

The Analysis of Poverty and Unemployment in West Sumatra

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Abstract

The study aims to explain the relationship between poverty and unemployment districts in West Sumatra. In addition, to explain the effect of health toward poverty, education toward poverty, education toward unemployment and the amount of unemployment people at District in West Sumatera. The study used data panel (cross section and time series) the which consists of 19 districts in West Sumatra during the period 2011 to 2017. The analysis used a simultaneous equations model of two stages least square. The results of the study found that unemployment and education had a negative and significant effect on poverty, then health had a positive and significant influence on poverty among regencies in West Sumatra, then poverty had a negative and significant effect on unemployment, then education, and the population had a positive and significant influence on unemployment among districts in West Sumatra.

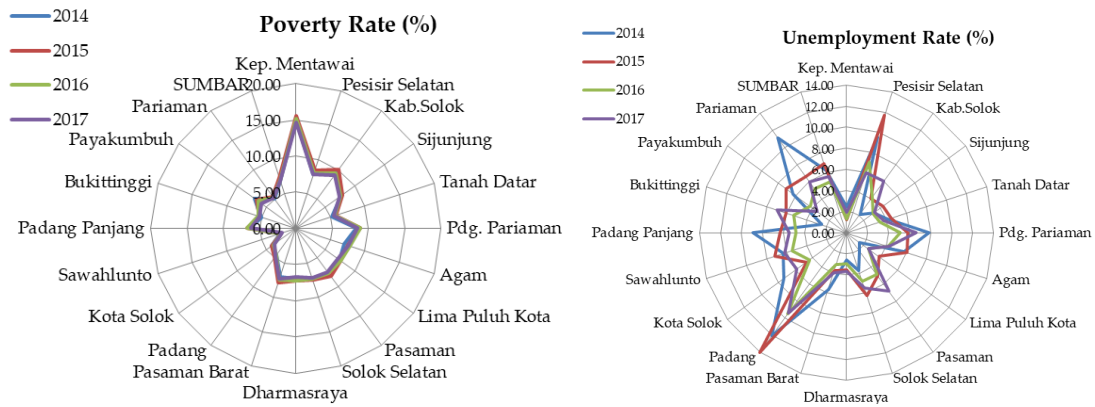
Keywords: poverty, unemployment, two stages least square

Introduction

Governments are obliged to improve the welfare of the people should be able to solve the problems of the economy, such as poverty and unemployment. Poverty is a condition often associated with need, hardship and shortages to ensure the survival, poverty has long been a complex issue that cannot be completed until now, and to the attention of people in the world. Poverty is not only experienced by poor countries, but also to the developing countries and even developed countries, in poor countries still faced with the problem of growth and income distribution is uneven, while many developing countries experiencing high economic growth, but failed to give benefits for poor people (Todaro and Smith, 2006),

In addition, the unemployment problem is a labor problems often faced by every country. The problem of unemployment is one of the issues that need to be solved in the economy. The population is increasing from year to year involved increasing the number of labor force, while employment is currently limited and can not meet the total work force, or where the number of jobs is less than the job seekers. This condition can lead to reduced productivity and incomes, so the impact on the increase in the poverty rate. This linkage condition can be seen in figure 1. Figure 1. shows the interrelationship of poverty and unemployment among counties and cities in West Sumatra in 2014 until 2017.

Figure 1: Percentage of Poverty rate, and the Unemployment Rate Between District in West Sumatra Period 2014-2017



