Determinants of Poverty in Indonesia: An Empirical Evidence using Panel Data Regression

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Abstract

This study aims to analyze the effect of the rate of economic growth, average length of schooling, dependency ratio, and life expectancy on the percentage of poor people in Indonesia. This study uses panel data consisting of 34 provinces in Indonesia during the period 2016 to 2020. The analysis model used in this study is a panel data regression model. The results found in this study are variables that have a significant effect on the percentage of poor people in Indonesia are the average length of schooling, dependency ratio, and life expectancy. Meanwhile, the variable rate of economic growth has not had a statistically significant effect on the percentage of poor people in Indonesia. The variables of average length of school and life expectancy have a negative and significant effect on the percentage of poor people so that aspects of the quality of human resources represented by the level of education and health have an important role in poverty alleviation. Meanwhile, the dependency ratio has a positive and significant effect on the percentage of the poor, so various policies are needed to control population growth so that the productive population does not have too high a burden to bear the needs of the non-productive population.

Keywords: economic growth, average length of schooling, dependency ratio, life expectancy and poor people

1. Introduction

Equitable economic development for the sake of equality of welfare is the goal of many regions. This is inseparable from the comprehensive impact of economic development on various social and economic sectors in various circles of society. Good economic development is development that aims to find concrete solutions to macro-problems experienced by people in the region such as poverty (Solikatun et al., 2014). Economic development is closely related to economic growth where economic development will accelerate the rate of economic growth in a region with the aim of reducing inequality as an indicator to be able to state that the perceived welfare is evenly distributed (Firdaus & Witomo, 2014).

Each region in Indonesia focuses on equalizing welfare so that the issue of poverty is one of the issues that continues to be resolved. The resulting policies focus on economic development that focuses on improving the quality of human resources such as education and health as well as providing various assistance, both consumptive and productive (Ali et al., 2016). However, these various policies have not been able to reduce the poverty level significantly. This is inseparable from the existence of poverty alleviation programs that are not in accordance with the characteristics of the poor in the region.

Various policies have been implemented by the government in order to increase economic growth but can provide more equitable welfare (Maulana et al., 2020). One of the policies that are expected to be able to realize this is the improvement of the quality of human resources in the form of compulsory education policies to policies for providing social assistance, both consumptive and productive. Based on the regulation of the Minister of Finance of the Republic of Indonesia Number 81 of 2012 concerning Social Assistance Expenditures, social assistance expenditures are expenditures that are spent in the form of transfers of money, goods, or services provided by the central or regional government to the community which are intended as protection to the community from all social risks. that occurs, to improve the people's economy, and can provide more equitable welfare. Equitable welfare is based on low levels of poverty and unemployment (Fajriawati, 2016).

The characteristics of poverty in each region are different, so the steps that must be taken as a basis for policy making are also different. Indonesia as a very diverse country due to the many tribes and races and cultures makes its

economic and social characteristics also vary. So that the type of assistance provided to each region also needs to be considered, both consumptive and productive assistance. Some of these productive assistances include improving the quality of human resources and socializing that increasing the population must be accompanied by an increase in quality of population so that although the population continues to increase, the increase that occurs is able to affect poverty alleviation in Indonesia.

