

Dynamic Poverty Study: Chronic and Transient Poverty in Indonesia

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The purpose of this study is to examine the condition of dynamic poverty from 2008 until 2010 in Indonesia and to understand the determinant of chronic poverty and transient poverty. The study method used was quantitative method with Component approach of Equally Distributed Equivalent (EDE) Poverty Gap to show chronic component of poverty and transient component of poverty. In the determinant analysis of chronic component of poverty and transient component of poverty, the regression method used was the Tobit method. The data used were derived from the National Socioeconomic Survey (Susenas) in 2008 and 2010. Meanwhile, the software used in the analysis was Microsoft Office Excel 2013 and Stata 12. The results of this study indicated that poverty in Indonesia was dominated by chronic poverty. The value of the chronic poverty component reached 78 percent and the value of the transitional poverty component was 22 percent. Provinces with the highest chronic component of poverty were Papua, West Papua, DI Yogyakarta, Aceh, and Central Sulawesi. Based on rural-urban location analysis, chronic poverty was mostly found in rural areas in eastern Indonesia, especially Maluku, Papua, and parts of Kalimantan. Regression estimation results showed that chronic poverty and transient poverty were influenced by the education status of the household head, household size, household location, occupation of the head of household, and access to credit, which had a larger influence on chronic poverty.

Key words: *Poverty, Dynamic Analysis, Component Approach.*

JEL Classification: *I32, J24, P36, P46.*

Introduction

Poverty has become a strategic issue at a global level in recent years. The strategic issue arises from the commitment of world leaders to reduce poverty in each country (Hulme and Shepherd, 2003). This commitment is unified within a global partnership called Millennium

Development Goals (MDGs) 2015. Decreasing the poverty levels is also a priority of Indonesia Government that has set the target of reducing poverty to 7.5 percent of the population by 2015 (Bappenas, 2008). This target is supported by the enactment of Presidential Regulation No.13 of 2009 on Coordination of Poverty Alleviation and enhanced through Presidential Regulation no. 15 Year 2010 on the Acceleration of Poverty Reduction (Latifah, 2011). This achievement is also evident from the publication of the Statistics Indonesia (BPS), which shows a pattern of poverty that continues to decline every year. The number of poor people in Indonesia was 34.01 million people or 17.47 percent in 1996, while in 2011, the number was 30.02 million people or 12.49 percent of the total population.

The fairly good achievement of poverty reduction still faces several challenges. The challenge is the complexity of poverty reduction due to the lower poverty rate in Indonesia (Komite Ekonomi Nasional (KEN), 2013). Another challenge is the distribution of income in Indonesia that continues to decline. The Gini index (World Bank Estimate) increased from 1996 to 0.41 in 2012 (Balisacan, Pernia, & Asra, 2003; Miranti, 2010). The Government of Indonesia solves the challenge of reducing poverty by revising poverty reduction policies. The effort to improve poverty reduction policies involves the change of anti-poverty policy approach, from macro top-down approach to community-based participatory approach (Teguh & Nurkholis, 2011) (Dartanto and Nurkholis, 2013). Specifically, the example of a community-based policy is manifested by four major program clusters implemented by the National Team for the Acceleration of Poverty Reduction (TNP2K).

Various anti-poverty programs and policies that have been implemented by the Government of Indonesia need to be evaluated. This evaluation is conducted to determine the effectiveness of the program in tackling poverty. In addition, policy evaluations need to be made because current policy-making for poverty is still based on static measurement and research (Dartanto and Nurkholis, 2013), although poverty is not a static phenomenon (May, 2001; Muller, 1998). The dynamic poverty approach uses the time dimension as an important part of the observation process. This measurement will provide a deeper picture of the poverty conditions experienced by a household (Kimsun, 2012).

