

ANALYSIS OF FACTORS AFFECTING POVERTY IN SUMATRA INDONESIA

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Abstract

This study aims to analyze the effect of minimum wage, investment, gross regional domestic product, and open unemployment on poverty. The data used to support this research is time series data for a period of 5 years, precisely from 2017 to 2021 from all provinces on the island of Sumatra. The analysis model uses a panel data regression model with a Fixed Effect Model approach. The results showed that the minimum wage variable had a negative and significant effect on poverty, while the investment variable had a positive and insignificant effect on poverty, then the gross regional domestic product variable was found to have a negative and insignificant effect on poverty, while the open unemployment variable had a positive and significant effect on poverty.

Keywords: Minimum wage, investment, gross regional domestic product, open unemployment, poverty

INTRODUCTION

Development means a dynamic stage that aims to improve the welfare of society. The barometer of development success can be seen from the structure of the economy, economic growth, and the smaller income gap between residents, between regions and between sectors. The main purpose of development efforts in addition to realizing the highest possible growth, must also reduce or eliminate poverty, unemployment, and inequality (Todaro, 2011). Therefore, the priority of development is the elimination of poverty. The cause of poverty seen from the first economic side, micro-poverty arises because there is a mismatch in the pattern of resource ownership to have an impact on income distribution, inequality and the poor only have resources of low quality, and the total is limited. Furthermore, poverty occurs due to the differentiation between the quality of human resources, which, if human resources have low quality, then productivity is also low because low productivity gives the reason for the low income they receive and will have an impact on their fate which is also due to low education. Finally, poverty occurs due to differences in access to capital. The three causes boil down to the vicious *circle of poverty* theory. There are lagging backs,

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underdevelopment, market imperfections and lack of capital which results in low productivity. As low productivity has an effect on the income they receive and if low income then low also their savings and investment, low investment has an effect on underdevelopment and others (Kuncoro, 1997).

Baswir explained socio-economically there are two forms of poverty, namely absolute poverty and relative poverty (Sudarwati, 2009); Absolute poverty means a poverty in which the poor have an income level below the poverty line. Or the total income is not enough to meet the minimum living needs, for example the needs of food, health facilities, clothing, education level, GNP per capita and calories, as well as expenditure or consumption along with others; Relative poverty means a comparison between a person's income level and another, for example where there are rich people in certain villages but in other villages people can also be classified as poor.

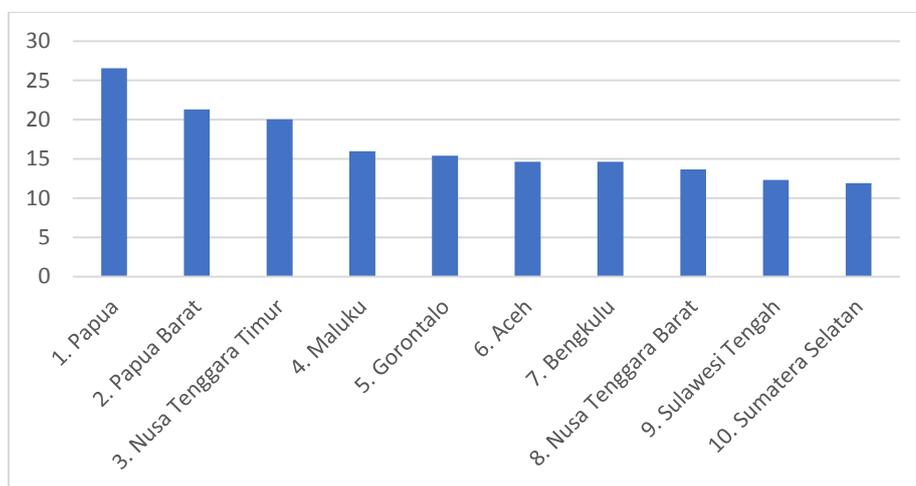


Figure 1. Provincial Poverty Rating in Indonesia

Based on the data above, the provinces with the highest poverty rate are on the island of Sumatra as many as 3 provinces, namely Aceh, Bengkulu, and South Sumatra. The development of poverty rates in 10 provinces on the island of Sumatra also fluctuated.