Kuncoro (2004) states that the cause of poverty will lead to the vicious cycle of poverty theory. The existence of backwardness, market imperfections and lack of capital cause the low income they receive. Low income will result in low savings so that it will have an impact on the lower investment value that can be developed. If this continues without breaking the chain of poverty, it will continue, and the cycle continues. So, one way is to improve the quality of human resources that act as a driving force for the economy of a region. Figure 1 shows that the average length of schooling in Indonesia tends to increase every year.
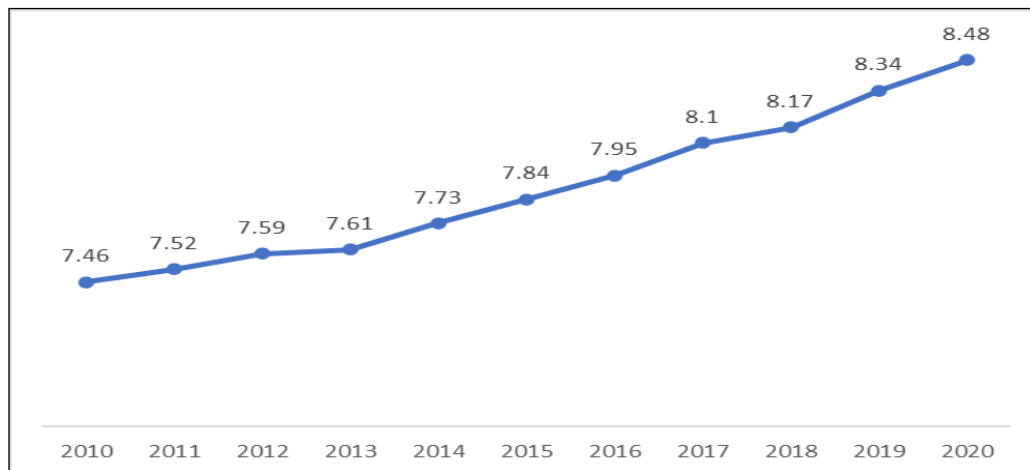

Figure 1: Average Length of Schooling in Indonesia for the 2012-2020 Period (Years)

Source: BPS - Statistics Indonesia

Figure 1, the average length of schooling in Indonesia in 2010 was 7.46 years or it can be said that the average population in Indonesia had the last education up to grade 7 to grade 8 (Grade 1 to grade 2 SMP). This value continues to increase until it reaches 8.48 years in 2020 as well as being the highest point during the 2010 to 2020 period. This value shows that in 2020, the average Indonesian population has a final education of grade 8 to grade 9 (Grade 2 to grade 3 SMP). This growth tends to be very slow coupled with the government's program to be able to receive education for 12 years has not been achieved. This is one of the obstacles for Indonesia to be able to accelerate poverty alleviation in Indonesia.