The results of dynamic poverty analysis will have different policy implications. This difference arises because of the classification of the poor into two parts: chronic poverty and transient poverty. Chronic poverty is considered to be a poverty that lasts for a relatively long period of time, while transient poverty is a relatively short-time fluctuating poverty or a poverty event. According to Jallan and Ravallion (1998), both types of poverty have different policy implications. Policy differences for chronic poverty and transient poverty are also inseparable from their different determinants. Determinants of chronic poverty are the structural factors or are inherent in a household (Wardhana, 2010). Factors of household location that is in rural areas also affect the household experience of chronic poverty (Jallan

& Ravallion, 2002). Besides that, a large number of household members will lead to a high degree of dependence (Bayudan-Dacuycuy & Lim, 2013). Low income levels with a large number of family members further reduce their per capita income. Economic factors in the form of employment of household heads that is in the agricultural sector are also key factors that relate to chronic poverty in Indonesia (Dartanto & Otsubo, 2016). On the other hand, the sex of the head of the household is also influential. Households with female heads tend to be in poverty for a longer duration (Van Edig & Schwarze, 2011). This situation is inseparable from socio-cultural conditions of people in developing countries regarding the positioning of women. The role of women is still very limited in public affairs and there is still discrimination in terms of employment because women are considered to be less skilled than men.

Meanwhile, important transient poverty factors include health insurance ownership and access to microcredit (Jalan & Ravallion, 2002). Health insurance is believed to be able to eliminate poverty due to economic shocks such as chronic illness that often makes the household lose its main income. The administration of insurance can reduce the healthcare cost, thus the treatment will be easier to do. Access to micro credit is also believed to be able to free households from transient poverty. Based on the description, the authors examined dynamic poverty analysis by referring to recent research conducted by Dacuycuy and Lim (2013) in the Philippines along with Dartanto and Nurkholis (2013) in Indonesia. Further analysis is expected to find empirical facts of dynamic poverty in Indonesia. The empirical facts findings are also expected to be used to complement previous studies and thus, they can be considered in formulating anti-poverty policies.

Literature Review

The definition of poverty continues to develop. These developments stem from Rowntree's publication in 1901 (Maxwell, 1999; Philip & Rayhan, 2004). Rowntree defines poverty as the inability to fulfil the minimum human nutritional needs (Foundation, Goulden, & D'Arcy, 2014). In the 1970s, Runciman and Townsend offered a new definition of poverty not only as a failure of minimal nutrient fulfilment, but also a failure in improving income distribution in a society (Maxwell, 1999; Philip & Rayhan, 2004). In addition, the concept of poverty became even more widespread by the issuance of the International Labor Organization (ILO) reports in the mid-1970s. The ILO, in Maxwell (1999), stated that poverty was not only defined as poverty in the dimensions of income or expenditure, but also in the dimensions of basic needs, including social needs such as education, health, and other basic services.

Definitions and concepts of poverty are becoming increasingly complex. According to Chambers (1987) in Suryono (2001) and Maxwell (1999), the core of poverty lies in the so-called deprivation trap. Deprivation trap specifically consists of five elements: poverty itself,

physical weakness, alienation, vulnerability, and helplessness. Other concepts emerge from the Brundtland Commission on Sustainability and the Environment, which incorporates livelihood or occupational elements as part of the assessment of poverty. Maxwell (1999) stated that this commission succeeded in introducing a new term called sustainable livelihood (Maxwell, 1999). More broadly, Sen (1987) saw that the assessment of poverty lay in key capabilities or key skills. A person can be said to be prosperous if they have capabilities to function in society.

The World Bank in 1990, as cited in Moeis (2007), stated that poverty is the inability to attain a minimum standard of living. The narrow definition then underwent further development to poverty as deprivation in well-being (Haughton & Khandker, 2009). The next question that arises is what is meant by the well-being and the size of the deprivation (Haughton & Khandker, 2009). The Statistics Indonesia (2004) defined poverty as an inability to fulfil minimum standards of basic needs that include food and non-food needs. The minimum basic needs standards are obtained from surveys conducted in the community. In the next stage, the poor and non-poor are classified by comparing the level of consumption of the population with the poverty line or the number of rupiahs for per capita consumption per month.

