



The Determinants of Poverty: Case of Indonesia

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ABSTRACT

Objective – The objectives of the study were to analyze the general picture of poverty, and determinants of poverty in Indonesia. Understanding poverty characteristic is a main point for designing an effective poverty reduction strategy. During the last five years Indonesia has experienced a slowing down growth and the poverty rates has declined slightly. Some provinces or regions have managed to reduce the poverty well, while others have been slower, and also the distribution of the poor is uneven across both rural and urban, generally the rural is more than urban area.

Methodology/Technique – Factors determining poverty of households were estimated and analyzed using a logit regression model, and it is found that such demographic factors as gender and age of households head, size of households, factors of production included accessibility to the technology and credit, working status, and education attainment, and also geographic characteristics significantly explain reasons for being poor. Moreover, increasing for accessibility of households to the technology and credit, reducing the size of households, and increasing an education attainment especially in rural area are important to do as a government priority intervention.

Findings – The results of the determinants of poverty in Indonesia shows that poor households are those with large number of dependents and equipped with limited education access, and the majority of these households live in rural area.

Novelty – Study suggests that increasing for accessibility of households to the technology and credit, reducing the size of households, and increasing an education attainment especially in rural area are important to do as a government priority intervention or policy implications.

Type of Paper: Empirical.

Keywords: Logit Regression; Poverty Reduction, Indonesia.

JEL Classification: I21, I22, I24.

1. Introduction

One of the main focus of the United Nations's Millennium Development Goals (MDGs) and the World Banks' Poverty Reduction Strategy Papers (PRSP) is to eradicate extreme poverty and hunger. These schemes are successful to reduce the global poverty rates by 50% in 2015, regardless the fact that there are approximately 1.2 billion global citizens earn and live on not more USD1.25 per day (UN, 2014). In addition, there are many Sub-Saharan African and Asian countries are still unable to thoroughly meet the goals set by the United Nations. Over the last decade, the poverty rate and number of poor people has continued to decline in Indonesia, almost doubled (on 2000 of 19.14% and declines to 11.47% on 2013). Despite Indonesia's

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successes in reducing poverty, disparities remain between the provinces. Some provinces have managed to reduce the poverty quickly, while others have been slower. In addition, the distribution of the poor is uneven across both rural and urban (generally the rural is more than urban area), with the largest percentage residing in rural areas in Java and Sumatra respectively, roughly the largest poverty is in Papua & Maluku (47%).

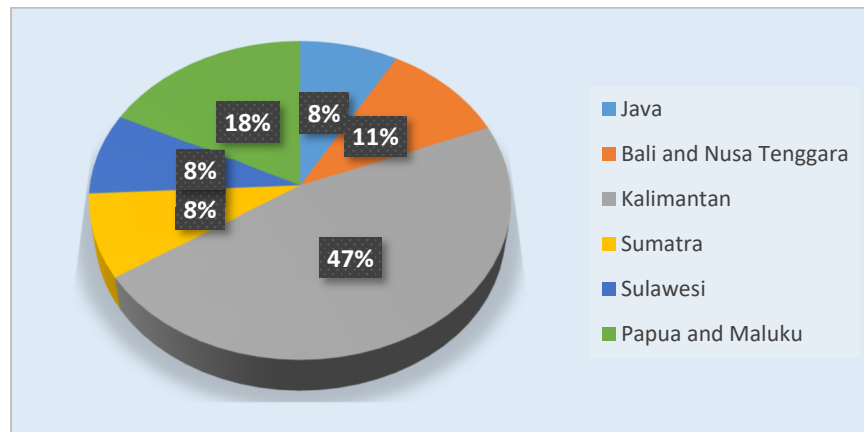


Figure 1. Poverty Profile per Province in Indonesia 2011

Source: TNP2K, 2011

Both developed and developing countries put poverty reduction as the priority in their development agenda. Government and policy makers particularly those in developing countries have encouraged economic growth, implemented redistribution policies, or combined two steps to abolish poverty. Some historical evidence show that the poor were in many ways not benefited from the growth, and therefore encourage global institutions like IMF and World Bank to initiate economic policies to ensure economic growth and higher incomes for the poor. It is argued that the pattern of growth is very crucial to determine the impacts of growth on poverty reduction (Maasoumi & Mahmoudi, 2013).