In addition, another issue that becomes an important issue is how the ratio of dependence in Indonesia to the percentage of the poor population is. A good dependency ratio is a condition where the productive population is greater than the non-productive population, so the expectation is that the productive population is able to bear all the needs of the non-productive population. This is certainly one of the focuses of poverty alleviation where the culture in Indonesia still bears the costs of family members even though the family members are adults. This culture is different from the culture offered in some countries where residents aged over 17 years can determine the direction of their own life without influence or obligation to bear the costs of other family members. Figure 2 shows the dependency ratio in Indonesia which tends to decrease.
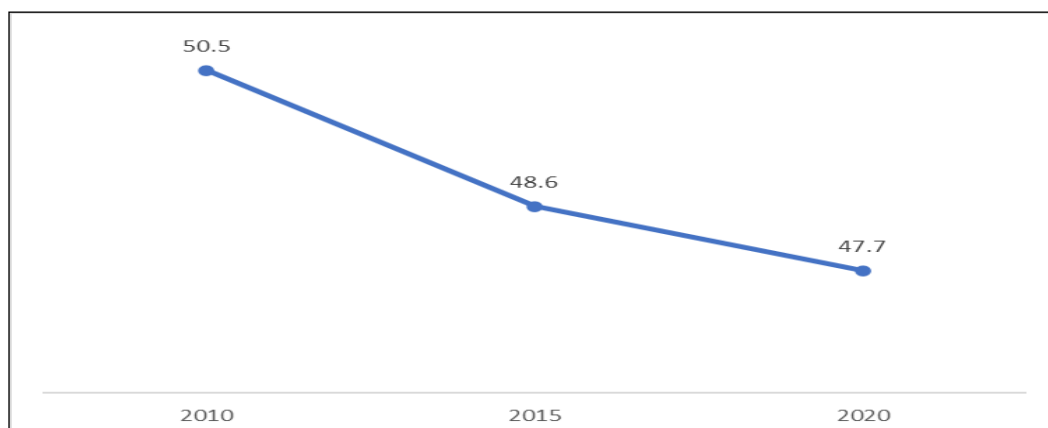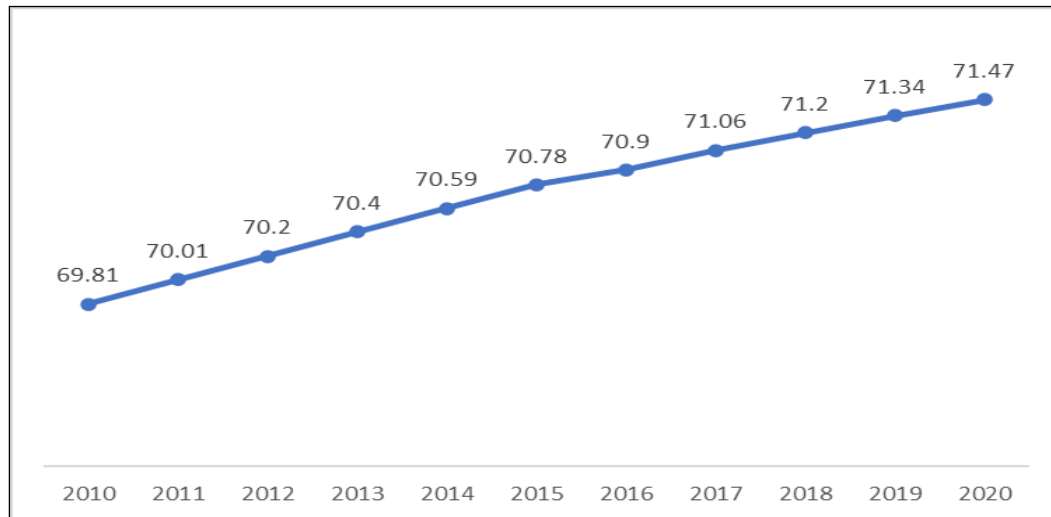

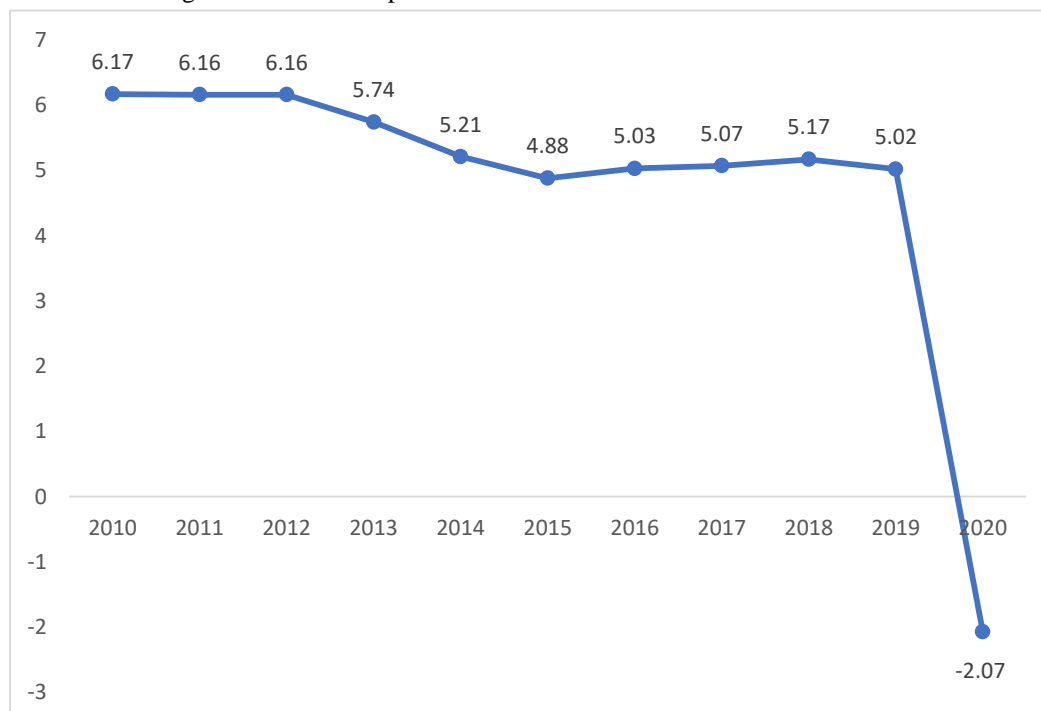**Figure 2:** Indonesia's Dependency Ratio Period 2010 - 2020

