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# Determinants of Poverty in Indonesia and its Policy Implications, Multidimensional Approach to Measuring Poverty

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**A B S T R A K**

Kemiskinan bukanlah fenomena tunggal, melainkan beragam dan multidimensi. Di Indonesia yang beragam secara sosio-ekonomi dan demografis, pengukuran kemiskinan berdasarkan pendekatan pengeluaran tidak dapat secara komprehensif merepresentasikan deprivasi yang dihadapi oleh masyarakat miskin. Makalah ini mengadopsi kerangka kerja multidimensi Alkire dan Foster untuk mengestimasi kemiskinan dan mengidentifikasi masyarakat miskin di Indonesia. Ini telah menganalisis data pada 10 indikator yang berkaitan dengan tiga dimensi kesejahteraan yang berharga: pendidikan, kesehatan, dan standar hidup. Penelitian ini menggunakan data dari Indonesia Family Life Survey (IFLS) 2014, kemudian penelitian ini menemukan bahwa 19,6% penduduk pada tahun 2014 dikategorikan miskin. Dalam penelitian ini determinan kemiskinan dibagi menjadi tiga jenis yang meliputi karakteristik wilayah, masyarakat dan rumah tangga. Berdasarkan hasil estimasi logit, semua variabel yang mewakili karakteristik wilayah sektor industri, sektor pertanian dan perkotaan) berpengaruh negatif dan signifikan terhadap probabilitas suatu rumah tangga untuk menjadi miskin. Kemudian, ada dua variabel karakter masyarakat yang berpengaruh negatif dan signifikan terhadap probabilitas suatu rumah tangga menjadi miskin, yaitu akses listrik dan akses sekolah. Selain itu, terdapat satu variabel karakteristik rumah tangga yang berpengaruh negatif dan signifikan terhadap probabilitas suatu rumah tangga menjadi miskin, yaitu kepemilikan rumah.

***Abstract***

*Poverty is not a single phenomenon, it is diverse and multidimensional. In Indonesia, which is socio-economically and demographically diverse, measurement of poverty based on an expenditure approach can't comprehensively represent deprivation faced by the poor. This paper adopted Alkire and Foster's multidimensional framework to estimate poverty and to identify the poor in Indonesia. It has analyzed data on 10 indicators pertaining to three valuable dimensions of well-being: education, health, and standard of living. This study uses data from Indonesia Family Life Survey (IFLS) 2014, then this study finds that 19.6% of the population in 2014 are categorized as being poor. In this study, poverty determinants are divided into three types including characteristics of regional, community and household. Based on results of logit estimation, all variables that representing regional characteristics industrial sector, agricultural sector and urban) has negative and significant effect on probability of a household to being poor. Then, there are two variables in community character that has negative and significant effect on probability of a household to being poor, that is access to electricity and access to school. Furthermore, there is one variable in household characteristics that has a negative and significant effect on probability of a household to being poor, that is home ownership.*



 

## 1. Introduction

Central statistics agency of Indonesia (BPS) defines poverty as the inability of individuals to meet the minimum basic needs for decent living (food or non-food). The problem of poverty is experienced by almost all countries in the world with different indicators of poverty, so the definition of poverty is very broad. According to the World Bank (2010), the definition of poverty is deprivation of well-being, while the core problem in poverty is the boundaries of welfare itself.

Indonesian poverty measurement uses the concept of ability to satisfy minimum basic food and non-food needs measured from the consumption side or just monetary attribute only (Artha and Dartanto, 2018). Based on BPS data publications, poverty in Indonesia from 2012 to 2019 continued to decline. In 2019 overall poverty in Indonesia stands at 25 million people or 9.41% of the total population in Indonesia. Here are the data of poverty Indonesia in 2010-2019:

