

Multidimensional Poverty and its Effect on the Economy of Aceh Province

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Abstrak

The first goal of Sustainable Development Goals, eliminating poverty in all forms, is closer to multidimensional poverty rather than official poverty statistics, which are measured using the basic need approach. Examining the trend of economic growth in Aceh during the past few years reveals the limitations of this strategy. Economic improvement has little effect on the poverty rate because it is only measured in one dimension. This research measures the poverty rate from various aspects by examining the forming factors first. The formed index will then be analyzed for its properness by involving other related variables and compared to the basic-need-based poverty measurement. Furthermore, every impact of each dimension on economic growth will also be assessed. Using the confirmatory factor analysis (CFA), multidimensional poverty is measured to give another perspective on the poverty rate. Multiple linear regression is employed to identify the relationship between the poverty dimension and the economy. The result shows that the new poverty rate measurement gives more proper poverty distribution across the region in Aceh Province. Concerning the human development index, multidimensional poverty is more relevant than basic need poverty. Asset ownership and education are the dimensions that significantly affect the economy. Our study concludes that multidimensional poverty should complement the monetary poverty produced by national statistical agencies and provide a new direction of poverty alleviation policy, such as increasing physical investment in households or creating vocational programs to improve the quality of the population.

Keywords: multidimensional poverty; confirmatory factor analysis; basic need approach; poverty rate.

I. Introduction

1.1. Background of the Study

Poverty is a severe and critical issue that must be overcome by the world as described in one of the goals on Sustainable Development Goals (SDGs) that was concurred by all the countries in the world on 25 September 2015. Eliminating poverty in all its forms has taken first place among seventeen agreed goals. It has given every country, including Indonesia, the message to focus on alleviating poverty in every aspect or dimension. Hence, poverty is expected to be eradicated in 2030 (Bappenas, 2017).

The discussion about poverty measurement is a complex matter. BPS-Statistics of Indonesia defines poverty as an incapability to fulfill basic needs. Hence, BPS uses the household expenditure approach, which comprises food and non-food expenditures, to measure the poverty rate used by the World Bank. Nevertheless, there are some weaknesses in this method. For example, it cannot consider the people that are not poor but have less expenditure in certain situations such as fasting or having an illness. Moreover, poverty caused by the prone to illness, less access to education or health facilities, or living in a slum area is not yet appropriately identified. Thus, this method cannot answer the challenge disclosed by the SDGs.

The complexity of poverty can be looked at in Aceh Province. At first glance, economic growth and poverty reduction have been appropriately run, as mentioned by the general knowledge that economic growth is the most prominent tool in fighting poverty. In the last seven years, Aceh's economy has grown by 2.4 percent per year, reducing the average poverty rate by 0.58 percent annually. However, the growth and poverty rate trend, as provided in Figure 1, indicates no relationship between economic growth and poverty alleviation. In 2013, the economy slowed down as it only grew by about 2.61 percent (reduced by 1.64 percent), while the poverty rate decreased significantly to approximately 1.86 percent. Since that, the economic growth and poverty rate are no longer in the same line until 2016. However, the causality between both of them occurred as the previous trend. The economy increased by 3.3 percent from minus 0.73 percent, whereas poverty decreased slightly to 0.35 percent.