Source: BPS - Statistics Indonesia

From Figure 2, it appears that in 2010, the dependency ratio of the Indonesian population was 50.5 percent, which means that for every 100 productive population there are 50 to 51 non-productive people. This value continues to decline to 47.7 percent in 2020. The dependency ratio is an early indicator to be able to see the increasing number of dependents of each resident. Therefore, with the lower the value of responsibility, in general it can be said that the opportunities for the poor to get out of poverty are getting bigger. Various government programs have been issued to be able to create a lower dependency value, but the decline that occurs is still slow because the poor tend to have a large number of children so that the ability of the family to get out of the poverty circle is getting smaller. Figure 3 shows Indonesia's life expectancy which tends to continue to increase.

Figure 3: Indonesia's Life Expectancy for the Period 2010 – 2020
Source: BPS - Statistics Indonesia

From Figure 2, it appears that in 2010, the life expectancy of the population in Indonesia was 69.81 years. This value continues to increase to reach 71.47 percent in 2020. This increase is the result of various policies carried out, even the focus of Indonesia's development on the quality of human resources shows good results. However, the increase occurred very slowly where the average growth that occurred during that period was only 0.17 years, so proper research is needed so that an estimator is obtained from the life expectancy of the percentage of the poor. Figure 4, is a graph of Indonesia's economic growth rate for the period 2010 – 2020.

Figure 4. Indonesia's Economic Growth Rate for the Period 2010 - 2020
Source: BPS - Statistics Indonesia

Furthermore, the movement of the percentage of poor people cannot be separated from the level of the economy in a region. Figure 4 shows Indonesia's economic growth rate which tends to slow down. In 2010, Indonesia's economic growth rate was 6.17 percent and continued to slow down to only 5.02 percent. However, in 2020, there was a COVID-19 pandemic in Indonesia which made the level of the Indonesian economy very low and even decreased to 2.07 percent. In general, the level of the economy describes a drastic decline in the level of production so that the income per capita of the Indonesian population generally declines. This declining per capita income has led to an increase in the percentage of poor people in Indonesia. Based on the background above, the researcher is interested in conducting a study to study further about the factors that influence the poverty rate in Indonesia.

2. Literature Review

Poverty is one of several macro problems experienced by every region, both poor, developing and even developed regions. The Central Statistics Agency (BPS) states that poverty is an individual's inability to meet minimum standard needs which include both food and non-food needs (Aceh Province Central Statistics Agency, 2020). The high or low level of poverty in an area depends on two main factors, namely the high income in the region and the level of inequality in the distribution of income between the poor and the rich.

Hudiyanto (2014) states that poverty can be classified into absolute poverty and relative poverty. Absolute poverty is a condition where a person has income below the poverty line, or poverty that occurs in people who cannot fulfill their needs such as clothing, food, housing, education, health. While relative poverty is poverty that occurs because of comparing one income group with another group. Relative poverty is the level of poverty caused by social or environmental comparisons. The relative poor or non-poor is measured by comparing low-income poverty. Based on this measure, the poverty line will change if the people's standard of living changes. This relative poverty is then measured or can be calculated by the level of inequality (Wibowo, 2016).