According to Philip and Rayhan (2004), the classification of the poverty approach consists of the welfare approach and the non-welfare approach (Philip & Rayhan, 2004). The welfare approach sees poverty as an inability to achieve welfare as demonstrated by one's utility function. Research conducted by Aryogi (2014) also showed that the largest component of the well-being contributor is income or consumption expenditure (Aryogi, 2016). Therefore, the commonly used proxies in this approach are income or expenditure (consumption). Meanwhile, the non-welfare approach sees poverty from various dimensions or aspects of one's life. Therefore, the approach is not centred on an economic aspect. This approach emphasises the aspect of a person's functioning ability to live a decent and dignified life in society. Examples of aspects included in this approach are access to education, access to electricity, and sanitation.

According to Zastrow (2000) and Rosyidi (2005), poverty can be viewed with subjective and objective approaches (Zastrow, 2009). A subjective approach leads to individual poverty being unrelated to the ownership of a particular economic asset and its ability to make ends meet. This approach is closely related to one's perception of one's own condition. The objective approach divides poverty into absolute poverty and relative poverty. Nacional De Estadística Institute (2010) defines absolute poverty with regard to the minimum standard of living of a society that is reflected in the form of a poverty line that remains unaffected by the economic conditions of the society (Förster & Mira D'Ercole, 2005). While relative poverty is defined as those who are at the bottom of the percentage of the degree of poverty, a community is classified as poor. Such a grouping can declare those classified as poor to also

be sufficient in their basic rights, but the level of empathies is in the bottom layer. Relative poverty is the poverty seen from the dimension of inequality between groups of people. The inequality approach does not focus on measuring the poverty line, but on the magnitude of the difference between the bottom 10 or 20 percent of the people and 80 percent or 90 percent of the rest of society. The inequality-oriented approach focuses on minimising the differences between those who are poor and prosperous in every dimension of social stratification and differentiation.

Suharno (2008) divided poverty measurement indicators into two parts: monetary (quantitative) indicators and non-monetary (qualitative) indicators (Suharno, 2008). Monetary indicators are part of the welfare approach, while non-monetary indicators are part of the non-welfare approach. Suharno (2008) generally divided the monetary (quantitative) indicators into two main indicators: income and consumption expenditure. Whereas, examples of non-monetary indicators are health, nutrition, literacy, social relations, security, confidence, and empowerment. The characteristics of poor households is important to be understood. The knowledge is useful as the basis for effective anti-poverty policy making. According to Haughton and Khanker (2009), the characteristics of poor households can be seen from several aspects, such as economic aspects, social aspects, and demographic aspects (Haughton & Khandker, 2009).

(1) Economic Characteristics

Generally, some examples of household economic characteristics that are related to poverty, both chronic poverty and transitional poverty, are employment and access to financial sources such as microcredit or soft loans. In fact, households that are identical to chronic poverty are households that work in the agriculture sector (Teguh & Nurkholis, 2011).

(2) Social Characteristics

Indicators that can be used in social characteristics are the level of education attained, the level of health, housing, and social life. Education is a key factor in reducing chronic poverty (Jalan & Ravallion, 2002).

(3) Demographic Characteristics

Household demographic characteristics related to chronic poverty and transitional poverty include the number of household members, the number of unproductive household members (who are not part of the labour force), and the sex of the head of the household.

The measurement of static poverty is the measurement of poverty at a certain point of time. The measurement of poverty is a common measure to be made and published in a country's economic report and be measured by the Foster-Greer-Thorbecke (FGT) Index, the Sen Poverty Index, and the Human Poverty Index. Poverty is a complex and stochastic phenomenon (IRIANTI, 2013). Many households regress to poverty as time passes. This makes decreasing poverty levels require an appropriate and accurate standard measure (Muller, 1998). Accuracy of conventional poverty measurement in the form of static poverty measurement becomes less relevant today. Smith and Middleton (2007) argued that an in-depth comprehension of poverty would not be obtained from a point-in-time or static analysis. Awareness of the weaknesses of static poverty measurements led this study to use the time dimension in measuring poverty. This analysis is then referred to as dynamic analysis. The measurement of dynamic poverty is expected to improve the effectiveness of policies undertaken with an additional measure of conventional poverty (Addison, Hulme, & Kanbur, 2008; Dacuycuy, Sauler, & Lim, 2019; Smith & Middleton, 2007; Van Edig & Schwarze, 2011).