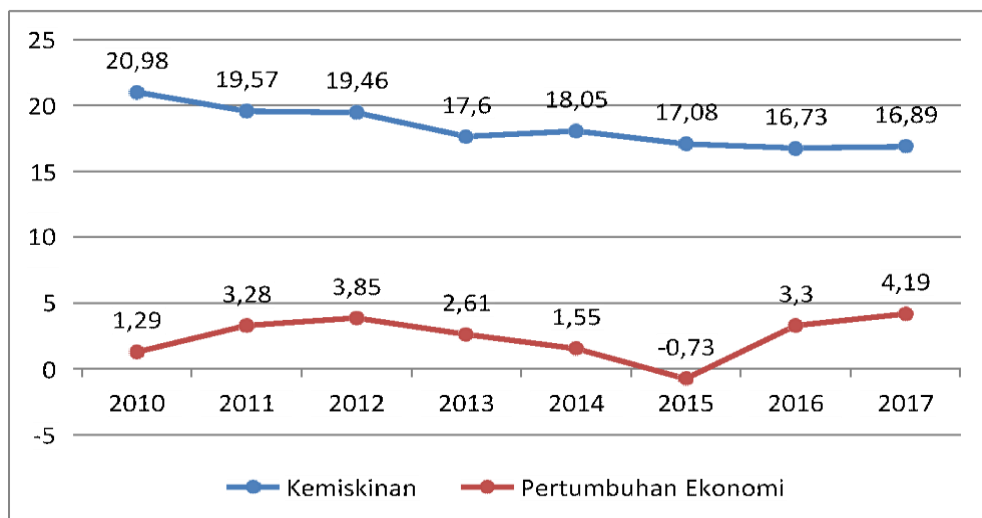


Figure 1. Economic Growth and The Percentage of Poor People in Aceh Province, 2010-2017

Source: BPS-Statistic of Aceh Province

High economic growth should reduce the number of poor people significantly. Research from various countries in the world revealed that the economy has been very effective in alleviating poverty. For example, the rapid economic growth in China from 1985 to 2001 was crucial in reducing poverty. Similarly, India's economy from 1980 to 1990 grew impressively and helped accelerate poverty alleviation. The poverty rate in Mozambique decreased by 15 percent, along with high economic growth. Last but not least, the study on 14 countries in 1990 unveiled that the poverty rate decreased in 11 countries with high economic growth, while in the rest of the countries with stagnant or low economic growth, the poverty level went up (DFID, 2007). Nonetheless, the causal relationship between economy and poverty is not found in poverty incidence in Aceh, which indicated the lack of an approach to poverty measurement as it only involved the expenditure approach. Another research that figured the demographic factors as the causes of Aceh's poverty strengthened this presumption (Dollar et al., 2016).

Multidimensional poverty has the capability to describe the issue in more comprehensive aspects. One dimension approach might not cover the real impact of the economy, which could be broader. Hence, proposing more approaches to measure the poor is expected to have a better understanding of poverty incidents. Moreover, the construction of multidimensional poverty in Indonesia is still under-researched, especially at the regency level. Considering poverty data is often problematic at the district level, the urgency of this research escalates as it is also helpful and more relevant to poverty from the SDGs standpoint. However, the limitation of the data is still the biggest problem.

Therefore, this study tried to use more proxies and select better indicators that best explain the issue. The first aim is to identify the contributing factors to poverty and then calculate the index. The analysis of the reasonableness will be performed on the result. Lastly, the poverty dimension that affected the economy the most will also be investigated.

This study aims to reveal the suitability of poverty to complement monetary poverty and address the economy. The calculated MPI is meant to assess its reasonability and effect on the economy. For these objectives, we based our study on the following research questions: 1) What are statistically reliable and robust dimensions of poverty? 2) Is the new multidimensional poverty index reasonable and fair to complement the official poverty measure? 3) What dimensions have the most impact on the economy?

1.2. Literature Review

There is some research conducted to construct the multidimensional poverty index (MPI). The method developed by Alkire and Foster (Alkire et al., 2015; Alkire & Foster, 2011; Alkire & Santos, 2010) is the most popular method adopted by most MPI research. They measured poverty according to three fundamental dimensions: Living Standards, Health, and Education. Then, they calculated it in 104 countries worldwide. The difference in the research is in the dimension and indicators employed to construct the index.

In some research, the three main dimensions used in the Alkire-Foster (AF) method were always employed. For example, Awan et al. (2011) used Housing, Water, Sanitation, Electricity, Assets, Education, Expenditure, and Land as dimensions where all dimensions are part of living standard dimensions in the Alkire-Foster method. Another study from Mideros M. (2012) employed education, housing, and health in addition to food, communication, information, and social security dimensions. Mohanty (2011) put wealth as a new dimension to complement education and health. Then, (Santos, 2013) developed the measure by using basic consumption and work as a proxy to the economic dimension, which also can be an extension of wealth. Lastly, Salazar et al. (2013) calculated MPI for Columbia with a similar dimension but with a slightly

different proxy. For instance, they looked at the education of all household members instead of only one or several members. Moreover, the children's education was also used as an indicator of the child and youth condition dimension. Hence, even though it is different, the foundation is still similar to the dimension proposed by Alkire and Foster.