In addition to absolute and relative poverty, Hudiyanto (2014) says that there is also cultural poverty, namely poverty that occurs due to cultural, habit, and mental factors of the population or because it refers to the problem of an individual's attitude such as not wanting to try to improve his level of life, even if he is lazy, wasteful, or in other words poor because of his own attitude so that there is no effort to improve to a better condition. Furthermore, structural poverty is a poor condition caused by low access to resources that occurs in a socio-cultural and political system that can even maintain the preservation of poverty so that the poverty rate is always high (Widiastuti, 2010).

The factors that cause it can be in the form of natural factors and human factors in the form of unfair economic policies due to uneven control of production factors, uneven land tenure, corruption and so on. Natural poverty, poverty that occurs due to scarcity of natural resources and public infrastructure and barren land conditions. This is related to the limitations possessed by the region. Next is artificial poverty, namely poverty that occurs more often due to the modernization or development system that makes the community unable to control the existing economic resources, facilities, and facilities evenly as a result of the inequality of access and economic development that occurs between regions.

Todaro and Smith (2003) stated that one of the most fundamental goals in development is the improvement of the quality of education. Education has a very important role to be able to shape the ability of a region to adapt to technological developments. In addition, increased education can be accompanied by capacity development so as to create sustainable development in an area.

The education sector can be seen from various indicators. One of the indicators used to explain the improvement in the quality of human resources in an area based on the education sector is the indicator of the average length of schooling. The average length of schooling is an indicator that can be used to see progress in the general level of education in a region. This indicator describes the length of time the population aged 15 years in an area undergoes formal education. The calculation of the average length of schooling is calculated by the Central Statistics Agency as the agency authorized to provide basic statistical data in Indonesia.

In addition, the average length of schooling is also considered as an evaluation material for the government which is focusing on human resource development in Indonesia from the education sector. Every increase in the number of quality human resources will increase labor productivity in general so that the increase is able to increase the economy and per capita income in Indonesia. This increase will affect a person's level of consumption so that later it is hoped that the increasing level of consumption can reduce the percentage of poor people in Indonesia.

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3. Materials and Methods

3.1. Materials

This study aims to analyze the factors that influence the level of poverty in Indonesia. The variables used are the percentage of poor people as the dependent variable and variables such as the average length of schooling, life expectancy, dependency ratio, and the rate of economic growth as independent variables. The data structure used in this study is panel data consisting of 34 provinces in Indonesia as well as annual data from each variable during the 2016-2020 period obtained from the Central Statistics Agency.

3.2. Methods

The analytical method used in this study to answer the hypothesis that sees the effect of the independent variable on the dependent variable is panel data regression (Sani and Maharani, 2013). This method is one of the most effective methods to see the magnitude of the effect generated by the estimator or called the parameter. The resulting parameters can be very important information for formulating the right policy as well as being an evaluation material for the policies that have been carried out (Zulfikar, 2020). The equations proposed in this study based on the panel data regression model are as follows:

$$PPP = \alpha + \beta_1 ALS + \beta_2 LE + \beta_3 DR + \beta_4 EG + \varepsilon \tag{1}$$

where:
PPP : Percentage of poor people
ALS : Average length of school
LE : Life expectancy
DR : Dependency ratio
EG : Economic growth rate
α : Constant
β : Slope
ε : Error.

4. Results and Discussion

The linear regression analysis of panel data aims to be able to see how much influence the independent variable has on the dependent variable in a study. This study aims to examine the effect of each variable, namely the average length of schooling, life expectancy, dependency ratio, and the rate of economic growth on the percentage of poor people in Indonesia. Meanwhile, before analyzing the linear regression model of the panel data, a test was conducted to select the best model used among the common effects model, fixed effect model, and random effect model.

