



Poverty and Its Problems in the Province of West Sumatra

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Poverty is a problem that is difficult for many countries to overcome, so the United Nations (UN) created an SDGS agenda whose main goal is to end all forms of poverty in this world by 2030. To overcome this poverty, many countries are trying to see what factors cause poverty to occur. This research tries to look at the causes of poverty in terms of education, Human Development Index, Unemployment, Income Inequality, and Labor Force Participation Rate in Districts/Cities of West Sumatra Province from 2011-2019. The research analysis technique uses panel data regression with cross sections of 19 districts and cities and the 2011-2019 time series. Estimation of the relationship using the panel model regression method is the Common Effect Model, Fixed Effect Model and Random Effect Model. Selection of the best model is done by Chow test and Hausman tests is the Random Effect Model. Based on the research results, it was found that education and the Human Development Index can significantly reduce poverty and unemployment, and income inequality can significantly increase poverty, as well as the Labor Force Participation Rate. The results of this study provide recommendations to local governments to provide access to higher education and better health for the whole community as well as provide employment and reduce income inequality that occurs.

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1. INTRODUCTION

On 25 September 2015, the United Nations (UN) approved the Agenda for Sustainable Development Goals (SDGs) which was attended by approximately 193 heads of state, including Indonesian Vice President Jusuf Kalla at the time. The first goal of the SDGs is "end poverty in all its forms everywhere" which means ending all forms of poverty everywhere by 2030. Therefore, governments in every country are doing various ways to reduce this poverty.

Poverty is a complex problem and is difficult for countries to overcome, especially developing countries and the third world. One of the efforts to overcome poverty is to improve economic performance by carrying out national development and creating jobs and organizing a decent life to realize the welfare of the population. According to Kuncoro (2010), poverty is one of the problems faced by all countries in the world. Poverty is considered as the inability to meet a minimum standard of living. And Susanto et al (2017) stated that poverty is an inability that is borne by a person, a family, a community or even in a country which creates anxiety in life, the precariousness of defending rights and justice, the precarious bargaining position (bargaining) in world association, the loss of generations, to the fading of the future of the nation and state. While BPS (2021), poverty is an economic inability to meet basic food and non-food needs as measured from the expenditure side.

West Sumatra Province is one of the provinces on the island of Sumatra which has various leading sectors, such as agriculture, plantations, trade, fisheries, tourism, and others. West Sumatra Province is one of the provinces that has a fairly high poverty rate in Indonesia. This can be seen in the following Table 1.

Based on Table 1, it can be seen that the highest average poverty rate is in the Mentawai Islands, followed by Solok Regency and Padang Pariaman Regency. Meanwhile, the lowest poverty rates are in Sawah Lunto City and Solok City. This poverty rate is still a cause for concern and will have an impact on all aspects of national life and provincial economic activity. To overcome this problem, many researchers, both national and international, study the factors that

influence poverty levels in each country or region. Researchers who discuss poverty include: [1] stated that in Afghanistan poverty is influenced by socio-economic conditions, people's lifestyles, unemployment rates, and employment. [2] states that poverty solutions must be discussed locally and because of the nature of poverty must be defined locally. [3] in Ukraine poverty is caused by unequal distribution. [4] in the Arctic of the Russian Federation, the solution to overcoming poverty through employment and increasing the income of the population. [5] overcoming poverty through Business, Entrepreneurship, and Innovation.

Based on the above, there is interest in studying the factors that cause poverty in West Sumatra Province, thus raising questions about whether education, human development, unemployment, income inequality, and labor force participation rates jointly or partially can affect poverty rates in districts/districts city in West Sumatra.

2. LITERATURE REVIEW

Poverty, based on the Indonesian Central Bureau of Statistics measures poverty using the basic needs approach concept. Poverty is seen as an economic inability to meet basic food needs. Poor people are residents who have an average monthly per capita expenditure below the poverty line.

Poverty criteria set by the World Bank are income less than USD 2.00 per capita/day and the Central Bureau of Statistics. The Food Poverty Line (GKM) is the expenditure value for minimum food needs which is equivalent to 2100 kilocalories per capita per day. According to Jhingan [6], the circle of poverty can be seen in Fig. 1.