**Table 1.** Poverty in Indonesia (2010-2019)

| Year | Year Total Poor Population (Million People) | | | Percentage of Poor Population | | | Poverty Line (Rp/Capita/Month) | |
|---|---|---|---|---|---|---|---|---|
| | Urban | Rural | Total | Urban | Rural | Total | Urban | Rural |
| 2012 | 10.65 | 18.49 | 29.13 | 8.78 | 15.12 | 11.96 | 267.408 | 229.226 |
| 2013 | 10.33 | 17.74 | 28.07 | 8.39 | 14.32 | 11.37 | 289.042 | 253.273 |
| 2014 | 10.51 | 17.77 | 28.28 | 8.34 | 14.17 | 11.25 | 318.514 | 286.097 |
| 2015 | 10.65 | 17.94 | 28.59 | 8.29 | 14.21 | 11.22 | 342.541 | 317.881 |
| 2016 | 10.34 | 17.67 | 28.01 | 7.79 | 14.11 | 10.86 | 364.527 | 343.647 |
| 2017 | 10.67 | 17.10 | 27.77 | 7.72 | 13.93 | 10.64 | 385.621 | 361.496 |
| 2018 | 10.14 | 15.81 | 25.95 | 7.02 | 13.20 | 9.82 | 415.614 | 383.908 |
| 2019 | 9.94 | 15.15 | 25.14 | 6.69 | 12.85 | 9.41 | 442.063 | 404.398 |

Source: Central statistics agency of Indonesia (BPS)

Poverty can be defined more broadly, which includes limited access to education, health and quality of life (Sen, 2000). Broad definition of poverty makes increasing criticism of poverty calculation methods which only based on monetary indicators, poverty measurement must involve basic human needs such as health and education (Tsui, 2002). Poverty is basically a multidimensional phenomenon, so it must be explained by a multidimensional approach. Many researchers have proposed new methods of measuring poverty using a multidimensional approach, for example Alkire and Foster (2011) in a paper titled Counting and Multidimensional Poverty Measurement which is proposing poverty measurement with multidimensional indicators.

The concept of multidimensional poverty provides a broader definition of poverty. Multidimensional poverty sees a broader structure of poverty not only in income or consumption but also defines it multidimensionally such as limited access to education, health and quality of life (Alkire and Foster, 2011). So far, indicators commonly used in calculating poverty rates are through monetary approaches such as poverty lines with a limit of USD Purchasing Power Parity (PPP) or through the basic consumption approach (basic need) used in Indonesia (Haughton and Khandker, 2010). The purpose of calculating poverty with a multidimensional approach is to identify poverty more holistically, Alkire and Foster (2017) argues that expanding poverty indicators and identifying poverty

 

multidimensionally is a global poverty reduction strategy. So far, the problem of poverty is measured by narrow indicators so that poverty alleviation strategies are narrow as well.

This paper adopted Alkire and Foster's multidimensional framework to estimate poverty and to identify the poor in Indonesia. It has analyzed data on 10 indicators pertaining to three valuable dimensions of well-being: education, health, and standard of living. The purpose of this paper is to calculate and determine the level of poverty in a multidimensional approach in Indonesia and determine the factors that influence multidimensional poverty in Indonesia. In this paper factors that influence poverty are divided into three main factors including regional characteristics, community characteristics and household characteristics.

### 1.1. Literature Review

The nature of poverty is not a single phenomenon; it is diverse, dynamic, and multidimensional. In the context of Indonesia, which is socio-economically, demographically, and geographically diverse, the current measurement of poverty based on an expenditure approach cannot comprehensively represent the deprivation faced by the poor. The concept of multidimensional poverty provides a broader definition of poverty (Artha and Dartanto, 2018). Multidimensional poverty sees a broader structure of poverty not only in income or consumption but also defines it multidimensionally such as limited access to education, health and quality of life (Alkire and Foster, 2011). In the calculation of multidimensional poverty there is the concept of a multidimensional poverty index (MPI). MPI was developed by Oxford Poverty and Human Development (OPHI) with the United Nations Development Program (UNDP) in 2010.

Alkire and Foster (2011) propose a new approach of a weighting system to identify the poor. Any person/household deprived in a certain dimension will be given a certain weight. The total weight is ranked 0 and 1. Each dimension has an equal weight, so if we use n dimensions, the weight for each dimension is 1/n. If one dimension consists of several indicators, then each indicator's weight in the same dimension has equal value. The second cutoff is simply the number of dimensions in which a deprived person/household must be in order to be considered poor (Alkire and Foster, 2011).