Methodology

Data Types and Sources

The data used in this study were secondary data in the form of household cross section data for 2008 and 2010. The data contained samples that were taken from individual and household level surveys in the National Socio-Economic Survey (Susenas) by the Statistics Indonesia (BPS). The sample used was the sample of household level in 33 provinces in Indonesia. The first phase of study was conducted by calculating the poverty value of dynamic chronic component of poverty and transient component of poverty. The second stage was the analysis with econometric approach in the form of Tobit regression to know the determinant of chronic component of poverty and transient component of poverty.

Analysis Technique

This study used two models of determinants of poverty. The first model was the chronic component of poverty model, while the second model was the transient component of poverty model. The dependent variable used was chronic component of poverty in chronic component of poverty model. Meanwhile, the dependent variable was the transient component of poverty in the second model. The value of both dependent variables was obtained from the statistical calculation of DAG method by using equally distributed equivalent (EDE) poverty gap technique. The following will explain the technical dependent calculation on both models that have been made in detail.

This study used Component approach to know the dynamic poverty in Indonesia. Based on this approach, poverty was divided into chronic component of poverty and transient component of poverty. Furthermore, the determinant analysis of chronic component of poverty and transient component of poverty was conducted by constructing two models of dynamic poverty. The first model was the chronic component of poverty model and the second model is the transient component of poverty model. Table 1 shows the variables used in each model. In the dynamic poverty determinant model of chronic component of poverty, the response variable used was chronic component of poverty variable. Meanwhile, the stimulus variables used were the education level of head of household, household size, dummy variable of household head, dummy variable of location of household, dummy variable of job of head of household, dummy variable of credit access, and dummy variable of health insurance for the poor (Jamkesmas). In the dynamic poverty determinant model of transient component of poverty, the response variable used was the transient component of poverty with the same stimulus variable as in the first model.

Table 1: Variables in the Dynamic Poverty Determinant Model

	Variable		Symbol
Model 1 : <i>Chronic Component of Poverty</i>	Dependent	<i>Chronic component of poverty</i>	Ch
	Independent	Educational level of head of household	Edu
		Household size	Hhsize
		Sex of head of household	Dsex
		Dummy variable of location of household	Dlocation
		Dummy variable of head of household work	Dsector
		Dummy variable of credit access	Dcredit
		Dummy variable of health insurance for the poor (Jamkesmas)	Dinsurance
Model 2 : <i>Transient Component of Poverty</i>	Dependent	Transient component of poverty	Tr
	Independent	Educational level of head of household	Edu
		Household size	Hhsize
		Sex of head of household	Dsex
		Dummy variable of location of household	Dlocation
		Dummy variable of head of household work	Dsector
		Dummy variable of credit access	Dcredit
		Dummy variable of health insurance for the poor (Jamkesmas)	Dinsurance

Analysis Technique of Chronic Component of Poverty and Transient Component of Poverty

This study used per capita expenditure or per capita consumption expenditure (pce) as a proxy of the level of household welfare. The next stage was to determine the poverty line that would be used as a determinant of the level of poverty of a household. The poverty line that was used in this study was the rural-urban poverty line published by BPS in 2008 and 2010. Referring to the study of Dacuycuy and Lim (2013), the next step was to normalise per capita expenditure by dividing per-capita expenditure per household in each year by its poverty line according to the (rural-urban) household location and looking for poverty gap value by subtracting per capita expenditure from 1. For households with per capita consumption expenditure below the poverty line, the poverty gap was positive, while for households with per capita consumption expenditure above the poverty line, the poverty gap would be negative and considered to have a poverty gap of 0 (zero). After the poverty gap was found, the total poverty calculation can be determined by summing the poverty gap for each period and dividing it by the duration of the observation time.

