive analysis. The results of this study are expected to be a reference for the

government and academics in formulating Aceh's economic development strategy that focuses on reducing unemployment and improving welfare in a sustainable manner.

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Authors' contributions and responsibilities

Sartika Cibro: conceptualization, methodology, investigation, formal analysis, visualization, and writing – original draft. Yuliana: supervision and writing – review & editing. Isthafan Najmi: supervision and writing – review & editing. Edi Saputra: supervision and writing – review & editing.

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Availability of data and materials

All data are available from the authors.

Competing interests

The authors declare no competing interest.

Additional information

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