Alkire and Foster (2011) already illustrated multidimensional poverty measurement using Indonesian data. In 2011, Alkire and Santos (2011) measured multidimensional poverty incidence in Indonesia by using three dimensions: education, health, and standard of living.:

a. Health dimension
   In the health dimension, MPI is measured using two indicators namely nutrition and child mortality. In nutrition indicators, MPI measures every member of the household whether child or adult. Another indicator of the health dimension is child mortality. In the philosophy of health, the death of a child is a reflection of the inability to health. The death could be due to illness or malnutrition.

b. Educational dimension
   There are two indicators in measuring the dimensions of education, namely years of education and adult literacy. These two indicators show people's ability to access basic education, not show the quality of education that they get.

c. Standard of living dimension

Living standards indicate the daily patterns of life of the community. Poverty will make people unable to meet the quality of the life standards in accordance with the SDGs. This standard of living dimension consists of six indicators:

1. Access to clean water
2. Sanitary conditions
3. Access to electricity
4. The condition of the house floor
5. Fuel for cooking
6. Ownership of asset

## 1.2 Determinants of Poverty

Based on world bank (2010), poverty determinants are divided into three types including regional characteristics, community characteristics and household characteristics.

a. Regional characteristics

Poverty can be influenced by regional characteristics, in general poverty is in an isolated location or country, low resources and bad climate. Indicators in regional characteristics that can be used include access to infrastructure (roads and markets), the region's vulnerability to disasters and the climate or weather in the area (Haughton and Khandker, 2010).

b. Community characteristics

Poverty can be influenced by environmental conditions, environmental conditions include the availability of infrastructure such as schools or health centers and the availability of electricity. Indicators on community characteristics that can be used include community access to employment, social representation and land distribution, access to state water companies or access to electricity and access to public goods such as schools or health clinics (Haughton and Khandker, 2010).

c. Household characteristics

Demographic conditions of a household affect the level of poverty, this is because in general poverty is measured based on income or expenditure per capita. The number of individuals in a family affects the poverty status of the family, whether the family is classified as poor or not. Indicators in the household characteristics that can be used include the number of family members, the gender of the family head and home ownership (Haughton and Khandker, 2010).

## 1.3. Previous Research

Alkire and Foster (2011) in Counting and multidimensional poverty measurement, already illustrated multidimensional poverty measurement using Indonesian data. In 2010, they measured multidimensional poverty incidence in Indonesia by using three dimensions: education, health, and standard of living. Similar to three dimensions used by Alkire and Foster (2011), Whardana (2012)

in Multidimensional Poverty Dynamics in Indonesia (1993-2007) also estimated multidimensional poverty incidence in Indonesia compared to monetary poverty. This study reveals that human assets (health and education) contribute more to the Multidimensional Poverty Index than physical assets (living standard).

Artha and Dartanto (2018) in The Multidimensional Approach to Poverty Measurement in Indonesia. Measurements, Determinants and its Policy Implications, conducted a research on the calculation of multidimensional poverty on Indonesia in 2011 and factors affecting multidimensional poverty in Indonesia using the multidimensional framework Alkire and Foster (2011). This research confirmed that the monetary measurement of poverty should be complemented with the multidimensional poverty measurement to capture comprehensive picture of deprivation in Indonesia. Around 61% of populations categorized as non-poor by the conventional poverty measurement are still categorizes as poor using the multidimensional measurement. Then, whit logit estimation model confirmed that a higher educational attainment of the household head leads to a higher probability of being non-poor in terms of both monetary and multidimensional poverty. Our study also identifies that a health indicator is the major source of multidimensional poverty in Indonesia.

Adetola (2014) in Trend and Determinants of Multidimensional Poverty in Rural Nigeria conducted a study on the calculation of multidimensional poverty on Nigeria in 2011 and its determinants. This research confirmed that absolute and percentage change in poverty reveals that change is higher for the headcount ratio than the intensity of poverty. The health, asset and education dimensions contributed most to poverty. Agriculture has the highest adjusted poverty incidence. Being in a female household, increased household size, working in the agriculture sector and residing in the north zones increase the probability of being poor. Education, working in nonagricultural sector and services, live in south west and south east zones reduces the probability being poor.