According to the research, this study adopts the basic dimension from the AF method. Data limitations could hinder the additional dimension that would be applied. However, these dimensions are still an essential issue in countries worldwide, including Aceh. Hence, this study adopts the indicator and dimension as Alkire-Foster constructs it. Further details about the dimension are explained as follows.

The standard of life takes the viewpoint of fulfilling some basic facilities. The poor are the ones that do not have access to a source of safe drinking water, use non-improved sanitation, do not use electricity, cook with charcoal, wood, or dung, and the house floor is made from soil or sand, and do not own any assets.

The health dimension gives attention to the vulnerability of the health issue. It must be admitted that these are the most complex indicators to measure. The households are classified as poor when there is child mortality. The malnourished in the household is another criterion to define the poor in this aspect.

The last factor is education which describes educational achievement. The main indicators are the years of schooling and the child's attendance level at school. The households with at least one member who did not finish five years of schooling are poor. It also applies to the household members, including an aged-school child who did not go to school from years 1 to 8.

Some research that utilized the AF method revealed a different landscape of poverty than the one pictured by consumption-based poverty. Research on MPI in Germany conducted by Suppa (2016), MPI in Bhutan (Lehtro et al., 2017), and MPI in Indonesia by Artha & Dartanto (2018) found a significant difference in who is considered poor. In addition, MPI calculated in Nigeria (Joshua et al., 2017) and Rural Mozambique (Victor et al., 2014), still produced new knowledge and direction on the policy on poverty even though they were not compared to monetary poverty. Hanandita & Tampubolon (2016) even uncovered the unambiguous poverty reduction from 2003 to 2013 in Indonesia. Furthermore, Wardhana (2010), through her assessment of Indonesia's MPI over time, was capable of identifying the phenomenon of chronic poverty that occurred in Indonesia since it characterized the poverty pattern in the long run.

However, despite all the advantages of employing the AF method, there are also some substantial critiques. The most apparent one is from Catalán & Gordon (2020), who addressed the reliability and construct validity in the MPI of the Alkire-Foster version. Using MPI for Latin America (MPI LA) created by Santos & Villatoro (2018) as a study case, they argued that MPI LA is statistically unreliable and its pre-specified dimensional structure is invalid. Considering that, this study employs an adjustment on the AF method using a statistical approach while keeping the indicator and dimension as they are first proposed. Hence, it is expected that this study could complement the setback of the AF method.

Furthermore, we improve the MPI analysis by running a multiple linear regression on the score factor of dimensions produced by factor analysis since the research conducted to identify the effect of MPI's dimension on the economy is limited. So, after employing the factor analysis based on dimension and approach from Alkire-Foster, multiple linear regression is implemented to check the effect of its dimension on the economy. It is crucial to find out whether this different approach to poverty could improve the economy in Aceh. For this reason, we did the regression on each dimension's score using the way DiStefano et al. (2009) and Tahtali (2019) suggested.

II. Method

2.1. Data Source

The data used to construct this index is mainly from the Socioeconomic Survey conducted by BPS-Statistics of Aceh Province (BPS) in March 2017. Data from The Report of Nutritional Status Monitoring Survey in Aceh Province 2017 is used to support the health dimension (Dinas Kesehatan Aceh, 2017). Some adjustment is made to reconcile the variables, the available data, and the condition of the domestic level. Further explanations about the variables used, the adjusted concept, and the definition are available in Table 1.