The first test is a test to choose the best model between the common effect model and the fixed effect model using the Chow test. The test results show that the fixed effect model is better to use when compared to the common effect model. This can be seen from the resulting probability value is lower (0.0344) than the alpha value of 5 percent. Then proceed with selecting the best model between the fixed effect model and the random effect model using the Hausman test. The results of the Hausman test show that the fixed effect model is better used in this study when compared to the random effect model. This is illustrated by the probability value of the Hausman test of 0.0021 which is smaller than the alpha value.

After selecting the fixed effects model as the best model, it is continued by testing the assumptions needed to ensure that the estimator formed is a best linear unbiased estimator (BLUE). The assumptions made in panel data regression using the fixed effect model are normality test and non-multicollinearity test. Meanwhile, the assumption of heteroscedasticity and autocorrelation can be accommodated by the fixed effect model formed (Melati and Suryowati, 2018). The normality test is a test to show that the model residuals are normally distributed or not, which can be seen using the Jarque-Bera test. The residuals are normally distributed if the resulting Jarque-Bera probability is greater than the 5 percent alpha value. The results of the normality test show that the Jarque-Bera probability obtained is 0.327682 and is greater than the alpha value, so it can be concluded that the data used is normally distributed.

Meanwhile, the non-multicollinearity test to see whether the independent variables have a relationship or not which can be seen through the correlation value is below 0.8. The normality and multicollinearity assumptions required in the panel data regression model have been met (attachment). The fulfillment of these assumptions causes the author to proceed to the next stage, namely the analysis of the best formed model.

The panel data regression model using a fixed effect model approach that is formed is as follows:

Table 1: Panel Data Linear Regression Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	16.97666	3.857218	4.401271	0.0000
EG	-0.006154	0.008435	-0.729586	0.4662
ALS	-1.812089	0.223483	-8.108396	0.0000
DR	1.199719	0.238627	5.027585	0.0000
LE	-3.675670	0.833910	-4.407754	0.0000
R-squared	0.478607	F-statistic		20.19470
Adjusted R-squared	0.454908	Prob(F-statistic)		0.000000

The equations that are formed based on the output or the results of the analysis that have been obtained from the panel data regression analysis above can be described as follows:

$$PPP = 16,977 - 0,006EG - 1,812ALS* + 1,200DR* - 3,676LE* \qquad (3)$$

where * Significant at the test level of 1 percent.

Statistically, the proposed model is fit. This can be seen from the Prob value (F-statistic) of 0.000000 which is smaller than the alpha value of 0.05. This situation explains that there is at least one independent variable that has a significant effect on the percentage of poor people in Indonesia. In addition, the independent variables that are used as well as represent the statistical model formed can explain the variation in the value of the percentage of poor people by 47.86 percent.

The rate of economic growth based on Table 1 concludes that the rate of economic growth in Indonesia has a negative but not statistically significant effect in Indonesia. Many factors cause this phenomenon to occur such as different natural resources so that economic development in each region in Indonesia is also different. In addition, the high level of inequality between the rich and the poor is also one of the causes of uneven economic growth in Indonesia. This causes economic growth has not been able to be felt evenly so that economic growth has not been able to play a significant role in alleviating the poor in Indonesia.

Furthermore, the variable average length of schooling has a negative and statistically significant effect on the percentage of the poor. An increase of 1 percent in the average length of schooling with the assumption of cateris

paribus can reduce the percentage of poor people by -1.812 percent. An increase in the average length of schooling means that in general the quality of human resources also increases so that it can influence increasing productivity so that it will increase per capita income in general. Pradipta and Dewi (2020) in their research say that an increased level of education can improve the welfare of the population in general and reduce the percentage of poor people.

The dependency ratio has a positive and statistically significant effect. Every 1 percent increase in the dependency ratio assuming cateris paribus can increase the percentage of poor people by 1.2 percent. This finding is in accordance with the theory that the dependency ratio and the percentage of poor people have a positive correlation. In addition, the success of the government program to control population growth is one of the factors for the significant influence given by this variable. Rohana et al. (2017) in his research said that the dependency ratio which has been successfully controlled by government policies causes this factor to tend to have a positive and statistically significant effect in controlling the percentage of poor people in Indonesia.