## 2. Research Method

### 2.1. Type of Research

This research is analytic descriptive, which is a study that describes and explains the independent variables consisting of factors that affect poverty. In this research, based on world bank (2010) the factors that influence poverty are divided into three characteristics, namely regional characteristics, community characteristics and household characteristics. The independent variable will be analyzed its effect on the dependent variable namely the multidimensional poverty index (measured using the concept of multidimensional poverty). This study uses secondary data types derived from Indonesia Family Life Survey (IFLS). IFLS is an on-going longitudinal survey in Indonesia, the sample is representative of about 83% of the Indonesian population and contains over 30,000 individuals living in 13 of the 27 provinces in the country (Wardhana, 2012).

### 2.2 Counting Multidimensional Poverty

Multidimensional poverty index (MPI) is calculated using the weights of each dimension and indicator, the weights of each dimension are the same that is 1/3. Based on the literature and available data, the dimensions considered in this study are: health, education, and standard of living.

After identifying the dimensions, Figure 2 shows a list of indicators and a cutoff point for each indicator (Adeoti, 2014). We assign equal weights to all three dimensions, dimension weight is then equally divided into its nested indicators. The indicators in the same dimension have the same weight by (Alkire and Foster, 2011), The details of weights are provided below in table 2:

**Table 2.** Multidimensional Poverty Indicators

| Dimension | Indicator | Deprived if | Weight |
|---|---|---|---|
| Health | Immunization | Households do not immunize baby members | 1/6 |
| | Child mortality | There are household members in age of children who have died | 1/6 |
| Education | Adult literacy | At least one household member cannot read or write (age≥15) | 1/6 |
| | Years of schooling | At least one household member cannot read or write (age≥15) | 1/6 |
| Standard of living | House floor | Majority of house floor is sand | 1/18 |
| | Sanitation | House has no toilet with septic tank or shares public toilet | 1/18 |
| | Access to water | Households don't have access to clean water | 1/18 |
| | Cooking fuel | Household's cooking fuel is firewood/charcoal/ briquettes | 1/18 |
| | Electricity | Household does not have installed electricity | 1/18 |
| | Asset ownership | Household does not own a vehicle (car, boat, bike, motorbike) | 1/18 |

Source: Alkire and Foster (2011)

In the MPI concept, everyone is considered poor or not seen from the indicators being assessed. The assessment consists of 0 and 1, when someone/household is included in the poverty assessment according to the MPI indicator then gets point 1, if not then gets point 0. The assessment will continue to be done on each indicator, after the assessment is carried out on the ten indicators then it will be calculated based on the following equation:

$$c_i = w_1 I_1 + w_2 I_2 + \cdots + w_d I_d \quad (1)$$

Where:

$I_1$ : Multidimensional poverty indicator

$w_1$ : Weight of multidimensional poverty indicator, with the following conditions:

$$\sum_{i=1}^{d} w_i = 1 \quad (2)$$

All indicators of each dimension are added together, then calculate its averaged values. Someone/houshold is categorized as a poor person/household when the total average rating is less than 1/3 (Alkire and Foster, 2011).

MPI is the result of multiplication between multidimensional headcount ratio (H) with the value of intensity of poverty (A), where H and A can be calculated with the following equation:

$$H = \frac{q}{n} \quad (3)$$

Where:

$q$ : The number of individuals who categorized as poor

$n$ : Total population

While the intensity of poverty can be calculated with the following equation:

$$A = \frac{\sum_{i=1}^{d} c_i(k)}{q} \quad (4)$$

Where:

$c_i(k)$ : Multidimensional poverty assessment score

$q$ : The number of individuals who categorized as poor

So multidimensional poverty index (MPI) can be calculated with the following equation:

$$MPI = H \times A \quad (5)$$

### 2.3 Model for Determinants of Multidimensional Poverty

We use the logit model to estimate determinants poverty on multidimensional poverty, the logit model is used to describe the dependent variable (categorical) against the independent variables (categorized, continue or a combination of both) (Wooldridge, 2013). The logit models are as follows:

$$P(Y-1) = \frac{e^{\sum_{p=1}^{P}\beta_p X_{ap} + e^{\sum_{q=1}^{Q}\beta_q X_{bq} + e^{\sum_{r=1}^{R}\beta_r X_{cr} + e}}}}{1(e^{\sum_{p=1}^{P}\beta_p X_{ap} + e^{\sum_{q=1}^{Q}\beta_q X_{bq} + e^{\sum_{r=1}^{R}\beta_r X_{cr} + e}}})} \quad (6)$$

Where:

$Y$ : Poverty category for multidimensional poverty measurement (0 = non poor, 1 = poor)

$e_i$ : Error term

$i$ : Household identifier (1, 2, … , )

$X_{ap}$ : Vector of regional characteristics, including industry as the main sector of business, agriculture as the main sector of business and urban area (1, 2, 3).