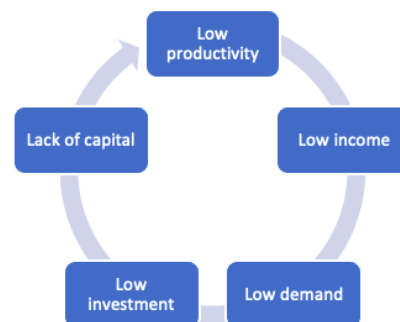


Fig. 1. Poverty circle (vicious circle Nurkse)

Education, according to RI Law Number 12 of 2012, “is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and the skills needed by them, society, nation, and state”. [7] states “the concept of education is 1) planned conscious effort, 2) creating a learning atmosphere and learning process, 3) students can develop their potential, 4) the ability of children to have religious spiritual strength, self-control, personality, intelligence, noble character, as well as the skills needed by himself, society, nation, and state”. Education can affect many aspects, one of which is poverty. There are several opinions stating the level of education with poverty have a negative relationship. According to researchers [8] in Ghana, [9] Pakistan, [10] in Pakistan, [11] in South Africa.

Human Development, according to UNDP (United Nation Development Programme) is a process to broaden choices for the population. From the definition provided by the UNDP, it can be said that humans in an area should have and be given broad choices, and support from the government is needed to provide facilities for the community to be able to utilize and make decisions according to the choices they make.

Aspects of human development can be seen from the Human Development Index. The HDI value of a country or region shows how far that country or region has achieved the specified targets, namely life expectancy, basic education for all levels of society without exception, and spending and consumption levels that have reached a decent standard of living. The general formula used to calculate the Human Development Index is that the HDI is equal to one-third of the total sum of the health index, education index and decent standard of living index. The relationship between the Human Development Index and poverty from many studies states an inverse or negative relationship, where the higher the level of social welfare as a proxy for HDI, the poverty decreases. The results of research that state this are [12-15], while [16] stated a positive relationship.

Unemployment according to BPS is part of the labor force who do not have a job, are looking for work, work less than two days a week, are trying to get a decent job, or are preparing to start their own business. While the International Labor Organization (ILO, 2019) defines “unemployment based on three important conditions that must be met simultaneously and these conditions are; not working, ready to work and looking for work”. [17], unemployment occurs due to a shortage of

Table 1. District/city poverty rate in West Sumatra Province period 2016 – 2020 (%)

Kabupaten/Kota	Tahun					Average
	2016	2017	2018	2019	2020	
Mentawai Islands Regency	15,12	14,67	14,44	14,43	14,35	14,60
South Pesisir Regency	7,92	7,79	7,59	7,88	7,61	7,76
Solok Regency	9,32	9,06	8,88	7,98	7,81	8,61
Sijunjung Regency	7,60	7,35	7,11	7,04	6,78	7,18
Tanah Datar Regency	5,68	5,56	5,32	4,66	4,40	5,12
Padang Pariaman Regency	8,91	8,46	8,74	7,10	6,95	8,03
Agam Regency	7,83	7,59	6,76	6,75	6,75	7,14
Lima Puluh Kota Regency	7,59	7,15	6,99	6,97	6,86	7,11
Pasaman Regency	7,65	7,41	7,31	7,21	7,16	7,35
South Solok Regency	7,35	7,21	7,07	7,33	7,15	7,22
Dharmasraya Regency	7,16	6,68	6,42	6,29	6,23	6,56
West Pasaman Regency	7,40	7,26	7,34	7,14	7,04	7,24
Padang City	4,68	4,74	4,70	4,48	4,40	4,60
Solok City	3,86	3,66	3,30	3,24	2,77	3,40
Sawahlunto City	2,21	2,01	2,39	2,17	2,16	2,19
Padang Panjang City	6,75	6,17	5,88	5,60	5,24	5,93
Bukittinggi City	5,48	5,35	5,82	4,60	4,54	5,16
Payakumbuh City	6,46	5,88	5,77	5,68	5,65	5,89
Pariaman City	5,23	5,20	5,03	4,76	4,10	4,86
West Sumatera	7,09	6,87	6,65	6,42	6,28	6,63

Source: BPS (2021)

aggregate spending. An increase in the unemployment rate will increase the poverty rate. Researchers discussing the positive relationship between unemployment and poverty are discussed by Nurdiana, Hasan, Arisah, Riesso, & Hasanah, [18], Badu, Canon, & Akib, [19], and Sinuraya, Linda Sari, & Lubis, [20]. While a negative and significant relationship was conveyed by Quy, [21] in Vietnam. And Lismana & Sumarsono, [22] and Rizki & Dinya Solihati STIA LAN Jakarta Polytechnic, [23] stated that the relationship was not significant.