Source: Statistics Sumbar

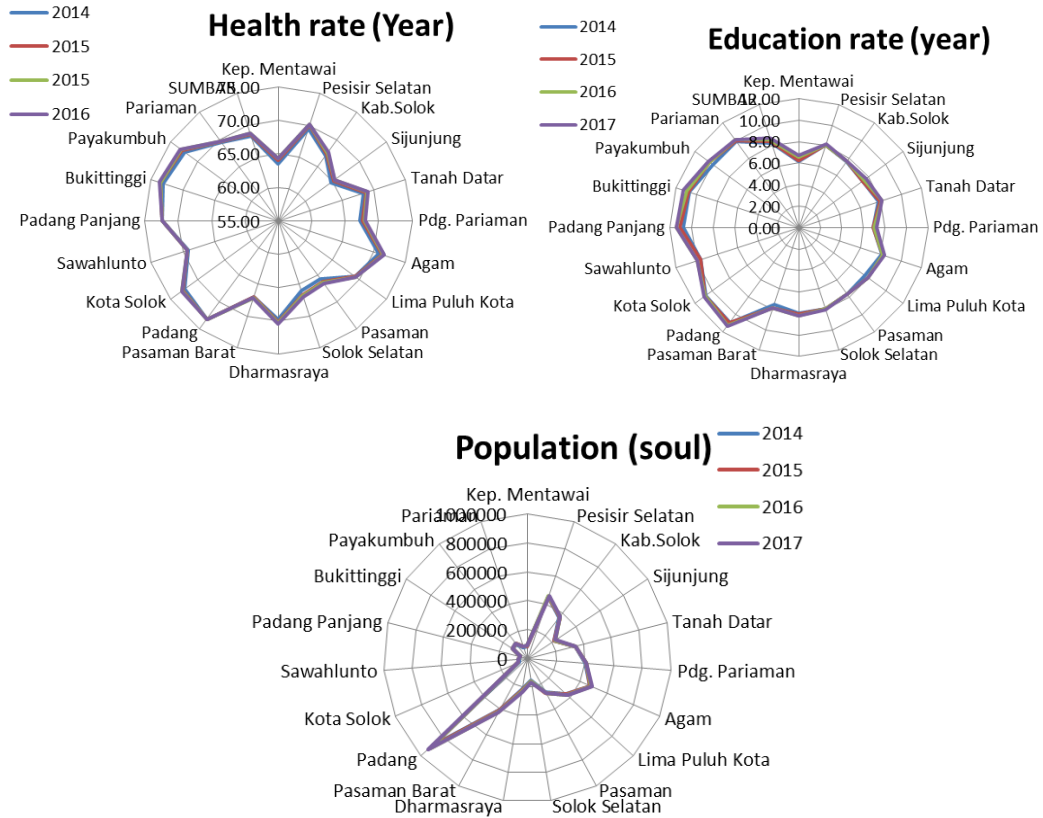
It can be seen in Figure 1. The phenomenon of poverty and unemployment are in 14 counties and cities, namely, Mentawai Islands, Solok regency, Sijunjung, Tanah Datar, Padang Pariaman, Pasaman, South Solok, Dharmasraya, Pasaman Barat, Solok, Sawahlunto, Padang Panjang, Bukittinggi, Pariaman, where poverty in 2017 has decreased, but in that year unemployment had passed. Based on this phenomenon, there is a mismatch between the poverty and unemployment by research (Egunjobi, 2014) that poverty and unemployment are positively related.

If seen by a factor - other factors affecting each - each endogenous variable above, this condition can be seen in Table 2, Table 2 shows the exogenous variables, namely health, education, and number between districts and cities in West Sumatra in 2014 until 2017.

The highest poverty occurred in 2015 in the Mentawai Islands district amounted to 15.52 percent, and the lowest poverty found in Sawahlunto, at 2.01 per cent in 2017. Then, unemployment highest in the city of Padang at 14 percent in 2015, it is suspected because the number of job seekers in the provincial capital of West Sumatra, many job seekers are not balanced with the number of jobs, and unemployment was lowest for the Mentawai Islands district by 1.25 percent in 2015.

Table 1.1 can be seen the phenomenon of poverty and unemployment in the 14 counties and cities, ie, Mentawai Islands, Solok regency, Sijunjung, Tanah Datar, Padang Pariaman, Pasaman, South Solok, Dharmasraya, Pasaman Barat, Solok, Sawahlunto, Padang Panjang, Bukittinggi and Pariaman, where poverty in 2017 has decreased, but in that year unemployment had passed. Based on this phenomenon, there is a mismatch between the poverty and unemployment by research (Egunjobi, 2014) that poverty and unemployment are positively related.