Several previous studies indicate that income distribution among the poor may lead to inequality and increased poverty (Bourguignon, 2004; Lopez, 2006). Besides, poverty reduction can not solely be achieved by economic growth (Ravallion & Datt, 2002). In other words, to improve and maintain the welfare and, in turn, to completely abolish poverty in one country, the policies made should promote economic growth as well as decrease the level of inequality. (Montiel, 2014). Indonesia has experienced a slowing down growth in the last five years, the poverty rates has declined slightly, interestingly the Gini Ratio has been larger and its pattern has been fitted with inflation rates. It means that there is correlation between inflation rates and the Gini Ratio, the wider inequality income distribution in Indonesia could be contributed by inflation rates.

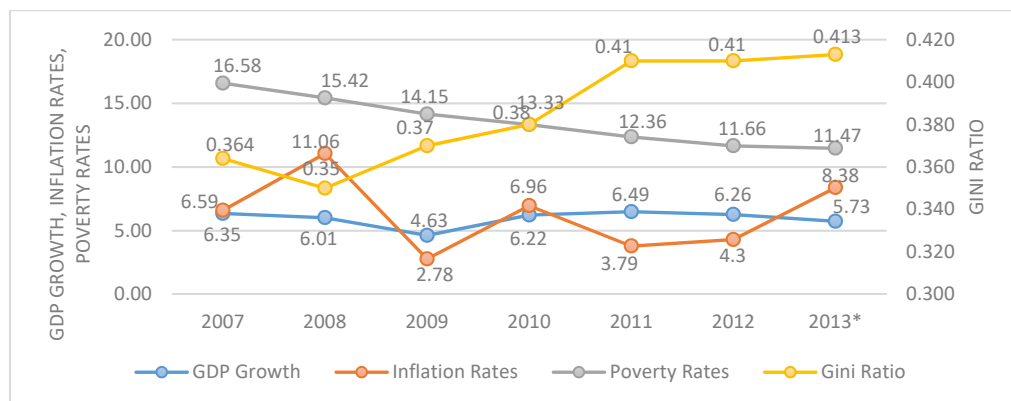


Figure 2. Macroeconomic Development and Its Impact on Poverty and Inequality

Source: Statistics Indonesia

(Streeten, 1998), noted that the poverty in society should be eliminated for several main reasons. Firstly, zero poverty society is highly productive society, as they are able to provide healthy, skilled, educated, and mentally alert workforce for sustainable economic growth. Secondly, small size family is more desirable in the society where poverty does not exist, as each member of the society is empowered for decision making. Thirdly, many believe that dreamed social situations such as healthy environment, desired democracy practices and social stabilities can only be achieved as the society can abolish its poverty. Several different approaches can be taken to identify factors lead to poverty. Among the major factors lead to poverty is first limited access. The poor has limitation in land and capital ownership as well as access to markets where they can sell their commodities and service. The second factor is limited participation to policy making process related to their interest, and the third is insufficient access to social service that lead to low quality human capital (World Bank, 1997).

In 2010, the Acceleration of Poverty Reduction (TNP2K) was established by the Presidential Decree of the President of the Republic Indonesia Number 15 year 2010. This national body is assigned to work in three areas, 1) developing policies and programs for reducing poverty, 2) synergizing similar programs proposed by other government institutions and other agencies, and 3) supervising and controlling the implementation of those programs.. In addition to mandating the establishment of TNP2K at the central level, its decree also mandates the formation of Regional Alleviation Coordinating Teams (TKPDs) at provincial and municipal level. Those duties are coordinating of regional poverty reduction efforts, and controlling regional implementation of poverty alleviation at provinces, districts and towns level.