Poverty is influenced by several factors. The first factor affecting poverty is the provincial minimum wage. The increase in UMP cannot also reduce poverty, related to this due to an increase in the cost of decent living (KHL) so that the government feels the need for an increase to ensure the welfare of workers in their regions. (Ningrum, 2017) Describing wages means a source of income, if the source of income decreases or remains until welfare is also fixed or decreased can also certainly affect the poverty level. The wages produced seem to be quite small in real results even though the numbers are quite large. Other research (Ramirez, 2015) shows that the minimum wage positively affects poverty. On research (Romi, 2018) shows that the minimum wage has a negative influence on the reverse position related to the increase in poverty, where

the minimum wage means an unseparated share of poverty. If the minimum wage increases, then the total number of poor families will decrease (Marinda et al., 2017). While research (Gung et al., 2019) shows that the minimum wage has no effect on poverty.

The next factor affecting poverty is investment. Investment can be interpreted as the expenditure or expenditure of investors or companies to buy capital goods and production equipment to increase the ability to produce goods and services available in the economy. Investment is not only to maximize output, but to determine labor distribution and income distribution, population growth and quality as well as technology (Sukirno, 2006). The results of the study (Pateda et al., 2019) show that investment variables have a significant negative influence on poverty. However, the study (Kolibu et al., 2019) shows that investment returns have a significant positive influence on poverty. In (Wulandari et al., 2021) with the results of investment studies do not significantly affect poverty.

The next factor affecting poverty is GDP. GDP is the net value of final goods and services produced by various economic activities in a region in a period. GRDP can describe the ability of a region to manage its natural resources (Cholili, 2014). (Permana, 2012) explained that poverty and growth have a very strong relationship, because in the early stages of the development process the poverty level tends to rise and when approaching the final stage of development the total poor experience a reduction. This was given support previously carried out by (Susanti, 2013) who examined related to GRDP as a variable that affects poverty. The results of the study show that the variable GRDP has a significant positive influence on poverty. However, the study (Damanik & Sidauruk, 2020) shows that the results of the GRDP study have a significant negative influence on poverty. In research (Cholili, 2014) using the results of GRDP studies does not have a significant effect on poverty, it is caused if the increase in GDP that is intertwined does not always go hand in hand with the shrinking total poor population.

A factor affecting poverty is unemployment. The large unemployment rate leads to low income which further triggers the emergence of poverty (Kristanto, 2014). Efforts to reduce unemployment and poverty are equally important. If people are not unemployed and have income, the income can be used to meet their expenses for life. If the necessities of life have been implemented, then it is not natural to be poor and it is desirable that the unemployment level will be small, until the poverty level will also continue to decrease. Some of the previous studies include, in a study (Istifaiyah, 2015) explained that open unemployment has a significant positive influence on poverty. Research (Hasballah, 2021) shows that open unemployment has a significant negative influence on poverty. However, (Oktaviana et al., 2021) shows that unemployment does not have a significant effect on poverty.

RESEARCH METHOD

The analysis method used to solve problems in the research carried out is regression analysis of panel data using the *Eviews 10* program tool. To achieve the objectives of research and hypothesis testing, this study uses a panel data regression model (Kusumawardani, 2022). Panel data is a combination of *time series* data and *cross section* data. The advantage of using panel data is the availability of total data that can be done *naliis*, it is known that some data for research have limitations in total both *cross section* and *time series*. Then with panel data, it will provide more and more total data until the requirements and statistical properties are met (Basuki & Nano, 2019). Panel Data Regression Model as follows:

$$Y = \alpha + b_1UMP_{it} + b_2INV_{it} + b_3PDRB_{it} + b_4PT_{it} + e$$

Information:

Y	= Poverty
a	= Constant
UMP	= Provincial minimum wage
INV	= investment
GDRP	= Gross Domestic Regional Product
UE	= Open Unemployment
b (1,2,3,4)	= coefficient regresi
e	= error term
t	= <i>time series</i> (time series 2017-2021)
i	= <i>cross-section</i> (Provinsi)

There are three tests to determine the most appropriate estimation model, namely the F test for fixed effects significance, the LM test for random effects significance and the Hausman test for fixed effects and random effects simulation. The first stage is to test fixed effects and common effects with fixed effects significance tests.