The last factor is life expectancy which has a negative and statistically significant effect on the percentage of poor people. Every 1 percent increase in life expectancy with the assumption of cateris paribus can reduce the percentage of poor people by 3.676 percent. This finding is in accordance with research conducted by Anggadini (2015) which states that an increased life expectancy has an impact on a person's ability to produce in a longer span. The increase in production capacity will have an impact on increasing the amount of output both goods and services that can be offered to consumers so as to increase per capita income. The increase in per capita increase in general tends to be able to reduce the percentage of poor people as a result of the increasing level of public consumption.

5. Conclussion

In conclusion, this study has found several statistically significant variables that effect on the percentage of poor people in Indonesia. The economic growth rate factor has a negative but not statistically significant effect on the poor. Economic development has not been evenly distributed where the dominance of the Indonesian economy is still centered at a few points, causing this economic growth to not be felt optimally in other areas. This causes residents in other areas not to feel an even increase in income so that it does not have a significant effect on the percentage of poor people. Also, the factor of the average length of schooling has a negative and statistically significant effect on the percentage of poor people in Indonesia. These results illustrate that improving the quality of human resources in Indonesia tends to be successful so that by increasing the average length of schooling, it is able to increase the power of creativity and innovation in various ways so as to increase productivity and increase the income per capita of the poor in Indonesia. Next, the dependency ratio factor has a positive and statistically significant effect on the percentage of poor people in Indonesia. This shows that government programs in controlling population growth tend to be successful, so the dependency ratio is not statistically significant. Further, the last factor is life expectancy which has a negative and significant impact on the percentage of poor people in Indonesia. These results indicate that every resident in Indonesia has the opportunity to produce longer so that it can increase per capita income. The increased income per capita will increase the level of consumption per capita so that it can reduce the percentage of poor people in Indonesia.

Based on the conclusions that have been described previously, the suggestions that can be given in this study are as follows:
1) To accelerate programs for poverty alleviation in Indonesia, various factors can be considered, such as:
a. Improve and facilitate various access to health and health so that it can reach various areas. This is important so that every resident has the opportunity to improve their quality, especially in terms of health and education so that every resident has the same opportunity to compete. The increasing level of health in an area marked by an increase in life expectancy causes the level of production to continue to increase so that the pace of economic growth will be faster in the future.
b. Improve various programs related to education policies so as to improve the quality of education even better. The gap in access to education must be further suppressed so that each region has qualified human resources to be able to develop its territory. This is important to do in order to facilitate the poor to get better opportunities to increase their productivity so that the percentage of poor people can be reduced.
c. Increase and focus on quality population growth so that it can help improve the Indonesian economy in general and be able to increase people's income in particular. The dependency ratio has decreased due to the focus of the government and the community on building quality resources so that the available human resources will be able to survive in the labor market. This is important to do so that the increase in the quality of the population is able to create competitiveness in the labor market so that it can increase the income per capita of the community in general.
d. In addition to considering increasing economic growth, the government is also expected to consider increasing various types of MSMEs where the majority of MSME entrepreneurs employ middle and lower class residents so that any economic improvement in the industrial, agricultural and other sectors can also be directly felt by the poor.
2) The process of poverty alleviation in Indonesia is expected to be an evaluation material for the Central Government, Provincial Governments, and district/city governments throughout Indonesia in order to formulate

appropriate policies based on the characteristics of the poor population possessed by each region in order to achieve common goals in efforts to eradicate poverty in Indonesia.

In connection with further research, it can be carried out using a longer time span in order to be able to capture other phenomena that occur in the long term. Further research is also expected to be able to provide an explanation and elaboration regarding the effect of each poverty alleviation policy through other more specific variables that can evaluate the various poverty alleviation policies so that the best poverty alleviation policies can be formulated in Indonesia.

Acknowledgments

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