Figure 2: Health rate, unemployment rate, and the total population of the Inter District in West Sumatra Year 2014-2017



Source: Statistics Sumbar

The phenomenon that occurs between health and poverty there in 2015, where there are 16 counties and cities, counties Islands Mentawai, county Coastal south, Solok district, county Sijunjung, district flat ground, the district of Padang Pariaman, Agam district, county Fifty cities, counties Pasaman, Solok district south, the district Dharmasraya, district Pasaman west, the city of Padang, a city of Padang long, Bukittinggi, Pariaman, the soundness of the year had passed, but in the same year poverty also increased, this situation is inversely proportional to the research (D.Wahyudi, and Tri Wahyu.R, 2013) which states that the health of a negative effect on poverty.

In 2015, there is a phenomenon between education and poverty in 16 counties and cities, counties Islands Mentawai, county Coastal south, Solok district, county Sijunjung, district flat ground, the district of Padang Pariaman, Agam district, county Fifty cities, Pasaman, Solok district south, the district Dharmasraya, district Pasaman west, the city of Padang, a city of Padang long, Bukittinggi, Pariaman, the education level of the year had passed, these conditions are not in line with the research (Apergis, Dincer, and Payne, 2010) where in penilitian tersebut there is a negative effect of education on poverty.

In addition, phenomena between education and unemployment between districts and cities in West Sumatra, where the level of education experienced an increase from 2014 to 2017, but the unemployment rate in the Islands

district mentawai 2015 to 2017, the district of Coastal south in 2015, Solok district 2015 until 2017, the district Sijunjung 2015 and 2017, the district Land flat in 2015, the district of Padang Pariaman, Agam district in 2015 and 2017, the county Fifty cities in 2015, the district Pasaman 2015 and 2017, the Solok district south in 2015 and 2017, the county Dharmasraya 2015, Pasaman district west in 2017, the city of Padang in 2015, the town of Solok in 2017, Sawahlunto city in 2015 and 2017, the length of Padang city in 2017, Bukittinggi town in 2015 and 2017, the city Payakumbuh 2015, and the city of Pariaman in 2017 had passed, the situation is not in line with the study (Riddell and Song, 2013) states that there is a negative relationship between education against unemployment.

The total population of the district and city in western Sumatra has increased from 2014 to 2017, but in 2015 Solok district, the district of Padang Pariaman, the district Pasaman western city of Padang long, and the city of Pariaman, the unemployment rate has decreased, the same condition also occurs in 2016, 17 counties and cities decline in the level of unemployment unless the Mentawai Islands district, and Solok district, the situation is not in line with the research (Riaz and Zafar, 2018) which states that there is a negative effect of population and unemployment.

Methods

This study classified the descriptive and associative study, because the author will describe and analyze the close relationship of the effect of one variable to another variable or exogenous variables on endogenous variables. This study uses a model in which to consider two-way relationship and indirect relationships between variables one by the other variables. This happens if the case is affected by the variable Y variable X, and in other cases are influenced by variables X variable Y. In this model, there will be more than one equation, wherein each or Jointly referred to as mutually dependent / endogenous variables. If the parameters in the equation is estimated using OLS (Ordinary Least Square) will have the potential result is not only biased,

OLS method cannot be applied to estimate an equation that have relevance in the system of simultaneous equations. If there are independent variables have a correlation with the disturbance it will cause the estimator be inconsistent.

According to Gujarati (2003: 717) on a model of simultaneous equations where there is more than one dependent variable (the dependent variable) and more than one equation. One of the unique characteristics of the simultaneous equations is that the dependent variable in the equation might appear as a variable that explains the other variables of the system. Therefore, the variables that explain the dependent (explanory dependent variable) into stockist and is generally correlated with disruption of the equation where the variables had appeared as variables that explain.

In the model there are two variables simultaneously endogenous and exogenous variables. Endogenous variable is a variable whose value is set or determined by the model as a result of the relationship between variables, whereas exogenous variables are variables whose value is determined outside the model.

The structural equation in this study are as follows:

$$Y_1 = A_0 + \alpha_1 Y_2 + \alpha_2 \alpha_3 X_1 + X_2 + \mu_1 t \dots\dots\dots (1)$$

$$Y_2 = \beta_0 + \beta_2 \beta_1 Y_1 + X_3 + X_2 + \beta_3 \mu_2 t \dots\dots\dots (2)$$

Where :

- Y₁ = Poverty
- Y₂ = Unemployment
- X₁ = Health
- X₂ = Education
- X₃ = Population

a. Identification test

While the identification test with the order condition in this study as follows:

Equation 3.5: $K-k = 3-2 > m -1 = 2- 1 \ 1 = 1 \rightarrow$ (exactly identified)

Equation 3.6: $K-k = 3-2 > m -1 = 2-1 \ 1 = 1 \rightarrow$ (exactly identified)

From the results of the test identification using order condition of the two equations above, then on to the conclusion that the two similarities exactly identified, then to estimate the parameters of the existing equation is using Two Stage Least Squared (TSLS), so the valuation coefficient will remain biased because this is an advantage of the model Two Stage Least Squared.