Clear and comprehensive view of what poverty is and its causes are very vital for effective and comprehensive poverty reduction strategies.. To create ones, several parties including central and local governments, businesses, and the general public should sit together and discuss best practices to reduce poverty. Four major strategies were formulated to support a comprehensive acceleration of poverty reduction in Indonesia, 1) improving of social protection programs for the poor and vulnerable, 2) increasing access to such basic services as education, healthcare, clean water and sanitation, 3) empowerment of poor communities for sustainable and effective poverty reduction initiatives, and 4) inclusive development (participation is a key word in executing development) that will advantage the entire community involved (TNP2K, 2015).

In summary, during the last five years Indonesia has experienced a slowing down growth and the poverty rates has declined slightly. Some provinces or regions have managed to reduce the poverty well, while others have been slower, and also the distribution of the poor is uneven across both rural and urban, generally the rural is more than urban area. In addition, the Gini Ratio has been larger and its pattern has been fitted with inflation rates, the wider inequality income distribution in Indonesia could be contributed by inflation rates. There is a strong argument to think these changes when observing the changes in poverty and inequality as well as when studying the determinants of poverty in Indonesia. Therefore, this paper is expected to contribute to the study and literature related to poverty in Indonesian context, and the remains of the article is organized as follows; section II is the theoretical reviews, section III covers data finding and methodology, section IV is discussion, and final remarks and policy implication are presented in section V.

2. Literature Review

2.1 The Importance of Human Capital and Technology on Poverty Alleviation

In the last thirty years, Economists have put much effort to create economic policies that ensure the long term growth rate. The new “endogeneous growth” theories propose the importance of human capital and technology advancement for productivity improvement (Romer, 2006). Human capital is defined beyond its classical conception as physical capital that it includes education, health, and experience (Lucas, 1988). More human to physical capital ownership by the country will lead to a rapid economic growth, and in a long run, this growth will lead to poverty alleviation.

Poverty is defined as “unacceptable human deprivation in term of economic opportunity, education, health, and nutrition as well as lack of economic empowerment and security” (World Bank, 2001).

Poverty is a situation where people are deprived that they have very limited access to economic opportunities, good education, health, and nutrition, and are lack of economic empowerment and security (World Bank, 2001). The idea of being deprived is highlighted as the poor have no access for both external assets such as land and infrastructure, and internal assets for instance health and education. These challenges demand more complex strategies for alleviating the poverty (Stewart, 2007; World Bank, 2005). In other words, measuring poverty is a complex task, and there have been several approaches proposed to measure poverty. Among the major ones are monetary approach, capability approach, basic needs approach, social exclusion approach and participatory approach. These approaches help to identify the characteristic of households and their possibilities to have better welfare.

2.2 Poverty Measurements

Being welfare can be seen from both consumption expenditure and income as they indicate individuals' ability to access commodities and service.. However, this study used a consumption based measurement adopted from Andersson et al. (2006). There are some reasons for the basis of the measurement. First, income measures an opportunity for welfare, whereas consumption measures welfare achievement. Therefore, consumption is a lot more appropriate indicator of real welfare. Second, consumption is less fluctuative than income, and therefore it is more desirable to be used to measure individual's permanent income and welfare overtime. Third, some researchers and policymakers believe that uncovering the consumption behavior is more feasible than that of income. Fourth, accurate income is hard to measure as many people especially in developing countries involved in self-employed economic activities.

The measures adopted to identify the level of poverty are Headcount Index (P0), Poverty Gap Index (P1), and Poverty Severity Index (P2) which are resemble to those proposed by (Foster, 1984). Head Count Index (P0) refers to the number of poor households in the society and neglects the severity of the poverty itself, while Poverty Gap Index (P1) refers to the number of poverty line and comprises of households the live under the poverty line. The latter index indicates the poverty depth but not the inequality possibly occurs among the households in this group. Poverty Severity Index (P2) refers to the average of poverty gap relative to the poverty line. In Indonesian context, the Statistic Bireau defines the poverty line as the level of daily consumption which is equivalent to 2100 kilocalories per capita/day. There are two components of poverty line; food poverty line which is measured basen on 70% of the poor expenditure on 52 commodities; and non-food poverty line can be found by measuring the needs of the poor towards settlements, clothing, education, and access to health service. There are 51 commodities in urban area and 47 commodities in rural area used to define non-food poverty line. In addition, there are differences of the magnitude of poverty line across municipalities and provinces in Indonesia.