$X_{bq}$ : Vector of community characteristics, including access to electricity, access to schools and access to health facilities (1, 2, 3).

$X_{cr}$ : Vector of household characteristics, including the number of household members, male as the head of household and private home ownership (1, 2, 3).

To estimating logit model, it is common to report the marginal effect after reporting the coefficients, the marginal effect the change in the probability of given a unit change in an independent variable X. Then, the marginal effect of logit model calculated as:

$$\frac{\partial P}{\partial X} = \frac{e^{\sum_{p=1}^{P}\beta_p X_{ap} + e^{\sum_{q=1}^{Q}\beta_q X_{bq} + e^{\sum_{r=1}^{R}\beta_r X_{cr} + e}}}}{\left(1 + e^{\sum_{p=1}^{P}\beta_p X_{ap} + e^{\sum_{q=1}^{Q}\beta_q X_{bq} + e^{\sum_{r=1}^{R}\beta_r X_{cr} + e}}}\right)^2} \quad (7)$$

Logit is often conceptualized as a latent variable model. The latent variable is determined by:

$$Y = \alpha + \beta_1 X_{a1} + \beta_2 X_{a2} + \beta_3 X_{a3} + \beta_4 X_{b1} + \beta_5 X_{b2} + \beta_6 X_{b3} +$$

$$\beta_7 X_{c1} + \beta_8 X_{c2} + \beta_9 X_{c3} + e \quad (8)$$

Here are the independent variables used in logit models:

**Table 3.** Independent Variables Used in Logit Models

| **Regional characteristics** | | **Measurements and units** |
|---|---|---|
| $X_{a1}$ | Industry as the main sector of business | 1 = Industry as main sector 0 = Other |
| $X_{a2}$ | Agriculture as the main sector of business | 1 = Agriculture as main sector 0 = Other |
| $X_{a3}$ | Urban area | 1 = Urban, 0 = Rural |
| **Community characteristics** | | **Measurements and units** |
| $X_{b1}$ | Access to electricity | 1 = Having, 0 = Other |
| $X_{b2}$ | Number to schools | Number of school in a community |
| $X_{b3}$ | Number to health facilities | Number of health facility in a community (Puskesmas) |
| **Household characteristics** | | **Measurements and units** |
| $X_{c1}$ | Number of household members | Number of household members |
| $X_{c2}$ | Male as head of household | 1 = Male, 0 = Female |
| $X_{c3}$ | Private home ownership | 1 = Own house, 0 = Other |

## 3. Result and Discussion

### 3.1. Multidimensional Poverty Index (MPI)

Multidimensional poverty index is calculated by weighting each dimension of causing multidimensional poverty, there are three dimensions: education, health and standard of living (figure 2). This study uses secondary data types derived from Indonesia Family Life Survey (IFLS), IFLS is a set of detailed household and community surveys on Indonesia conducted by RAND. This study use data from IFLS 5 that was published in 2014. Figure 4 explains that in this study the sample used was 11,911 households.

**Table 5.** Descriptive Statistics of Multidimensional Poverty Indicators

| | **Obs** | **Freq** | **Perc** |
|---|---|---|---|
| **Health** | | | |
| Households dont immunize baby members | 11,911 | 3,520 | 29.55% |
| There are children in household who have died | 11,911 | 44 | 0.37% |
| **Education** | | | |
| Adult member in HH didnt complete secondary school | 11,911 | 2,130 | 17.88% |
| At least one household member cannot read or write | 11,911 | 615 | 5.16% |
| **Standard of living** | | | |
| Majority of house floor is sand | 11,911 | 3,976 | 33.38% |
| House has no toilet with septic tank/shares public toilet | 11,911 | 1,666 | 13.99% |
| Households don't have access to clean water | 11,911 | 49 | 0.41% |
| Household's cooking fuel is firewood/charcoal | 11,911 | 1,727 | 14.50% |

| | | | |
|---|---|---|---|
| Household does not have installed electricity | 11,911 | 29 | 0.24% |
| Household doesnt own a vehicle (car, bike, motorbike) | 11,911 | 4,476 | 37.58% |

On the health dimension, the percentage of children in the household not immunizing indicator is 29.55%, this shows that household awareness of the importance of immunization is still low. In the education dimension, number of family members who did not complete junior high school (SMP) education indicator was still quite high at 17.88%. Then in the standard of living dimension, the highest percentage is in the asset ownership indicator, 37.58% of the total sample does not have assets such as houses, cars, motorcycles or other types of assets.

