Multidimensional Poverty Index (MPI) in Agricultural Household in Indonesia

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Abstract

Poverty is one of the central issues in the development program of Indonesia. In 2014, more than 27 million people in Indonesia live in poverty and over than 60 per cent of them lived in rural areas which heavily rely on agriculture sector as their livelihood (BPS-Statistics Indonesia, 2014). This fact confirms that poverty eradication in agriculture is the key factor in reducing poverty in Indonesia. Data and information about poverty are really needed in the fight against poverty. However, the formal poverty data that available counts only direct monetary income and neglects other qualitative dimensions of poverty like health and education. Therefore, researchers are interested in measuring the Multidimensional Poverty Index (MPI) in the agricultural household in Indonesia. This research used secondary data from the latest Indonesia - National Social Economic Survey (SUSENAS) 2014. The total number of sample in this research was 285,400 household. The measurement of MPI was conducted exploratory by factor analysis. Based on the result of the analysis, we found that, in term of multidimensional poverty, poverty in Indonesia is also an agricultural phenomenon. Multidimensional Poverty Index (MPI) in the agricultural sector in Indonesia was 0.15 and much higher than MPI in the non-agriculture sector that was only 0.06. More than 30 per cent of people in the agricultural sector was considered as poor multidimensionality. The intensity of poverty in the agriculture sector was 0.49. It is also much higher than the intensity of poverty in non-agricultural sector and intensity of poverty in total that was 0.44 and 0.45, respectively. Therefore, we conclude that any effort to address poverty must consider the central place of agriculture in Indonesia. Besides, poverty reduction must not only focus on improving the income of farmers but also on boosting the capability (level of health and education) of poor people in the rural area.

Key: poverty, agricultural household, multidimensional poverty, MPI

1. Background

Indonesia has an impressive record of efforts to reduce poverty. During the period 1976-1996, through impressive economic growth performance, with an average growth of 7 per cent per year, Indonesia has succeeded in reducing the percentage of the poor who reached 40.1 per cent by mid-1976 to only 11.3 per cent of the total Population in 1996.

However, the economic crisis that hit Indonesia in the middle of 1997 and peaked in 1998, gave a powerful effect on the economic condition. As a result, in 1998, the number of poor people increased to 48.99 million people or about 23.4 per cent of the total population of Indonesia.

Post-crisis, along with the recovery of national economic condition and supported by strong government commitment in reducing poverty realized through various programs and policies of poverty eradication, the percentage of poor people, in general, continues to decrease consistently. Nevertheless, poverty remains the main issue of Indonesia's economic development. Based on data from BPS in 2015, the number of poor people is relatively high, reaching 28.51 million people or covering 11.13 per cent of the total population of Indonesia (BPS, 2015).

Poverty in Indonesia is a phenomenon of the agricultural sector. Statistics show that more than 60 per cent of Indonesia's poorest people in 2015 is rural inhabitants who are structurally highly dependent on the agricultural sector. This confirms that poverty alleviation in the agricultural sector is the key to Indonesia's success in fighting poverty. In line with this, poverty alleviation efforts in the agricultural sector, of course, require the support of data and information about poverty that is able to capture a comprehensive picture of poverty.

It cannot be denied that poverty is a multidimensional problem. This is in line with what Amartya Sen (2000) says that poverty should be seen from various dimensions, such as education, health, quality of life, democracy, and people's freedom of access to the economy. Therefore, the government's success in eradicating poverty in the rural agricultural sector has provided data availability that can capture the multidimensional aspect of poverty.

Unfortunately, the macro-poverty data used by the government has only measured the poverty of the monetary-based dimensions and ignored other dimensions of poverty, such as low access to education and health. In fact, the government, of course, requires information that presents a picture of multidimensional poverty to formulate appropriate poverty eradication policies.

Since 2010, the United Nations Development Program (UNDP) and the Oxford Poverty and Human Development Initiative (OPHI) agreed on a new poverty reduction initiative through the Multidimensional Poverty Index (MPI) published in Human Development Report (HDR) 2010 (Budiantoro et al, 2013). The study of multidimensional poverty for the Indonesian case is also not new. The research that analyzes multidimensional poverty in Indonesia through MPI calculations has been done by OPHI since 2010 and Budiantoro, et al from Prakarsa associations in 2013. The studies also measure multidimensional poverty in rural areas.

Nevertheless, until now there has been no single study that measures and analyzes multidimensional poverty in the agricultural sector in Indonesia in depth. Therefore, in this study, we tried to calculate the multidimensional poverty index (MPI) and other multidimensional poverty indicators in the agricultural sector by province. The results of this study are expected to provide an overview of poverty in the agriculture sector multidimensional. In addition, the study is also expected to enrich the study of multidimensional poverty in Indonesia, particularly in the agricultural sector, and provide inputs to the government in formulating poverty alleviation policies in the rural agricultural sector.