Tabel 1. Definisi Variabel Rancangan Peta

Dimension	Variables	Definition
Standards of Life	Asset Ownership	Households without any asset ownership
	Electricity	Households without electricity
	Solid Fuel	Households that cook using coal, wood, or other solid fuel
	Water	Households that drink from a safe source of water
	Floor	Households with dirt floor house (not ceramic, cement, or tiles)
	Sanitation	Households with not proper sanitation facility
Education	Years of School	One of the household members went to school for less than five years
Health	Underweight	The baby with a weight below the average of its age group
	Wasting	The baby with weight per height below the average of its age group
	Lack of Food	Households that reduce their eating volume due to a lack of money

According to the Alkire-Foster method, the complete data only existed on the Life Standards dimension. On the education aspect, the available indicator is only one due to the dropout rate for children aged 7-12, which can be the best proxy is not available. The percentage of children who did not finish primary school was tried to be the replacement, but it is insufficient and potentially overlaps the other indicators. Other alternative variables, except the dropout rate, may have a similar reason. Hence, the education dimension is only represented by one variable.

The underweight and wasting variables were meant to be the best proxy of the indicators as the child mortality data is challenging to collect. The death risk of wasting children is almost twelve times greater than ordinary children (Bappenas, 2019), while the underweight indicated malnutrition in the baby. The lack of food variables is proposed as a proxy for nutrition indicators to represent people above five years old.

2.2. Analysis Method

The multidimensional poverty index (MPI) measurement technique refers to the composite index method introduced by Alkire & Foster (2011). We constructed the index by using confirmatory factor analysis (CFA). CFA functions as a means to test how well-measured variables represent the construct. In CFA, we need to define the factors according to the theory.

Principally, CFA explains how well the factors constructed from the theory match the actual data (Hair et al., 2010).

The composite index has two main steps: standardizing and aggregating (Rahadiana, 2013). First, standardizing means that all the variables have the same standard to prevent bias and unclarity. Then, the forming variables are transformed into a percentage. Moreover, the direction of the relationship for each variable is converted in one direction.

The aggregating process has two procedures: the aggregation in forming the index and the aggregation to get the composite index. In the first aggregation, three steps need to be done. Firstly, we need to ensure that the variables in each dimension must be correlated, not mutually independent. Bartlett's test will examine this assumption. If the Bartlett test shows the conclusion that cannot reject the null hypothesis, then the variables are correlated. The next step is to ensure the properness and accuracy of the group of variables. For this reason, we use Kaiser-Meyer-Olkin (KMO) statistics. The value of KMO must be above 0.5 to conclude that it is appropriate and sufficient to use the factor analysis. The last thing to count is the eigenvalue, which shows the variance that each factor can explain. This value is used as weighting in this first aggregation. Eventually, the index from each dimension will be standardized using the maximum-minimum method to ease the interpretation.

The second aggregation was implemented to get the composite index of the multidimensional poverty index. The aggregation in this step used equal weighting, meaning each dimension gets the same weight. Therefore, the MPI will be counted using the following formula.

$$MPI = (Standard\ of\ Life + Education + Health)/3 \quad (1)$$

After computing the MPI, we investigated the poverty dimension that affects the economy. This technique enables us to see the impact of the independent variables on the dependent variable. As we needed to find the best model, we used the backward elimination method. This method involves all the variables first and investigates the appropriateness of maintaining their position in the model. The independent variables not excluded until the end of the selection mechanism are the best variables to explain the dependent variable.

To provide an unbiased estimation of the regression, (Asra et al., 2017) revealed that the model needs to fulfill three assumptions: normality, homoscedasticity, and no multicollinearity. Normality means the error has a normal distribution, while homoscedasticity ensures the residual is constant. Moreover, the last assumption explains that there is no correlation between the independent variables. Lastly, there is a mandatory requirement for the model to be used. It is that the number of observations must be at least five observations for each independent variable.

III. Results, Analysis, and Discussion

3.1. Multidimensional Poverty Index

Factor analysis demonstrated that all variables fulfill all the requirements needed in factor analysis. The correlation is not too strong, but it is sufficient. It was shown by the significance of the Bartlett test that the entire variable matrix is not equal to the identity matrix. Kaiser-Meier-Olkin (KMO) value is 0.661, which means that the variables are sufficient for implementing factor analysis.