1. Common Effect Model (Pooled Least Square/CE)

This means a simple panel data model approach because it only combines time series data and cross sections. This model does not pay attention to the dimensions of time or individuals, until it is assumed that the behavior of company data is the same over various periods of time. This method uses the Ordinary Least Square (OLS) approach or the least squares technique to estimate panel data models (Basuki & Nano, 2019)

2. Fixed Effect Model

This model assumes that differences between individuals can be accommodated to differences in interception. To estimate the Fixed Effects panel model data using the *variable dummy technique* to capture the difference between companies, intercept differentiation can occur due to differences in work culture, managerial,

and incentives. But the slope is the same between companies. This estimation model is often also referred to as the *Least Squares Dummy Variable (LSDV)* technique (Basuki & Nano, 2019)

3. *Random Effect Model*

This model will estimate panel data where disturbance variables may be interconnected over time and between individuals. In the *Random Effect model*, the difference in intercepts is accommodated by the *error terms* of each company. The advantage of using the *Random Effect model* is that it eliminates heteroscedasticity. This model is also called the *Error Component Model (ECM)* or the *Generalized Least Square (GLS)* technique (Basuki & Nano, 2019).

Once the results are known, if the *common effects method* is better than testing is sufficient at the first stage. But on the contrary, if the original *fixed effects method* is better, then continued the second stage of testing, which is comparing fixed effects with random effects using the Hausman test. After knowing the results, if the *fixed effects method* is better, then testing is enough to get to this stage using the method. But if the results of the random effects model are better, then use the *random effect method*.

Classical assumption tests used in linear regression using the *Ordinary Least Squared (OLS)* approach include Linearity, Multicollinearity, Normality, Autocorrelation and Heteroscedasticity tests (Basuki & Nano, 2019). However, not all classical assumption tests should be performed on every linear regression model with the OLS approach (Gujarati, 1972) in (Basuki & Nano, 2019). In panel data only enough in Multicollinearity test and Heteroscedasticity test.

RESULT AND DISCUSSION

The selection of this model was determined using an analysis test between *common effect*, *fixed effect* and *random effect* models which are described in Table 1.

Tabel 1 Common Effect, Fixed Effect dan Random Effect

Dependent Var: Log Poverty	Model		
	Common Effect	Fixed Effect	Random Effect
UMP	0.034	-0.011	-0.009
Standar Error	0.085	0.004	0.049
P-Value	0.689	0.015**	0.845
INV	14.882	0.478	1.420
Standar Error	5.981	0.420	2.394
P-Value	0.016**	0.262	0.555
PDRB	-5.946	-0.234	-2.362

Standar Error	1.214	0.361	1.992
P-Value	0.000***	0.520	0.242
UE	1.326	0.294	0.847
Standar Error	0.175	0.061*	0.226
P-Value	0.000***	0.000***	0.000***

Source: processed data (2023)

Noted: * Sign $\alpha < 0,10$

** Sign $\alpha < 0,05$

*** Sign $\alpha < 0,01$

Based on the results of model specification testing that has been carried out using the Chow Test and the Hausman Test, it is recommended to use the *Fixed Effect* model. Then from the test results of the best model selection in Table 5.5. shows that the best model in estimating panel data is *Fixed Effect*. This is because the values of independent variables of the *Fixed Effect* are more significant than the *Random Effect* and *Common Effect*.

The chow test serves to determine the accuracy of the model between *fixed effect* and *common effect*. From this test could determine several results, among others, if the results obtained are the null hypothesis (H_0), then the model that must be used or the most correct is to use *the common effect*. However, if the resulting results reject the null hypothesis (H_0), then the alternative hypothesis (H_1) *fixed effect* is the most appropriate model to use.

Table 2 Chow Test and Hausman Test

Chow Test (Cross-section Weights)			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	794.335	(9,36)	0.000
Hausman Test			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	11.594	4	0.020

Source: processed data (Eviews 10, 2023)

From the results of the chow test in Table 2 it is known that the value of the probability of *Cross-section F* is 0.000. This value is less than 0.05 which means it rejects the null hypothesis (H_0). So, the best method to use is to use the *fixed effect* method. While the Hausman test becomes a test that serves to determine what method is most appropriate to use between *fixed effect* or *random effect* models. If the result produced from this test is the null hypothesis (H_0), then the most appropriate model to use is the *random effect model*. But if the results obtained reject the null hypothesis (H_0), the *fixed effect* becomes the most appropriate model to use. The test results obtained from Table

2 show that the probability value of *random cross-section* is 0.0206. This value is smaller than 0.05 which can be interpreted as rejecting the null hypothesis (H_0). Therefore, the most appropriate model to use is a *fixed effect model* rather than a *random effect model* in estimating in this study.