After weighing each indicator and dimension, the headcount index ($H$) value can be calculated. Based on the results of the study, the value of the headcount index or can also be called the percentage of the number of poor people in a population that can be calculated by equation (3) is 0.1293 or 12.93%.

Intensity of poverty ($A$) or the weighted average number of deprivations poor people experience at the same time can be calculated. Based on calculations using equation (4), the value of intensity of poverty ($A$) is 1.52. After we get the $H$ and $A$ values, we can get the MPI value by multiplying the $H$ and $A$ values (equation 5), the MPI value represents the adjusted headcount ratio value or can be used to see the poverty severity index in a country. Based on calculations, the MPI value is 0.196, this means that the adjusted headcount ratio value in Indonesia is 19.6% of the total population. This means that 19.6% of the total population in Indonesia is classified as poor in the concept of multidimensional poverty, this value is higher than the poverty value based on monetary indicators issued by BPS in 2014 which is 11.25%.

This value is higher than the poverty value based on monetary indicators issued by BPS in 2014 which was 11.25%. In summary the values of headcount index, intensity of poverty and MPI can be seen in table 5:

**Table 5.** Multidimensional Poverty Index

| | |
|---|---|
| Headcount index | 0.1293 |
| Intensity of poverty | 1.52 |
| Multidimensional Poverty Index (MPI) | 0.196 |

### 3.2. Determinants of multidimensional poverty

Determinants of poverty are compiled based on the poverty and inequality handbook (World Bank), poverty determinants are divided into three characters namely regional characters, community characters and household characters. This study use data from IFLS 5 that was published in 2014. Figure 6 explains result of descriptive statistics of each determinant that affect multidimensional poverty.

**Table 6.** Descriptive Statistics of Multidimensional Poverty's Determinants

| | Obs | Freq | Perc | Freq | Max | Min | Stdev |
|---|---|---|---|---|---|---|---|
| **Regional Characteristics** | | | | | | | |
| Industry as main sector | 11,911 | 5,440 | 45.7% | - | 1 | 0 | - |
| Agriculture as main sector | 11,911 | 927 | 7.8% | - | 1 | 0 | - |
| Urban area | 11,911 | 6,976 | 58.6% | - | 1 | 0 | - |
| **Community Characteristics** | | | | | | | |
| Access to electricity | 11,911 | 11,88 | 99.8% | - | 1 | 0 | - |
| Number of schools | 11,911 | - | - | 6.11 | 24 | 1 | 3.39 |
| Number of health facilities | 11,911 | - | - | 2.13 | 9 | 0 | 1.31 |
| **Household characteristics** | | | | | | | |
| Household size | 11,911 | - | - | 10.33 | 23 | 2 | 3.29 |
| Female as head of HH | 11,911 | 311 | 2.4% | - | 1 | 0 | - |
| Private home ownership | 11,911 | 10,849 | 91.1% | - | 1 | 0 | - |

Based on the results of IFLS 5 data processing, 11,911 research samples were obtained with a percentage of household classified as poor as many as 19.6% or 2,335 people. Furthermore, to obtain the estimated results of a household's probability of being poor or not poor then an estimated logit is performed, according to equation (8) Logit estimation results are shown in the following table 7:

**Table 7.** Logit Estimation Result

| | Logit | dy/dx |
|---|---|---|
| **Regional Characteristics** | | |
| Industry as main sector | - 0.158* | - 0.157* |
| | (0.078) | (0.008) |
| Agriculture as main sector | - 0.199* | - 0.020* |
| | (0.055) | (0.057) |
| Urban area | - 0.434* | - 0.044* |
| | (0.063) | (0.006) |
| **Community Characteristics** | | |
| Access to electricity | - 1.711* | - 0.177* |
| | (0.399) | (0.041) |
| Number of schools | - 0.937* | - 0.009* |
| | (0.010) | (0.001) |
| Number of health facilities | 0.039 | 0.004 |
| | (0.024) | (0.002) |
| **Household characteristics** | | |
| Household size | - 0.008 | - 0.001 |
| | (0.007) | (0.001) |
| Female as head of Household | - 0.049 | - 0.005 |
| | (0.147) | (0.015) |
| Private home ownership | - 0.283* | - 0.029* |
| | (0.418) | (0.009) |
| Constanta | 1.533 | - |
| | (0.418 | - |
| Pseudo | 0.102 | 0.102 |
| F-Statistics | 0.000 | 0.000 |
| Number of observation | 11,911 | 11,911 |

Dependent Variable: Poor
* $p < 0.05$

a. Regional characteristics

Based on the results of the logit model estimation, all variables that representing regional characteristics (industry as main sector, agriculture as main sector and urban) have a negative and significant effect on the probability of a household being poor. Households in areas where the main sector of work is the industrial (1 = industry, 0 = other) sector has a smaller probability of being poor by 15.7% compared to households in areas where the main sector of work is the non-industrial sector. Then, households in areas where the main sector of work is the agricultural sector (1 = agriculture, 0 = other) has a probability of being poor by 2% less than households in areas where the main sector of work is the non-agricultural sector.

Furthermore, households in urban areas (1 = urban, 0 = rural) have a 4.4% lower probability of being poor when compared to households in rural areas. This can happen because poverty is multidimensionally measured from various aspects/indicators, urban locations provide more complete access when compared to rural areas, for example access to water, electricity and others. So the probability of households in urban areas to be poor multidimensional will be lower.

b. Community characteristics

Based on the logit model estimation, there are two variables in the community character that significantly influence the probability of a household being poor, namely the variable availability of access to electricity and access to school, on the other hand variable access to health facilities does not affect the probability of household becoming poor. Households that have access to electricity (1 = have access to electricity, 0 = not) have a lower probability of being 17.7% lower than households without access to electricity. This is because the availability of access to electricity is able to encourage the productivity of a household, with acces electricity household being able to carry out more economic activity and more effective activities so that the probability of the household becoming poor will also decrease.

Furthermore, households that have access to better schools will reduce the probability of households becoming poor. Based on logit estimation results, increasing the number of schools by one unit in a community will reduce the probability of households to become poor by 1%. On the other hand, the existence of access to health facilities does not affect the probability of a household becoming poor. This can be due to an ineffective policy so that not all households are able to use the health facility.

c. Household Characteristics

Based on the logit model estimation, there is one variable in the characteristics of household that has a significant effect on the probability of a household being poor, namely the variable of home ownership, while the number of family members and women as a family has no effect on the probability of a household becoming poor.

Households that have their own homes (1 = own house, 0 = other) have a lower probability of being poor by 2.9% compared to households that do not have their own homes. On the other hand the number of family members and women as family does not affect the probability of household becoming poor. This can be caused by the low dependency ratio and not only the head of the household working in a household, so the number of families also does not affect the probability of a household to be poor.

### 3.3. Driver Multidimensional Poverty and its Policy Implications

Figure 1 represents the percentage of each multidimensional poverty indicator. There are three indicators that have a high percentage, these indicators are the implementation of immunization, availability of sanitation access and asset ownership. To reduce poverty, the government can implement policies that lead to a reduction in the percentage of each indicator