Two Stage Least Squared an estimation performed using a two-stage OLS, which of course, with certain rules. The technique for estimates is as follows (Nachrowi, 2006):

The first stage, perform parameter estimation using OLS between endogenous variables with all the exogenous variables. Thus, we will obtain the estimated value of endogenous variables.

The second phase, estimated the parameters by using OLS, which now include the endogenous variable, but the variable is replaced with an endogenous variable estimation results.

b. Reduce Form

After doing a test identification with the order condition, then the next rare is to reduce the form of each - each equation above. Reduced process conducted to determine the form of exogenous variables (predetermine) in a system of simultaneous equations. The process reduce the form of each - each equation above as follows:

a. $Y1 = \Pi1 + \Pi \ \Pi2 \ X1 + X2 + X3 + v1 \ \Pi3 \dots\dots\dots (3)$

From the equation above poverty can be seen that the exogenous variables (predetermine) it is health, education, and population.

b. $Y2 = \Pi4 + \Pi5 \ \Pi6 \ X1 + X2 + X3 + v2 \ \Pi7 \dots\dots\dots (4)$

Of unemployment above equation can be seen that the exogenous variables (predetermine) it is health, education, and population.

Results and Discussion

A. Inductive analysis

1. Classic assumption test

a. Heteroskedastisity test

Heteroskedastisity to detect tampering on the model estimates residual diagnostics test heteroskedastisitas with the regulations, if the value of the probability of the independent variables used are under significant value at $\alpha = 0:05$, meaning there heteroskedastisitas

Table 1. Test Results Heteroskedaticity

Dependent Variable: LOG (RESABS)
 Method: Panel Least Squares
 Date: 08/09/19 Time: 11:28
 Sample: 2011 2017
 Periods included: 7
 Cross-sections included: 19
 Total panel (balanced) observations: 133

variable	coefficien		t-Statistic	Prob.
	t	Std. Error		
C	-20.61226	19.93499	-1.033974	0.3031
LOG (Y2)	-0.104752	0.222926	-0.469894	0.6392
LOG (X1)	3.521236	5.232353	0.672974	0.5022
LOG (X2)	0.712024	1.253772	0.567905	0.5711

Source: Eviews 10 (2019, processed)

Based on Table 4.4 it can be seen that there is no independent variable probability value is below the significant value of $\alpha = 0.05$, then we can conclude that there is heteroskedastisitas

Table 2. Test Results Heteroskidastity

Dependent Variable: LOG (RESABS)
 Method: Panel Least Squares
 Date: 08/09/19 Time: 11:35
 Sample: 2011 2017
 Periods included: 7
 Cross-sections included: 19
 Total panel (balanced) observations: 133

variable	coefficien		t-Statistic	Prob.
	t	Std. Error		
C	-6.599626	3.104744	-2.125659	0.0354
LOG (Y1)	-0.247412	0.353931	-0.699039	0.4858
LOG (X2)	0.962235	0.867476	1.109236	0.2694
LOG (X3)	0.055755	0.135036	0.412889	0.6804

Source: Eviews 10 (2019, processed)

Based on Table 4.5 it can be seen that there is no independent variable probability value is below the significant value of $\alpha = 0.05$, then we can conclude that there is heteroscedasticity.

B. Model Test Two Stages Least Square

Two Stage Least Squared an estimation performed using a two-stage OLS, which of course, with certain rules. Two satge model estimation Least Square can be seen in Table 4.6 and Table 4.7.