2. Data and Research Methods

The data used in this research is secondary data from the Indonesia National Social Economic Survey (Susenas) 2014. Susenas 2014 is the survey that was conducted by BPS-Statistics Indonesia with the number of samples is 285.400 household. The analysis was performed on the 33 provinces in Indonesia. In this research, a person is engaged with agriculture sector if he/she is a member of the agriculture household (the main source of income comes from the agriculture sector).

3. Data Analysis

Constructing a composite indicator of multidimensional poverty index in the agricultural household in Indonesia was conducted exploratory by factor analysis. The first step to construct a composite indicator is variables selection. Data was entered and analyzed by the Statistical Package for Social Science (SPSS) computer program version 16. Indicator selection using factor analysis was based on the value of Kaiser-Meyer-Olkin (KMO), Measure of Sampling Adequate (MSA), and commonalities. A small value of KMO indicates that the using of factor analysis should be reconsidered. KMO value should be above 0.6 so that it can be analyzed using factor analysis (Kaiser and Rice in OECD, 2008). Such as KMO value, a higher value of MSA means more reasonable to incorporate individual indicators into a factor analysis. MSA value limit is greater than 0.5 (Hair, *et al*, 1998). The results of this factor analysis, in addition to generating the selected variables as well as grouping these variables into dimensions.

After the indicators that construct a multidimensional poverty index was selected, the next step is to build the composite score. Measurement of the composite score using the standard MPI formula that is conducted by Oxford Poverty and Human Development Initiative (OPHI). The formation of composite scores is done by weighing and aggregating them. The weights used for each dimension are the same. Individual indicators in the dimensions are also given equal weights. Everyone judged in the MPI is viewed from the assessed indicator. The assessment consists of a range of 0-1. When a person meets the assessment of poverty according to the MPI indicator then he increases to point 1. Assessment will continue to be made on each indicator. Someone is said to be poor when the average total score is less than 1/3 (Budiantoro, et al, 2013).

The MPI is calculated by multiplying the incidence of poverty by the average intensity of poverty across the poor; as a result, it reflects both the share of people in poverty and the degree to which they are deprived (Alkire, S. and Robles, G., 2015). MPI formula is as follows:

$$MPI = H \; x \; A$$

Note:

$H =$ incidence of poverty;

the incidence of poverty in this paper is the percentage of people in agriculture who are identified as poor

$A =$ intensity of poverty;

The average proportion of indicators in which poor people are deprived

4. Results

Based on the result of factor analysis, multidimensional poverty index (MPI) of agricultural household consists of 11 variables divided into 4 dimensions. The first dimension is the health dimension that consists of child mortality variable and health problem variable. The second dimension is the education dimension that consists of literacy and enrolment variable. The third dimension is the living standard dimension that consists of drinking water, electricity, sanitation, and cooking fuel dimension. The fourth dimension is the housing dimension that consists of the type of wall, type of floor, and the type of rooftop variable.

Table 1. Weights for each dimension and variable of MPI

Dimension	Variables	Weights	
Health Dimension	- Child mortality	1/8	1/4
	- Health Problems	1/8	
Education Dimension	- Literacy	1/8	1/4
	- Enrolment	1/8	
Living Standard Dimension	- Drinking water	1/16	1/4
	- Electricity	1/16	
	- Sanitation	1/16	

	- cooking fuel	1/16	
Housing Dimension	- Type of wall	1/12	1/4
	- Type of floor	1/12	
	- Type of rooftop	1/12	

Figure 1 shows the result of MPI calculation. As we can see that the incidence of poverty in agriculture household is 0.60. It is mean that about 60 per cent of people in the agriculture household lives in poverty. It is much higher than the poverty in the non-agriculture household which is only 0.24. In line with the result of the incidence of poverty, the number of MPI in agriculture household is also high at 0.30, while MPI in non-agriculture households is 0.11. It shows that there is a big gap between poverty in agriculture and non-agriculture household.