The Heteroskedasticity test is a test that has the aim of finding whether the regression model has an inequality of variance from the residual of one observation to another.

Table 3 Heteroscedasticity Test Results

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-Statistic	0.846	Prob. F(3,161)	0.503
Obs*R-squared	3.499	Prob. Chi-Square (3)	0.478
Scaled explained SS	3.119	Prob. Chi-Square (3)	0.538

Sumber: Olah Data (Eviews 10, 2023)

From Table 3 it is obtained that the value of Prob. Chi-Square is indicated by an Obs*R-squared value of 0.478. Due to the value of Prob. Chi-Square $0.478 > 0.05$ means that H_0 is accepted, then the regression model is homoscedasticity or in other words there is no problem of assuming non-heteroscedasticity or no heteroscedasticity.

To detect multicollinearity, it is carried out by testing partial correlations between independent variables. A good model is that there is no multicollinearity between independent and dependent variables (Gujarati, 1972). One way to see multicollinearity is with the *Correlation Matrix test*.

Table 4. Multicollinearity Test Results

	UMK	INVESTASI	PDRB	UE
UMK	1.000	0.271	0.307	-0.108
INVESTASI	0.271	1.000	0.457	0.506
PDRB	0.307	0.457	1.000	-0.050
UE	-0.108	0.506	-0.050	1.000

Source: processed data (Eviews 10, 2023)

From the results of the *multicollinearity correlation matrix test*, it is known that all average correlation values are below 0.9. From these results, this test does not experience multicollinearity problems because the *correlation matrix value* < 0 .

By testing the specifications and selecting the best model, the *fixed effect model* (FEM) is a model that can be used in this study. The following are the results of estimated data in 10 provinces of Sumatra Island during the 2017-2021 period.

Based on the results of this study, an analysis and discussion can be made related to each independent variable influence on poverty in 10 Provinces of Sumatra Island for the 2017-2021 period as follows:

Minimum Wage and poverty have a very close relationship whereas it is well known that if the minimum wage increases then the poverty rate will decrease, and vice versa.

The regression results in this study show that the minimum wage affects poverty at a significant level of 5%, which can be seen from the minimum wage coefficient of -0.011 along with a probability value of 0.015. Against this, the minimum wage means one of the economic driving factors, with the increase in the minimum wage of a region then there is good economic development in the area until the increase in the regional minimum wage indirectly has an impact on reducing the poverty rate. This is in line with the results of research where the minimum wage affects poverty. This is also in line with research conducted by (Sari, 2021) with the conclusion that the minimum wage has a significant negative effect on poverty in Central Java province. Research conducted by (Priseptian & Primandhana, 2022) is also in line with these results. The study concluded that the provincial minimum wage has a negative and significant influence on poverty.

Table 5. Fixed Effect Estimation Results (Best Model)

Dependent Variable: Poverti	Model Fixed Effect
Constant	536659.7
Standart Error	15380.68
Probability	0.000 ***
UMP	-0.011
Standart Error	0.004
Probability	0.015 **
INV	0.478
Standart Error	0.420
Probability	0.262
GDRP	-0.234
Standart Error	0.362
Probability	0.520
UE	0.294
Standart Error	0.061
Probability	0.000 ***
R²	0.999
F_{Statistic}	7825.594
Probability	0.000 ***
Durbin Watson Stat	1.931

Source: Processeng Data (Eviews 10, 2023)

Noted: *** Signifikan<1%, ** Signifikan<5% dan * Signifikan<10%.

The relationship between investment and poverty is very important because investment is a fiscal policy that can be used to allocate its budget to the public interest, especially the poor, so that the right budget policy will be able to reduce poverty.

According to the results of the study, investment has a positive and insignificant influence. The value of the coefficient is 0.478 to poverty, which when there is an increase in investment of 1% then poverty will increase by 0.478%. When the coefficient is positive, this shows a positive influence between investment on poverty in 10 provinces of Sumatra Island for the 2017-2021 period. Related to this, investment means one of the economic driving factors, with the increase in investment in a region then there is good economic development in the area to the increase in regional investment indirectly has an impact on reducing the poverty rate. This is different from the results of the study where investment did not affect poverty due to factors such as the Covid-19 disease outbreak in 2020-2021 so that various regions experienced a decrease in government revenue and hampered investment. These results are inversely proportional to research conducted by (Dagume, 2021) With the result that foreign investment has a negative short-term relationship with poverty rates but is statistically significant. Foreign direct investment has a long-term negative relationship with poverty rates. Research conducted by (Mansi, 2020) is also inversely proportional. The study has found that other factors such as education, investment environment, and especially unemployment also have a significant impact on reducing poverty rates in both economic zones.