There have been several relevant studies, such as (Amuedo, 2004) for Chile, (Geda, 2005) and it is argued that in Kenya, being poor has strong assosiation with factors like education, the size of the family, and agricultural involvement. (Sekhampu, 2013), found that the possibility to live in poverty is strongly influenced by the household size and the age and the employment status of the head of the family. (Mok et al., 2007) showed that the possibility of living in poverty can be significantly reduced by strengthening the human capital. It is the migrant workers who are very vulnerable to live in poverty. In Urban Malaysia, family size, the race this family belongs to, and the region they are from may be used as indicators for defining the poverty. In addition, the gender and occupation of the household head also contribute to the poverty level. (Ennin et al., 2011). While, the study of (Andersson et al., 2006) showed that per capita consumption can be determined from such factors as household size, dependency ratio, education, access to agricultural inputs as well as geography and ethnicity. Ethnicity is believed to contribute to the incidence of poverty that there has been a higher incidence of poverty among the minorities not because they are unable to use the resource efficiently, instead it is because they are limited to access the productive resource.

Many claim that strengthening human capital through education and better access to health service will lead to significant reduction on poverty and its impacts on economy (Ali & Ahmed, 2013). The poverty incidence is not equally related with education that the higher the educational experience and achievement, the lesser the possibility of poverty incidence to happen.. Moreover, being a male member of the society is more advantageous as they can easily retain a status of being above the poverty level (Awan et al., 2011). In other words, it is education and experience that influence the poverty of individual member of the society, and thus prioritizing primary and middle education for the poor can be very powerful to eradicate the vicious poverty circle in the society and to increase productivity. Education service for the poor can be provided by the government in collaboration with private sectors and participation from community as well as education related NGOs (Awan et al., 2011). Among the employed individuals, being non-poor can be retained by strong and continuous education and experience, and a male's educational level is more significant to reduce the poverty than a female counterpart (Njong, 2010).

3. Methodology

Summarizing the discussion of theoretical considerations above, among the factors determining the consumption expenditure per capita are production, labor, capital, and technology that able to generate income and thus consumption capacity, demographic characteristics such as the family size, the age and gender of head of the family or household, and geographic location which describes variation of poor and non-poor households due to location, rural and urban area.

In Indonesia where the major income sources of the society are from agriculture and small scale business, and its consumption is shared among adults and other members of the family, the household that represents the family size is a sensible choice taken as the unit of analysis (Andersson et al., 2006). Data for this research is obtained from The Indonesian National Socioeconomic Survey (SUSENAS) 2012 which is a series of large scale multipurpose socioeconomic surveys. The survey was carried out by Statistics Beureau Indonesia and is reported that poverty status can be used to determine a range of household and individual characters such as, gender, age, size of households, occupancy, education levels, geographical location, and also accessibility the households due to credit and technology across 33 provinces In Indonesia.



Figure 3. Map of Indonesia by Province

In choosing the samples, stratified multi-stage design is adopted and it constitutes 278,836 households in Indonesia which is scattered in 33 provinces. Generally, the sample is divided into two groups, urban and rural households, 119,735 and 159,101 households respectively. The non-poor households which is located in an urban area are 111,677 (93.27%), and poor households are 8,058 (6.73%). Meanwhile, the non-poor households which is located in rural area are 137,241 (86.26%), and the poor households are 21,860 (13.74%).