The living standards dimension generated two general factors: accessibility and asset.

Access to power, solid fuel, potable water, and sanitation were variables that may explain 54.87 percent of the variance in the standard living dimension. The factors for the second element, asset, were asset ownership and floor. This factor can account for 18.63% of the variance.

The next dimension is education, which is only reflected by one variable: years of school. This is the only variable that represents the education dimension.

The last dimension is health. Factor analysis informed that only the lack of food variable is sufficient to represent the dimension. The KMO value of the variable is 0.54, which represents its sufficiency in factor analysis. Our analysis shows the score for each dimension and the value of the Multidimensional Poverty Index in Table 2.

Table 2. The Score of the Multidimensional Poverty Index with its Components

Districts/ Municipalities	Living Standard	Education	Health	MPI	Rank
Simeulue	87,92	49,97	90,93	76,27	3
Aceh Singkil	92,08	87,42	24,61	68,04	7
Aceh Selatan	95,00	60,63	30,89	62,17	9
Aceh Tenggara	97,50	32,54	42,61	57,55	11
Aceh Timur	74,17	57,69	77,12	69,66	5
Aceh Tengah	37,50	30,83	19,04	29,12	18
Aceh Barat	81,67	23,24	17,79	40,90	16
Aceh Besar	37,92	27,07	54,59	39,86	17
Pidie	100,00	41,42	81,67	74,36	4
Bireuen	72,92	32,06	52,88	52,62	12
Aceh Utara	98,75	52,36	100,00	83,70	2
Aceh Barat Daya	87,08	41,83	76,86	68,59	6
Gayo Lues	66,25	84,01	31,31	60,52	10
Aceh Tamiang	29,58	48,39	56,29	44,75	14
Nagan Raya	62,08	62,68	0,00	41,59	15
Aceh Jaya	40,00	51,88	47,06	46,31	13
Bener Meriah	28,75	28,02	27,00	27,93	19
Pidie Jaya	62,92	48,80	83,75	65,16	8
Banda Aceh	0,00	0,00	58,69	19,56	23
Sabang	5,83	21,87	52,21	26,64	20
Langsa	13,75	19,69	30,86	21,43	22
Lhokseumawe	11,25	19,69	48,08	26,34	21
Subulussalam	77,92	100,00	75,57	84,50	1

The Multidimensional Poverty Index (MPI) measures the relative poverty level between districts. According to table 2, there is a large gap between the non-poorest and poorest individuals. Banda Aceh, which is not the poorest, has an MPI of 19.56, while Subulussalam, the lowest, has an MPI of 84.5. Moreover, if poverty is viewed as a multidimensional phenomenon, then the social disparity is rather large.

3.2. Multidimensional Poverty and Need Poverty

MPI is calculated using arithmetic means on each dimension obtained from confirmatory factor analysis. Meanwhile, the official poverty statistic is calculated using the basic need approach by BPS-Statistics Indonesia. In this section, we discuss the comparison of the rank of each district provided by both measures.

As shown in Table 3, the MPI means that the smaller the index, the fewer poor people in the region. Thus, Banda Aceh is the least poor city, while Subulussalam is the poorest city in Aceh Province. The three areas that are the least poor according to the MPI are the areas that are also the least poor according to the Basic Needs Approach Poverty Rate. The three areas are Lhokseumawe City, Langsa City and Banda Aceh City. The pooriness of the District/City is due to the low level of the forming variables as reflected in the average value of these variables.

The city of Banda Aceh is undoubtedly the least poor because six of the nine variables that make up the MPI have the lowest scores in the city of Banda Aceh. This is what causes, multidimensionally, the poverty rate in Banda Aceh City is already meager. Meanwhile, Poverty in Subulussalam City is probably due to the level of education. Based on table 1, Subulussalam City has the most residents who did not finish school in the first five years of elementary school. Given that the lowest value on this education variable is also found in the least poor cities, this indicates that education, especially the obligation to study at elementary school for a minimum of 5 years, is the most crucial factor in influencing poverty levels in Aceh.