1. Equation 1 (Poverty)

Table 3 Model Two Stages Least Square Poverty (Y1)

Dependent Variable: Y1
 Method: Panel Two-Stage Least Squares
 Date: 08/09/19 Time: 11:41
 Sample: 2011 2017
 Periods included: 7
 Cross-sections included: 19
 Total panel (balanced) observations: 133
 Instrument specification: C X1 X2 X3
 Constant added to the instrument list

variable	coefficien			
	t	Std. Error	t-Statistic	Prob.
Y2	-0.369664	0.166005	-2.226826	0.0277
X1	0.326782	0.021856	14.95127	0.0000
X2	-1.510938	0.234322	-6.448137	0.0000

Source: Eviews 10 (2019, processed)

Table 3 can be written based on the model estimates of this study are as follows:

$$\text{LOG (Y1)} = -0.369664 (\text{Y2}) + 0.326782 (\text{X1}) - 1.510938 (\text{X2}) + \text{M1} \dots\dots\dots (4.1)$$

From equation (4.1) can be seen that:

Unemployment (Y2) positive and significant impact on Poverty (Y1) with a regression coefficient that is equal to -0.369664 This means that when there is a decrease in Unemployment (Y2) by 1 unit will raise Alleviation (Y1) of -0.369664 unit.

Health (X1) positive and significant impact on Poverty (Y1) with a regression coefficient that is equal to 0.326782 This means that when there is increase in Health (X1) of one unit will increase poverty (Y1) of 0.326782 satuan.

Education (X2) significant negative effect on Poverty (Y1) with a regression coefficient that is equal to -1.510938 This means that when there is a decrease of Education (X1) by 1 unit will decrease poverty (Y1) of -1.510938 unit.

2. Equation 2 (Unemployment)

Table 4 Model Two Stages Least Square Unemployment (Y2)

Dependent Variable: Y2
 Method: Panel Two-Stage Least Squares
 Date: 08/09/19 Time: 11:43
 Sample: 2011 2017
 Periods included: 7
 Cross-sections included: 19
 Total panel (balanced) observations: 133
 Instrument specification: C X1 X2 X3
 Constant added to the instrument list

Variable	coefficien t	Std. Error	t-Statistic	Prob.
Y1	-0.256136	0.064476	-3.972603	0.0001
X2	0.714487	0.058364	12.24195	0.0000
X3	5.34E-06	9.88E-07	5.404354	0.0000

Source: Eviews 10 (2019, processed)

$$\text{LOG (Y2)} = -0.256136 (Y1) + 0.714487(X2) + 5.34E-06 (X3) + M2t \dots\dots\dots (4.2)$$

Poverty (Y1) a significant negative effect on unemployment (Y2) with a regression coefficient that is equal to -0.256136 This means that when there is an increase of Poverty (Y2) by 1 unit will raise unemployment (Y2) of -0.256136 unit.

Education (X2) positive and significant impact on unemployment (Y2) with a regression coefficient that is equal to 0.714487. This means that when the increase in education (X2) is 1 unit it will raise unemployment (Y2) of 0.714487 unit.

Population (X4) positive and significant impact on unemployment (Y2) with a regression coefficient that is equal to 5.34E-06. This means that when there is an increase Population (X4) by 1 unit will raise unemployment (Y2) of 5.34E-06 unit.

Conclusion

Based on the results of research and discussion about the determinants of poverty, unemployment and income inequality between districts and cities in West Sumatra, it can be concluded that:

Unemployment is a significant negative effect on poverty, but the estimate is not consistent with the theory, this condition is caused by most of the labor force works in the agricultural sector involves almost all members of the family (low unemployment rate) but with a low income so it is not sufficient family. So that even with a low unemployment rate (as most of the work), but they remain poor.

Positive and significant impact of education on poverty, this indicates that education is a determinant of poverty across counties and cities in Sumatra health Barat. Variable shows that there is negative and significant impact on poverty between districts and cities in West Sumatra, this indicates that health was one factor determinants of poverty in districts and cities in West Sumatra.

Poverty and no significant negative effect on unemployment. This indicates unemployment poverty be the deciding factor between districts and cities in West Sumatra. educational results of hypothesis testing has been done it can be concluded that education is positive and significant impact on unemployment. This indicates that education be the deciding factor of unemployment between districts and cities in West Sumatra. Furthermore, the number of people who have done it can be concluded that the number of positive and significant impact on unemployment. It indicates the number of unemployed people be the deciding factor between districts and cities in West Sumatra.

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