Income inequality is proxied by the GINI index. The GINI index is the most popular indicator used to observe relative poverty or income inequality between groups of people. The GINI index number is not the most ideal indicator to describe inequality, but at least it can give an idea of the general trend in the pattern of income distribution. GINI coefficient values range between 0 and 1, where $G < 0.3$ = low inequality, $0.3 \leq G \leq 0.5$ = moderate inequality, and $G > 0.5$ = high inequality. The World Bank version of the inequality criteria is based on the portion of national income enjoyed by three layers of the population, namely 40% of the low-income population, 40% of the middle-income population, and 20% of the high-income population. The relationship between income inequality and poverty was put forward by Pasha & Pratama, [24] which stated that the relationship was not significant, Sehwat & Giri, [25] stated that income inequality could exacerbate poverty in India, [26] in his research results stated income inequality and poverty has a positive and significant relationship in Sub-Saharan African (SSA) countries, [27] states that income inequality has a positive relationship with poverty in 15 developing countries, [28] in his research stated that income inequality exacerbated poverty in Nigeria.

The Labor Force Participation Rate (LFPR), based on the Central Bureau of Statistics, namely the proportion of the population that belongs to the labor force, namely those who are employed and unemployed to the population of working age (15 years and over). The Labor Force Participation Rate identifies the size of the economically active working age population in a country or region. In general, LFPR can be formulated:

$$LFPR = \frac{\text{Number of labor force}}{\text{Total working age population (work force)}} \times 100\%$$

Thus the Labor Force Participation Rate shows a measure of the proportion of the working-age population who are actively involved in the labor market, both working and looking for work. The relationship between Labor Force Participation Rate and poverty was stated by Alfionika, Yulmardi, & Hardiani, [29] with an insignificant relationship, Deby Alsyah, Triwahyuningtyas, & Murtatik, [30] and Saifuloh, Ahmad, & Suharno, [31] states that it has a significant relationship. Meanwhile [27] state a negative relationship.

3. METHODOLOGY

The data used in this study are poverty data, education level, HDI, unemployment rate, income inequality (the GINI index), and Labor Force Participation Rate (LFPR) from 19 districts/cities in West Sumatra Province for a period of 9 years from 2011 – 2019.

The data collection technique is from literature sources and archives related to the factors that influence poverty in districts/cities in West Sumatra Province, namely data from Regional Statistics publications for each district/city in West Sumatra Province in 2011 – 2019.

The data analysis used in this study is panel data regression estimation to measure the effect of education level, HDI, unemployment, income inequality, LFPR on poverty which is carried out through econometric models with the help of the EViews 9 program with the stages of analysis are Descriptive Statistics, Classical Assumption Test panel regression model and selection of the best model through the Chow test, Hausman test and Lagrange Multiplier test.

“The F test is a test to see the effect of all independent variables on the dependent variable. This F test shows whether all the independent or independent variables included in the model have a joint effect on the dependent or dependent variable [32] and the t-test or partial test is used to find out how far the independent variables partially influenced individual to the dependent variable”. This t-test aims to test the regression coefficients individually.

The Multiple Linear Regression equation is as follows:

$$Poverty = f(\text{Education, HDI, Unemployment, Gini, LFPR})$$

$$Poverty = \beta_0 + \beta_1 Education_{it} + \beta_2 HDI_{it} + \beta_3 Unemployment_{it} + \beta_4 Gini_{it} + \beta_5 LFPR_{it}$$

The coefficient R^2 shows the ability of the model to explain the relationship between the independent variables and the dependent variable. The value of R^2 will always be between 0 and 1. The closer to 1, the greater the ability of the independent variable to explain its effect on the dependent variable.