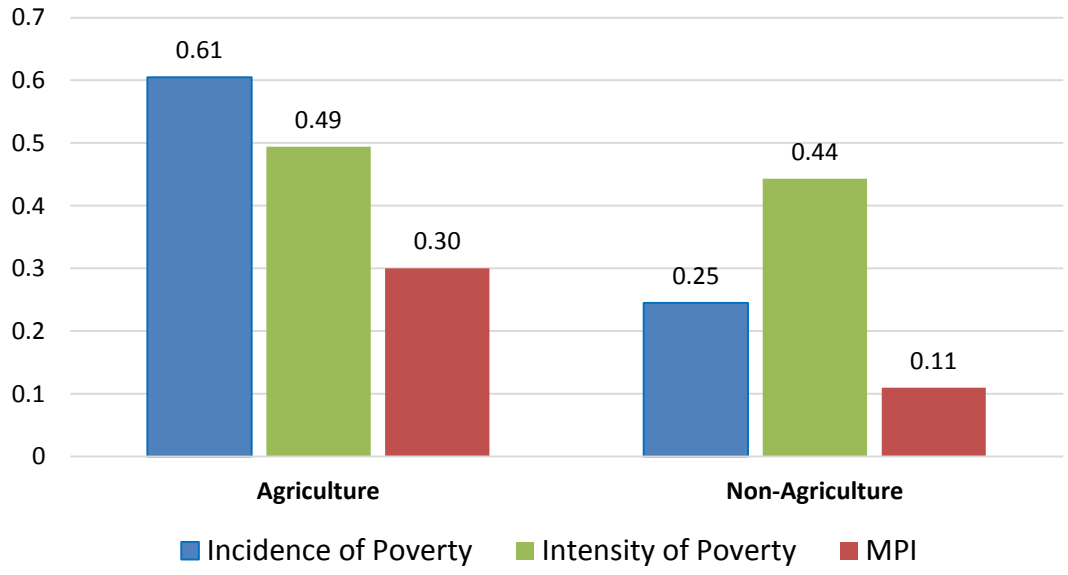

Figure 1. Comparison of MPI at the national level of agriculture household and non-Agriculture household

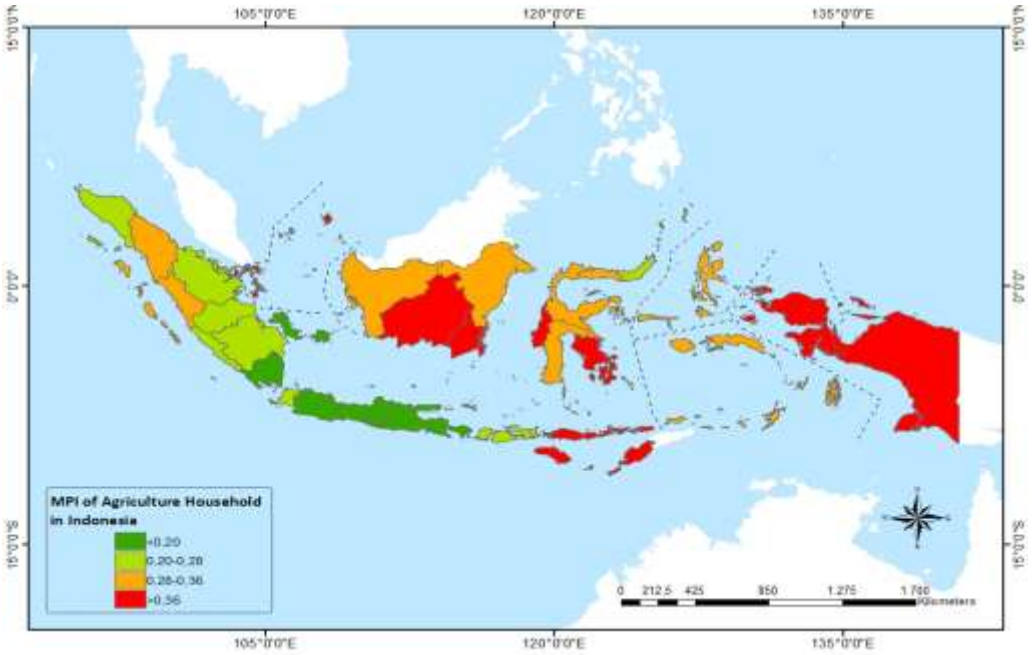

Figure 2. MPI of agriculture household at the provincial level in Indonesia

In addition to providing data on multidimensional poverty at the national level, the MPI can also be broken down by sub-national regions to show disparities in poverty within countries. This analysis can be easily performed when the survey used for the MPI is representative at the sub-national level. The map at figure 2 shows visually how the MPI of agricultural household varies across provinces in Indonesia; red indicates a higher MPI and therefore greater poverty, while green indicates a lower MPI and therefore lesser poverty. From the map above, we also can see those provinces in the Sumatera, Java, and Bali Island has the lower number of MPI of agriculture household than the other provinces in Kalimantan, Sulawesi Nusa Tenggara, and Papua. So that it can also be said that the provinces in the western region of Indonesia have an agriculture household with a lower poverty level compared with other provinces in eastern Indonesia.

5. Conclusion

- Development program goals of poverty reduction cannot be achieved unless directly tackled at the rural area and without a specific focus on the agricultural sector.
- Any effort to address poverty must consider the central place of agriculture in Indonesia, especially provinces with the high MPI of agriculture household.
- Poverty reduction must not only focus on improving the income of farmers but also on boosting their capability (level of health and education).

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