The level of GDP and poverty have a relationship that is not directly proportional. This increase in GDP affects the poverty rate. If the level of GDP goes up, then the poverty rate will go down. Vice versa, if the level of GDP decreases then the poverty rate will rise.

From the results of the study, the level of GDP has a negative and insignificant influence because in 2020-2021 several regions experienced a decrease in GDP due to the outbreak of Covid-19 disease. The value of the coefficient is -0.234 and the probability is 0.520 of poverty, which when there is an increase in the level of GDP by 1% then poverty will decrease by 0.234%. When the coefficient is negative, this shows a negative but not significant influence between GRDP on poverty in 10 provinces of Sumatra Island. These results are inversely proportional to research conducted by (Lutherani, 2023). The study concluded that the variable GDP has a negative and significant effect on the poverty population. Another inversely proportional study was conducted by (Damanik & Sidauruk, 2020). The results of the study are population variables and GRDP have a significant effect on poverty variables in North Sumatra province in 2008-2017.

Unemployment and poverty rates have a directly proportional relationship. This increase in unemployment affects the poverty rate. If the unemployment rate rises then the poverty rate will also increase, and vice versa, if the unemployment rate decreases then the poverty rate will also decrease. Because there is no job, the community has no income.

From the results of the study, the unemployment rate has a positive and significant influence. The value of the coefficient is 0.294 and the probability is 0.000 of poverty, which when there is an increase in the unemployment rate of 1% then poverty will increase by 0.294%. When the coefficient is positive, this shows a positive influence between unemployment and poverty in 10 provinces of Sumatra Island. These results are directly proportional to the research conducted by (Sari, 2021). This study concluded that the open unemployment rate has a significant positive effect on poverty in Central Java province. Another directly proportional study was conducted by (Priseptian & Primandhana, 2022). The result of the study is that unemployment has a positive and significant influence on poverty, as well as simultaneously all independent variables have an influence on poverty in East Java.

Research conducted by (Hanifah & Hanifa, 2021) has results that are not directly proportional to this study. The study has found that unemployment has a negative and insignificant influence on poverty.

CONCLUSION

The results of research that has been conducted related to the analysis of factors affecting poverty on the island of Sumatra in 2017-2021, obtained the following conclusions:

- a. Based on the results of the study, UM variables affect and are significant on poverty, so this study is in accordance with the research hypothesis that states UM has a negative effect on poverty.
- b. Based on the results of the study, the INV variable has a positive and insignificant effect on poverty, so this study is not in accordance with the research hypothesis that states INV has a negative effect on poverty.
- c. Based on the results of the study, the variable of GRDP has a negative and insignificant effect on poverty, so this study is in accordance with the research hypothesis that states GRDP has a negative effect on poverty.
- d. Based on the results of the study, the variable PT has a positive and significant effect on poverty, so this study is in accordance with the research hypothesis that states PT has a positive influence on poverty.

Based on research that has been conducted on the analysis of factors affecting poverty on Sumatra Island in 2017-2021, using a panel data regression model, the advice that can be given is to further researchers to increase the period and other research

variables that are factors in poverty. In addition, there are several other suggestions, including:

To reduce the number of poor and unemployed people, especially provincial governments on the island of Sumatra can implement various policies, one of which is providing capital and skills training and job training to poor people in the hope of improving the quality of human resources. By improving the quality of human resources, it can increase employment opportunities for the community and be able to increase people's income, Gross Regional Domestic Product (GDP) and automatically the minimum wage will also increase. Henceforth, if this program continues to be sustainable, it will be able to reduce the poor population and unemployment rate. In addition, there must be regular supervision so that the programs carried out can be right on target, run well and continuously.

The provincial governments on the island of Sumatra must grow purchasing power, investment, exports, and *government spending*. This is to increase economic growth and Gross Regional Domestic Product (GRDP) of Provinces on the island of Sumatra.

This research is inseparable from the shortcomings and limitations of research by researchers. The limitation in this study is that the variables used in the study are only Minimum Wage, Investment, GDP, and Open Unemployment.

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