4. RESULTS AND DISCUSSION

Administratively, West Sumatra Province consists of 19 regencies/cities (12 regencies and 7 cities) which have 179 sub-districts with 259 sub-districts and 760 Nagari, with the following boundaries: to the north by North Sumatra Province, to the east by Riau Province and Jambi, to the south with Bengkulu Province, and the west by the Indian Ocean.

The data in this study is secondary data obtained from the BPS of each district and city in West Sumatra and BPS of West Sumatra from education level, Human Development Index, unemployment, Income Inequality (GINI Ratio) and Labor Force Participation Rate. Based on data from 19 regencies/cities in West Sumatra province from 2011 to 2019. Descriptive statistics for each variable are shown in Table 2 as follows.

Table 2 illustrates: (1) The average district/city poverty rate in West Sumatra Province is 7.23%, the lowest is 2.01% and this requires systematic, integrated and comprehensive handling steps. (2) The average level of education in districts/cities in West Sumatra Province is 99.9 and the lowest level of education is 91.22. The education development strategy through the smart Indonesia program is as stated in the 2015-2019 National Medium-Term Development Plan (RPJMN) as outlined in Book I of the National Development Agenda. (3) The Human Development Index (HDI) is an indicator to measure the success rate of human quality development, the average HDI level is 77.14 and the lowest is 55.9. To increase HDI, the government must improve 3 sectors, namely the health sector, the education sector, and increasing people's income. (4) The average district/city unemployment rate in West Sumatra Province is 5.94% and the lowest is 0.4%. The unemployment rate has an impact on poverty. (5) The average level of income inequality as measured by the district/city GINI ratio in West Sumatra Province is 0.308 and the lowest is 0.230. To overcome existing inequality, the government has prepared several strategies,

including building infrastructure based on priority scales and providing social assistance. (6) The average district/city Labor Force Participation Rate (LFPR) in West Sumatra Province is 67.01%, where the lowest LFPR is 55.1.

The best panel data regression model based on the Chow test, Hausman test, and Lagrange Multiplier test is the Random Effect Model. The Random Effect Model is shown in Table 3.

Based on Table 3, the results of the F-test in this study have a prob value (F-statistic) of $0,000 < 0,05$. This result means that the independent variables (education level, HDI, unemployment, income inequality, and LFPR) simultaneously have a significant influence on poverty. Table 3 also describes the estimation results for the Poverty model as follows:

$$Poverty = \beta_0 + \beta_1 Education_{it} + \beta_2 HDI_{it} + \beta_3 Unemployment_{it} + \beta_4 Gini_{it} + \beta_5 LFPR_{it}$$

$$Poverty = 49,494 - 0,279 Education_{it} - 0,294 HDI_{it} + 0,098 Unemployment_{it} + 3,026 Gini_{it} + 0,067 LFPR_{it}$$

From the multiple regression equation above, it can be explained as follows:

- A constant of 49,494 means that if Education, HDI, Unemployment, GINI, and LFPR are 0 or do not experience any changes then the Poverty is 49,49 and the relationship that occurs is significant and positive at the significance level $\alpha = 5\%$.
- The regression coefficient of the Education variable is -0,279, meaning that every increase in Education by 1 unit will decrease Poverty by 0.279 units, assuming the other independent variables do not change and the form of the relationship that occurs is significant and negative at the significance level $\alpha = 5\%$.
- The regression coefficient of the HDI variable is -0,294, meaning that every increase in HDI by 1 unit will decrease Poverty by 0,294 units, assuming the other independent variables do not change and the relationship that occurs is significant and negative at the significance level $\alpha = 5\%$.
- The regression coefficient of the Unemployment variable is 0,098, meaning that for every increase in Unemployment by 1 unit, it will increase by 0,098 units, assuming the other independent variables

have a fixed value and the form of relationship that occurs is significant and positive at the significance level $\alpha = 5\%$.

- e. The regression coefficient of the GINI variable is 3,026, meaning that every

increase of GINI by 1 unit will increase Poverty by 3,026 units, assuming the other independent variables have a fixed value and the form of the relationship that occurs is significant and positive at the significance level $\alpha = 5\%$.