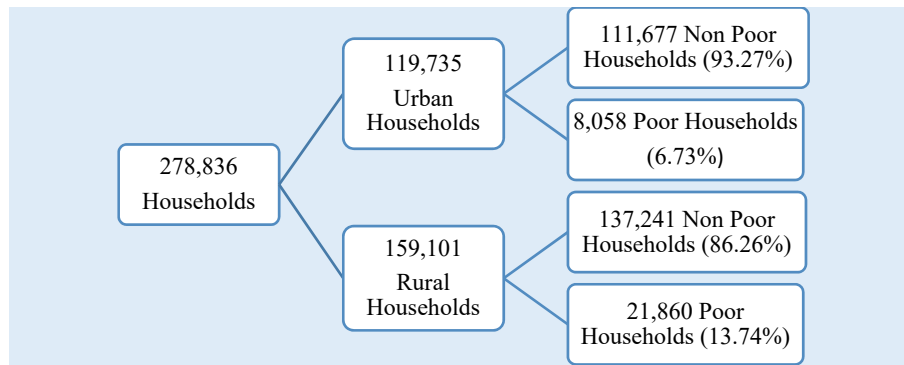


Figure 4. The Sample Selection
Source: Statistics Indonesia, March 2012

The theoretical discussion supported with the data available from SUSENAS, an empirical model can be formulated to identify factors determining the poverty in Indonesia using a binomial logistic regression model. There is a dichotomy to refer to dependent variable, 1 if a household per capita expenditure is below the poverty line, and 0, if a household per capita expenditure is above the poverty line. Let P_i indicates the probability that the i th household is below the poverty line. It is assumed a Bernoulli probability distribution and it depends on the vector of explanatory X variables, so that:

$$P_i(X) = e^{(\alpha + \beta X)} / (1 + e^{(\alpha + \beta X)}) \quad (2)$$

where β is a row vector and α is a scalar. The logit function to be estimated is then written as:

$$\ln P_i / (1 - P_i) = \alpha + \sum_j \beta_{ij} X_{ij} \quad (3)$$

The logit variable, $\ln P_i / (1 - P_i)$ is the natural log of the odds in favor of the household falling below the poverty line. Equation (3) will be estimated using the maximum likelihood method, and this method does not need a normality assumption or equal variance of errors in explanatory variables (Mok et al., 2007). The explanatory variables contain three factors, household characteristics (gender, age, size of household), factor of production (employment, education levels, access to credit, and access to technology), and geographic characteristics (rural and urban households). They include both of dichotomous or binary and continuous variables used in the model as seen in Table 1.

Table 1. Summary of Variables Used in the Logit Regression Model

Number	Name of Variable	Explanation of Variable	Expected Sign
0	Poverty Status	Dependent Variable (being in poor or non-poor household), 1 if a household per capita expenditure is below a poverty line, and 0 otherwise	
1	Household Characteristics		
	Gender	Gender of household head, 1 if the gender is female, and 0 otherwise	positive
	Age	Age of household head (in years)	negative
	Size	Number of person in a household	positive
2	Factors of Production		
	Work	Working Status, 1 if a household head is not working, 0 otherwise	positive
	Edu	Education attained by a household head, 1 if education attainment of a household head is equal or less than junior high school, and 0 otherwise	positive
	Credit	Access to credit, 1 if no one in household has an access on credit, 0 otherwise	positive
	Phone	Mobile phone ownership as a proxy of access to information technology, 1 if a household does not have a mobile phone, 0 otherwise	positive
3	Geographic Characteristics		
	Location	Location of household, 1 if a household in rural area, 0 otherwise	positive

4. Results and Discussion

Table 2 provides a general picture of poverty in Indonesia. Generally, the poverty performance showed an improvement in headcount index (P0), poverty gap index (P1), and severity index (P2). Respectively, the P0, P1, and P2 have declined from 13.33, 2.21, and 0.58 in 2010 to 11.66, 1.88, and 0.47 in 2012. However, those indices are better in urban area than in rural, it means that poverty incidence is more likely in rural area. On the other hand, Gini Ratio in rural and urban area have increased, showed that inequality tend to be wider. However, the rural area was smaller than area, indicated that in term of inequality rural area much better than urban area. Compromising the result in poverty performance and Gini Ratio can be concluded shortly that rural area was more suffered from poverty, and even the inequality is good, it can be understood that majority households in rural area were poor.