The two districts that have the most significant difference in the ranking are Kab. East Aceh and South Aceh mean that according to the BNA Poverty Rate, these two districts tend to be less poor because they have a better ranking, but according to MPI, these districts are poor (the ranking tends to be worse). South Aceh Regency is a Regency that tends to be not poor because it ranks 20th in the BNA Poverty version. However, in terms of MPI poverty, it is ranked 9th, which means this district tends to be poor. The reason is that the average in this area is the fourth highest in each of the variables forming the MPI. In addition, the population using solid fuels in this area is the highest compared to other areas. These two factors are sufficient to make South Aceh District a district that tends to be multidimensionally poor.

The smallest difference in ranking between MPI and BNA Poverty is found in four regencies/cities in Aceh Province, namely Gayo Lues Regency, West Aceh Regency, Bener Meriah Regency, and Sabang City. Poverty Levels in Bener Meriah Regency and Aceh Barat Regency are quite interesting because, in Poverty BNA, these two districts are ranked relatively low as poor areas (ranks 5 and 6). However, in MPI, the ranking of these two regions increased to include areas that tend to be non-poor (ranks 19 and 16). In Bener Meriah Regency, apart from the average of each variable, which is small (only one digit), residents' level of asset ownership is the lowest, which means that people who do not own assets or only own one asset tend to be few. In addition, there are no households that eat less because they do not have money. These two things play an essential role in the characteristics of poverty in this area, so the poverty rate is low. Unlike the case with West Aceh Regency, this Regency still has the largest population that has not used electricity compared to other regions.

Table 3. Rank Comparison Between MPI and Basic Needs Poverty of Districts and Municipalities in Aceh

Districts/ Municipalities	MPI	MPI Rank	Basic Need Poverty Rank	Difference in Rank
Subulussalam	84,50	1	9	8
Aceh Utara	83,70	2	8	6
Simeulue	76,27	3	7	4
Pidie	74,36	4	4	0
Aceh Timur	69,66	5	16	11
Aceh Barat Daya	68,59	6	11	5
Aceh Singkil	68,04	7	1	-6
Pidie Jaya	65,16	8	3	-5
Aceh Selatan	62,17	9	20	11
Gayo Lues	60,52	10	2	-8
Aceh Tenggara	57,55	11	17	6
Bireuen	52,62	12	14	2
Aceh Jaya	46,31	13	18	5
Aceh Tamiang	44,75	14	19	5
Nagan Raya	41,59	15	10	-5
Aceh Barat	40,90	16	6	-10
Aceh Besar	39,86	17	15	-2
Aceh Tengah	29,12	18	13	-5
Bener Meriah	27,93	19	5	-14
Sabang	26,64	20	12	-8
Lhokseumawe	26,34	21	21	0
Langsa	21,43	22	22	0
Banda Aceh	19,56	23	23	0

However, the average poverty-forming variable in the region tends to be low. Thus, the low poverty rate in Aceh Barat Regency tends to be due to the low level of all variables forming poverty. In general, the conclusion that can be drawn is that the resulting Multidimensional Poverty Index tends to be reasonable because it has similarities with poverty with the Basic Needs Approach in the least poor regions. However, these two methods tend to differ in determining the poorest areas. Only Pidie District is in a poor area (ranking the fourth poorest) in the multidimensional or basic needs methods.

Table 4. Comparability of Multidimensional Poverty Index to Basic Needs Based Poverty Rates and Human Development Index in Distrites/Municipalities in Aceh Province