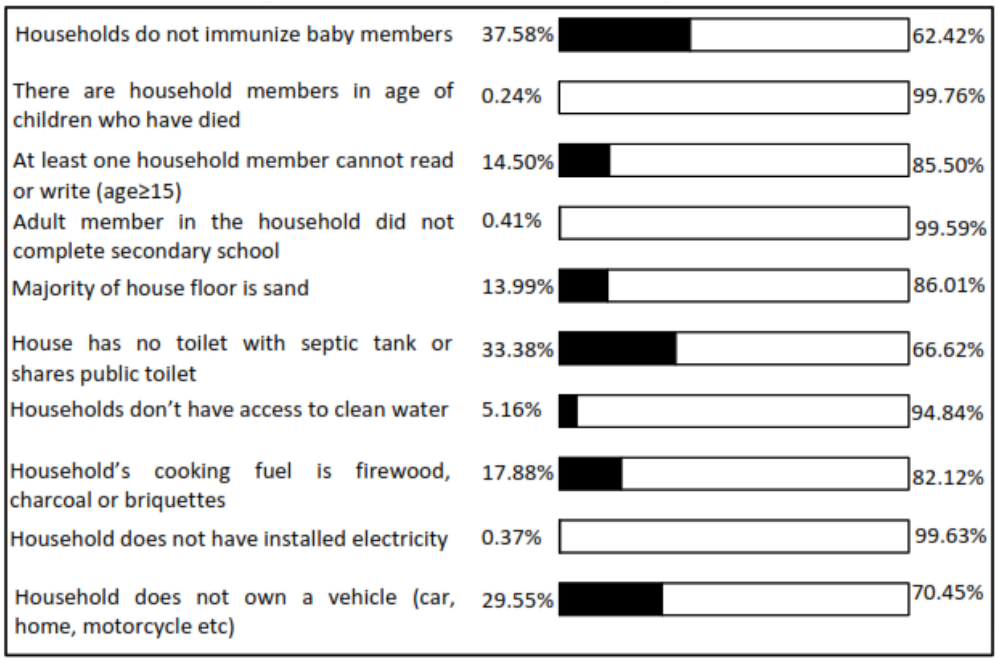


**Figure 1:** Multidimensional Poverty Indicator

Policies that can be done to reduce the percentage of each indicator of multidimensional poverty is to increase education about the importance of immunization for the community and the importance of a healthy lifestyle. Then another thing that can be done is by providing health facilities in the form of social security as well as assistance for proper sanitation development for the community. These policies can reduce the high percentage of indicators for the implementation of immunization and the availability of adequate sanitation for households.

Based on logit estimation, in regional characteristics there are several variables that affect the probability household to be poor. The influential variables include the main sectors of work (industry and agriculture) which reduce the probability of someone becoming poor. This can be the basis of government policy when it wants to reduce poverty, by increasing the role of the industrial and agricultural sectors in the national economy.

Furthermore, in the community characteristics there is a variable access to electricity that can reduce the probability of households to be poor, this can be the basis of government policy when they want to reduce poverty, the government must try to provide access to electricity for households up to 100% in Indonesia. Then in terms of community characteristics, the number of schools can reduce the probability of households becoming poor. Therefore the availability of schools is an important matter, but it must also be balanced with the quality of education and the ease of household access to education such as free school programs or scholarships.

The variable private home ownership can reduce the probability of someone to be poor, private home ownership can make households more flexible in managing their economy than when the house is the result of rent. The government can promote a house credit program so that households can have a private home, this can indirectly reduce poverty.

## 4. Conclusion

This paper adopted Alkire and Foster's multidimensional framework to estimate poverty and to identify the poor in Indonesia. It has analyzed data on 10 indicators pertaining to three valuable dimensions of well-being: education, health, and standard of living. This study finds that around 19.6% of the population in 2014 are categorized as being multidimensional poor. This value is higher than the poverty value based on monetary indicators issued by Central Statistics Agency of Indonesia (BPS) in 2014 which was 11.25%.

In this study, poverty determinants are divided into three types including regional characteristics, community characteristics and household characteristics. Based on the results of the logit model estimation, all variables that representing regional characteristics (industry as main sector, agriculture as main sector and urban) have a negative and significant effect on the probability of a household being poor. Then, there are two variables in the community character that significantly influence the probability of a household being poor, namely the variable availability of access to electricity and access to school, on the other hand variable access to health facilities does not affect the probability of household becoming poor. Furthermore, there is one variable in the characteristics of household that has a significant effect on the probability of a household being poor, namely the variable of home ownership, while the number of family members and women as a family has no effect on the probability of a household becoming poor.

Based on this study, there are several policies that the government can take to effectively reduce pro multidimensional poverty and decreasing probability of a household being poor. These policies include increasing the role of the industrial and agricultural sectors in the national economy, increasing number of school but it must also be balanced with the quality of education and the ease of household access to education such as free school programs or scholarships, promote a house credit program so that households can have a private home

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