Table 2. Head Count Index (P₀), Poverty Gap Index (P₁), Severity Index (P₂), and Gini Ratio Based on Location 2010-2012

Year	P ₀			P ₁			P ₂			Gini Ratio		
	Urban	Rural	U&D	Urban	Rural	U&R	Urban	Rural	U&R	Urban	Rural	U&R
2010	9.87	16.56	13.33	1.57	2.80	2.21	0.40	0.75	0.58	0.38	0.2	0.38
2011	9.09	15.59	12.36	1.52	2.63	2.08	0.39	0.70	0.55	0.42	0.34	0.41
2012	8.06	14.7	11.66	1.40	2.36	1.88	0.36	0.59	0.47	0.42	0.33	0.41

Source: Statistics Indonesia, 2014

The demographic information help in understanding of the household structures of the sample population. There were more female headed households for the non-poor household sample (14.12%) than was in poor

household (12.12%). The demographic information help in understanding of the household structures of the sample population. However, the performance of household size in both group were different significantly, which was 3.79 on average in non-poor and was 5.12 in poor households.

Table 3. Demographic Characteristics of Poor Households and Non-Poor Households in Indonesia

Household Type	Demographic Characteristics	Mean	Standard Deviation	Min	Max
Poor	Household Size	5.12	1.95	1	18
	Household Head Age	46.83	13.88	10	98
Non-Poor	Household Size	3.79	1.68	1	22
	Household Head Age	47.12	13.71	12	98

Source: Statistic of Indonesia, March 2012

In term of education attainment, the most of poor households and non-poor household were primary school completed, and the number of poor with this attainment was greater than the non-poor. However, after that such level the number of household who completing the junior high school declined in both group, and intersecting each other. The turning point has been occurred in complete high school category, the number of non-poor high school completed were larger that the poor. And the gap between the two groups were contrast. In addition, after the complete high school category the number of household with complete higher education in two group declined. It can be concluded that the education improvement will have a positive impact on their improvement of well-being if the people completed their high school.

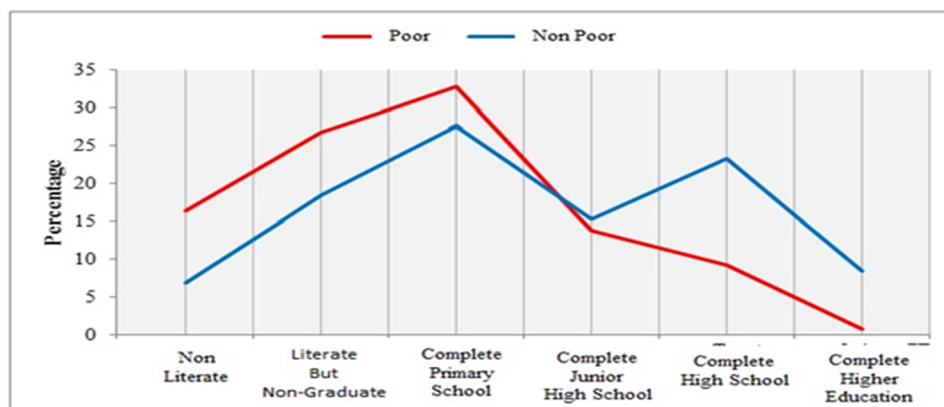


Figure 5. Education Attainment across Poor and Non-Poor Households

The results of the logistic or logit regression on determinants of poverty are presented in Table 4, presenting the Z test statistic and the odds ratio for each of the explanatory variable. Firstly, the household poverty status is significantly affected by demographic factors like the gender and age of the head of the household as well as the size of the household. The positive sign of the coefficient of gender, $\beta = 0.2008$, indicates that the gender positively affects the probability of living in poverty, that the probability of household led by female will be 1.22 times larger than the others for being poor. Similarly, age of the head as well as the size of the household important determinants of poverty. Results suggest that the older the household head is negatively related to the probability of living in poverty. Furthermore, the larger size of households are more vulnerable to experience poverty.

Secondly, factors of production included working status, education attainment, access to credit and information technology positively significant affect for being poor. If the household head are not working the probability of being poor is 1.12 times greater than others. Accessibility to get the credit have a positive impact on probability for being poor, if no one in a household does not have an access on credit, the probability for

being poor is 1.6 times greater than others. The human capital strongly relies on education and it can be assessed by the number of people having opportunities to higher education and training. The results indicate that the education positively correlates with the poverty status. If the education of household head is equal or less than junior high school the probability of being poor is 1.5 times greater than others. Finally, the household accessibility to the information technology has a positive impact for being poor, if no one of household member has a mobile phone the probability of being poor is 5 times greater than others.