Districts/ Municipalities	MPI	MPI Rank	BN Poverty Rank	HDI	HDI Rank	Difference between HDI and BN Poverty	Difference between HDI and MPI
Simeulue	76,27	3	7	64,41	2	-5	-1
Aceh Singkil	68,04	7	1	67,37	7	6	0
Aceh Selatan	62,17	9	20	65,03	4	-16	5
Aceh Tenggara	57,55	11	17	68,09	12	-5	-1
Aceh Timur	69,66	5	16	66,32	6	-10	-1
Aceh Tengah	29,12	18	13	72,19	19	6	-1
Aceh Barat	40,90	16	6	70,2	14	8	2
Aceh Besar	39,86	17	15	72	18	3	-1
Pidie	74,36	4	4	69,52	13	9	-9
Bireuen	52,62	12	14	71,11	15	1	-3
Aceh Utara	83,70	2	8	67,67	8	0	-6
Aceh Barat Daya	68,59	6	11	65,09	5	-6	1
Gayo Lues	60,52	10	2	65,01	3	1	7
Aceh Tamiang	44,75	14	19	67,99	10	-9	4
Nagan Raya	41,59	15	10	67,78	9	-1	6
Aceh Jaya	46,31	13	18	68,07	11	-7	2
Bener Meriah	27,93	19	5	71,89	17	12	2
Pidie Jaya	65,16	8	3	71,73	16	13	-8
Banda Aceh	19,56	23	23	83,95	23	0	0
Sabang	26,64	20	12	74,1	20	8	0
Langsa	21,43	22	22	75,89	21	-1	1
Lhokseumawe	26,34	21	21	76,34	22	1	-1
Subulussalam	84,50	1	9	62,88	1	-8	0
Variance						54,09	14,60

3.3. Poverty and Human Development

The quality of Human Resources (HR) is crucial in poverty reduction efforts. Economic growth also has limitations in reducing poverty. One way to reduce poverty is to improve human quality. Improving human quality will be able to trigger economic growth, which in turn reduces poverty (Chakraborty & Bandopadhyay, 2009). (Nayar, 2005) also mentions that human development has a vital role in reducing poverty and contributing to increasing economic growth. Therefore, the reasonableness of the poverty rate will also be corrected with the Human Development Index data, which can describe Human Quality. Table 4 describes the comparability of rankings on Multidimensional Poverty data, Poverty Basic Need Approach, and Human Development Index in Regencies/Cities in Aceh Province.

As shown in Table 2, the HDI ranking shows that the low HDI has the lowest rank and

vice versa. This is done to make it easier to compare with poverty. As a result, the Multidimensional Poverty Index looks more in line with the Human Development Index. This can be seen from the number of SMEs with the same ranking as the HDI, namely Banda Aceh City, Sabang City, Subulussalam City, and Aceh Singkil Regency. Meanwhile, Poverty BNA only has the same ranking as the HDI in North Aceh Regency. In addition, the similarity in the highest and lowest HDI scores with MPI also strengthens the notion that MPI can better explain its relationship with HDI.

Based on the value of the variance of the difference between HDI and MPI and BNA Poverty, it can be seen that the variance of the difference between HDI and MPI is significantly smaller from the perspective of data distribution. This indicates that the distribution of HDI data is more similar to MPI data than BNA Poverty statistics. In South Aceh District, the disparity between HDI and BNA poverty tends to be the greatest, with a difference of 16 points. The district is among the ten regions with the lowest HDI, yet its poverty rate is among the four lowest in the country. Regarding the difference between MPI and HDI, the two variables' farthest ranking is only 8 points. This, of course, confirms the assumption that the Multidimensional Poverty Index is more numerically accurate than the poverty rate based on the Basic Needs Approach.

3.4. Impact of Poverty Dimensions on Economic Growth

Based on the value of the variance of the difference between HDI and MPI and BNA Poverty, it can be seen that the variance of the difference between HDI and MPI is significantly smaller from the perspective of data distribution. This indicates that the distribution of HDI data is more similar to MPI data than BNA Poverty statistics. In South Aceh District, the disparity between HDI and BNA poverty tends to be the greatest, with a difference of 16 points. The district is among the ten regions with the lowest HDI, yet its poverty rate is among the four lowest in the country. Regarding the difference between MPI and HDI, the two variables' farthest ranking is only 8 points. This, of course, confirms the assumption that the Multidimensional Poverty Index is more numerically accurate than the poverty rate based on the Basic Needs Approach.

$$Y = 1.386 - 0.504 X_1^* + 1.846 X_2^*$$

$$R^2 = 38,1 \%$$

Notes:

*significant at 5 percent

Y : Gross Regional Domestic Product

X1 : Education Dimension

X2 : Asset Dimension

The best equation produced in this study only produces two dimensions that affect the Gross Regional Domestic Product (GRDP). The two dimensions are the asset dimension which consists of household asset ownership and the condition of the floor of the house, as well as the education dimension, which reflects elementary school education for at least the first five years. The equation can also be the best because it has fulfilled all the regression assumptions. A simultaneous test shows that all dimensions significantly affect GRDP. In addition, the assumption of normality is met with the results of the Kolmogorov Smirnov and Shapiro Wilk tests which accept the hypothesis that the data are normal. The VIF value for each variable below five also indicates that the non-multicollinearity assumption is met. Finally, a point diagram is generated to see whether heteroscedasticity occurs. The result revealed that no particular pattern

is found, which means that the assumption of homoscedasticity is met. To strengthen this assumption, the Glejser test was carried out, and it contained the results that heteroscedasticity did not occur. Although all assumptions are met, the value of R^2 is not too large, which is only about 38.1 percent. It means that the proportion of GRDP can be explained by poverty is only 38.21 percent. The rest is explained by other variables not included in this study.

Based on the above equation, we can see that GRDP has an opposite relationship with education. An increase in the education dimension index by 0.504 points will increase GDP by 1 trillion rupiahs. The dimension of education described by residents who have attended school for at least five years is a reasonably necessary variable in encouraging economic improvement in Aceh Province. Residents who do not attend a school or even attend school for less than five years will tend to have low knowledge, so they tend to work as laborers or unskilled workers with low wages. This population is undoubtedly vulnerable to poverty. This is something that the government should pay attention to because an increase in this aspect of education will be able to accelerate economic growth and simultaneously eradicate the poor. One of the programs that the government can offer is to conduct job training or vocational programs so that workers with less education can compete for jobs with better wages.

The dimensions of asset ownership, which consist of asset ownership and household floor conditions, are also significant in accelerating economic growth. Every 1.846 points increase in the asset ownership dimension index will increase GDP by 1 trillion rupiahs. The dominant variable in explaining this dimension is household asset ownership. This means that the government should focus more on physical investment in households. Considering the Gross Fixed Capital Formation (PMTB), which is the second-largest component in forming GRDP in terms of expenditure, increasing the PMTB program in an effort to accelerate economic growth and alleviate poverty is the right step. Increasing household physical investment programs, such as procuring specific tools that make it easier for residents to access or repair house floors, can be a reasonably good program in alleviating poverty and accelerating economic growth.

IV. Conclusion and Recommendation

The results of the Factor Analysis stated that all variables on the standard of living dimension were statistically significant. In the health dimension, the significant variable is households that eat less. Meanwhile, the education dimension, represented only by one variable, did not perform factor analysis. The results of the MPI show that there is still a fairly high disparity between each district/city. The City of Subulussalam has the highest index, while the City of Banda Aceh has the lowest index.

The resulting Multidimensional Poverty Index tends to be reasonable because it has similarities with poverty with the Basic Needs Approach, especially in the least poor areas. Only Pidie District is in a poor area (ranking the fourth poorest) in the multidimensional or basic needs methods. Concerning Human Development, the distribution of data on the difference between MPI and HDI rankings tends to be more even than between BNA Poverty and HDI. There are 4 (four) regencies/cities that have the same HDI and MPI rankings. The alignment of MPI with HDI further strengthens that MPI tends to be more reasonable. Therefore, MPI should be a good complement to BNA Poverty and should be able to contribute a new approach to poverty alleviation policy.

There are two dimensions that have the most influence on the economy, namely, the dimensions of asset ownership and education. Increasing government programs in these two

dimensions will be very effective in accelerating the pace of economic growth and increasing the level of household asset ownership. One recommendation is to increase physical investment in households or conduct skills or vocational programs to improve the quality of the population not in school.

Further research is urgently needed using more comprehensive and multiple indicators and broader observations. However, this multidimensional poverty index is still very much needed and continues to grow in line with the main goal in 2020, eliminating poverty in all its forms.

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