Table 2. Descriptive statistics of research variables

	Poverty	Education	HDI	Unemployment	GINI	LFPR
Mean	7,323199	98,89930	70,13871	5,945380	0,308601	67,01480
Median	7,210000	99,48000	68,94000	5,750000	0,303000	67,18000
Maximum	18,17000	100,0000	82,68000	16,90000	0,448000	82,77000
Minimum	2,010000	91,22000	55,90000	0,400000	0,230000	55,09000
Std. Dev	2,787863	1,452615	5,791720	2,783852	0.037132	4,822749
Skewness	1,184621	-2,542990	0,041177	1,209015	0,712308	0,240058
Kurtosis	6,100658	10,93213	2,616678	4,956324	3,960549	3,473470
Jarque-Bera	108,4951	632,5989	1,095242	68,92776	21,03432	3,239637
Probability	0,000000	0,000000	0,578324	0,000000	0,000027	0,197935
Sum	1252,267	16911,78	11993,72	1016,660	52,77070	11459,53
Sum Sq. Dev	1321,271	358,7153	5702,484	1317,471	0,234394	3954,014

Source: Processed Data, 2022

Table 3. Estimation results of the random effect model

Dependent Variable: Poverty				
Method: Panel EGLS (Cross-section random effects)				
Sample: 2011 2019				
Periods included: 9				
Cross-sections included: 19				
Total panel (balanced) observations: 171				
Swamy and Arora estimator of component variances				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	49.49389	3.348735	14.77988	0.0000
Education	-0.278745	0.041859	-6.659199	0.0000
HDI	-0.293942	0.034652	-8.482744	0.0000
Unemployment	0.098306	0.025314	3.883463	0.0001
GINI	3.025877	1.411807	2.143265	0.0336
LFPR	0.067082	0.015652	4.285928	0.0000
Effects Specification				
			S.D.	Rho
Cross-section random			1.592214	0.9098
Idiosyncratic random			0.501377	0.0902
Weighted Statistics				
R-squared	0.711923	Mean dependent var		0.764475
Adjusted R-squared	0.703193	S.D. dependent var		0.930951
S.E. of regression	0.507182	Sum squared resid		42.44348
F-statistic	81.55272	Durbin-Watson stat		1.185796
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.591478	Mean dependent var		7.323199
Sum squared resid	539.7683	Durbin-Watson stat		0.093242

Source: Processed Data, 2022

- f. The regression coefficient of the LFPR variable is 0,067, meaning that every increase in the LFPR by 1 unit will increase Poverty by 0,067 units, assuming the other independent variables have a fixed value and the form of the relationship that occurs is significant and positive at the significance level $\alpha = 5\%$.

From the multiple regression equation above, it can be concluded that the most dominant variable influencing poverty is income inequality (GINI) with a regression coefficient of 3,26 followed by the HDI variable with a regression coefficient of -0,294 and then the education variable with a regression coefficient of -0,279. Increasing income inequality, education level, and HDI will reduce poverty.

Based on Table 3 above, it is also known that the coefficient of determination for the regression model between education levels, HDI, unemployment, income inequality, and LFPR for poverty is 0,703. This value means that 70,3 percent of the education level, HDI, unemployment, income inequality, and LFPR can explain poverty. While the remaining 29,7 percent of poverty is influenced by other variables that are not included in this research model.

5. CONCLUSIONS AND RECOMMENDATIONS

Simultaneously, the relationship between the variables of Education, Human Development Index (HDI), Unemployment, Income Inequality and Labor Force Participation Rate (LFPR) with Poverty Level is significant and positive, while partially all variables are significant, where Education and HDI have a negative effect meaning that these two variables can reduce poverty. Meanwhile the variables Unemployment, Income Inequality and Labor Force Participation Rate (LFPR) has a positive effect, which means that an increase in these variables can increase the level of poverty in the research object area. The large variation of the education, HDI, unemployment, income inequality, and labor force participation rates can explain the poverty rate of 70,3 percent.

As a result, this study provides several recommendations to policymakers including education and the Human Development Index can reduce poverty so it is suggested that residents should have access to higher levels of

education and better health. Besides that, income inequality is proxied to make the biggest contribution to increasing poverty and it is recommended that local governments make programs that are pro-poor to the poor to reduce poverty, for example providing labor-intensive jobs.

Based on the results of the research above, there are still other variables that are not discussed that affect the poverty rate (29.7 percent), it is hoped that this research will be continued by further researchers.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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