Lastly, the geographic characteristics which is represented by the location (urban and rural area) also affects positively significant on probability of being poor. The probability of households in a rural area will be 1.5 times greater than in urban area for being poor. In addition, this confirms the result that there are more incidence of poverty in rural area compared to that in urban area. For this reason, it is important for the government for focusing alleviation poverty strategy in rural area.

The results of logit regression analysis on the factors determining household poverty status notes that demographic characteristics, factors of production, and geographic characteristic are significantly explain the poverty status in Indonesia. Demographically, household size is the most important determinant affecting the poverty status; the larger the size the greater likelihood of that such household for being poor. It can be understood that the household burden is greater as in large households there are usually more dependants than the earners and the shared earning means smaller expenses for consumption. Moreover, the result is also confirmed with the descriptive result with the mean of household size in the poor is greater than the non-poor, 5.12. The older the household head, the lower the probability of this household to live in poverty. The probability of a household being poor tends to decline as age of the household head increases. This can be explained by an increase in asset ownership as people get older, or the composition of the family changes in time as children grow up and contribute to household income or leave the household (Sekhampu, 2013).

Table 4. The Logit Regression Estimation Results

		Number of Observations		=	170927
		Likelihood Ratio		=	1003,59
		LR (prob)		=	***0.0000
		Pseudo R2		=	0.0087
Variable	Coef.	Std. Err.	Z	P> Z	Odds Ratio
Gender	0.2008	0.0225	8.92	0,000 ***	1.2223
Age	-0.0069	0.0005	-12.71	0,000 ***	0.9931
Size	0.4657	0.0037	127.33	0,000 ***	1.5932
Work	0.1596	0.0219	7.29	0,000 ***	1.1730
Credit	0.4547	0.0255	17.81	0,000 ***	1.5757
Edu	0.3860	0.0150	25.66	0,000 ***	1.4711
Phone	1.6177	0.0150	107.58	0,000 ***	5.0415
location	0.4276	0.0152	28.19	0,000 ***	1.5335
constants	-5.2756	0.0420	-	0,000 ***	0.0051

***significant at 1%, **significant at 5%, *significant at 10%

Source: Output of Logit Regression Model

Factors production have a positive impact on poverty status, respectively the most important is accessibility to information technology, access to credit, and education attainment. Factors of production are needed for creating a household output. The mobile phone ownership in a household as a proxy of accessibility to information technology has a strong relationship with an ability of the household to use this factor to generate the income. The TNP2K has a networking with banks and other financial institutions especially on offering the micro credit for micro business to make them more productive. The result shows that access to credit has a potential impact on poverty reduction. Improving education attainment will lessening the poor. Quality of human capital can be measured by the availability of the education accessible for the people. People with better education will have a better future because it will help the people to get a better opportunity for getting a better

job and better wages. Finally, location is an important variable to explain the poverty status. The likelihood of rural household for being poor is greater than in urban, this factor cannot solely explain the phenomenon, however the location is related to other characteristics which embedded in rural area, such as lagging behind in term of education attainment, accessibility to technology, capital, and infrastructures, and also engagement of rural people in agricultural activities. In the future, rural area should be a priority in poverty alleviation targeting.

5. Conclusions and Policy Implications

The objectives of the study were to analyze the general picture of poverty, and determinants of poverty in Indonesia. The poverty reduction in Indonesia during the last five years has been slowing down which was in line with the economic growth. In addition, the inequality has been wider and its pattern was similar with the inflation rates, there was an association between inequality and inflation rates and also poverty. The results of the determinants of poverty in Indonesia shows that poor households are those with large number of dependents and equipped with limited education access, and the majority of these households live in rural area. The important variables to explain the probability of being poor respectively are, accessibility to the technology and credit, size of household, and quality of human capital through education attainment. It means that increasing for accessibility of households to the technology and credit, reducing the size of households, and increasing an education attainment especially in rural area are important to do as a government priority intervention or policy implications.

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