$$G(ij) = (1 - Yij) \quad (1)$$

$$P\alpha(gi) = (1 - Yij) \quad (2)$$

In equation above, G_{ij} was an individual Poverty gap (i) at the jth period, Y_{ij} was the individual per capita expenditure (i) in the normalised j-period, $P\alpha(gi)$ was the total poverty of the individual (i), t was the period of observation, and α was the period of observation in Jalan and Ravallion (JR) method.

JR method estimates the poverty component of chronic component of poverty by calculating the average value of normalised per-capita expenditure. If the average household per capita expenditure is below 1 (one), chronic component of poverty will be obtained. If a household has an average per capita expenditure above a normalised poverty line (of 1), then the chronic component of poverty will be zero. Meanwhile, the transient component of poverty value was derived from the reduction of total poverty with chronic component of poverty. Mathematically, the calculation will be explained as follows:

$$\bar{y}_i = t^{-1} \sum_{j=1}^t Y(ij) \quad (3)$$

$$P\alpha * (y_i) = t - 1 \sum_{i=1}^t (1 - \bar{y})^\alpha \quad (4)$$

$$P\alpha T(y_i) = P\alpha(gi) - P\alpha * (y) \quad (5)$$

Where:

\bar{y} = the average per capita expenditure

$Y(ij)$ = normalised per-capita expenditure

- $P\alpha(g)$ = total poverty
 $P\alpha^*$ = chronic component of poverty
 $P\alpha T$ = transient component of poverty
 t = duration of observation time
 α = 1,2,3

The calculation result of chronic component of poverty and transient component of poverty using this method will not be used as dependent variable in regression model analysis. The calculation results of this method will only be used as a comparison in the descriptive analysis of the composition of the poor in Indonesia.

Equally Distributed Equivalent (EDE) poverty gap was a statistical concept that divided the overall poverty gap between all observed individuals. This will have an impact on the equitable distribution of poverty levels of all individuals observed. Textually, PEP (2010) defined the EDE poverty gap as the gap that, if it were assigned to all individuals, would generate the same level of poverty as that generated by the observed distribution. Furthermore, the EDE poverty gap equation can be written mathematically as follows:

$$\Gamma\alpha(g) = P\alpha(g) \quad (6)$$

Based on the equation of EDE poverty gap above, then we will get total poverty value with the formula as follows:

$$\gamma\alpha(gi) = (t^{-1} \sum_{j=1}^t g(ij)^\alpha)^{1/\alpha} \quad (7)$$

$$\gamma 1(gi) = (t^{-1} \sum_{j=1}^t g(ij)) \quad (8)$$

$$\theta\alpha(gi) = \gamma\alpha(gi) - \gamma 1(gi) \quad (9)$$

Where $\gamma\alpha(gi)$ was the total poverty value of the i -th individual; $\gamma 1(gi)$ was the value of chronic component of poverty of individual i ; $\theta\alpha(gi)$ was the transient component of poverty value of the i -th individual; t is the duration of observation; $g(ij)$ was a poverty gap from individual income to i year j ; and α was 1,2,3. The results of chronic component of poverty and transient component of poverty with this method will be the value of the dependent variable in chronic component of poverty model and transient component of poverty. After the value of the dependent variable of both models was determined, then the next step was to perform regression. Regression was performed with the help of Stata 12 software because of the number of data or observations that reached thousands.

Regression Analysis Techniques

Linear regression method used in this study was Tobit method (standard). Tobit method was selected because the dependent variable data on chronic component of poverty model and transient component of poverty was censored. Specifically, the dependent variable data on both models were left-censored at 0. According to Green (2008) and Hill et al (2012), censored data were limited to a certain range of data with uniformity of values at certain points/values and should be estimated using the Tobit method (Green et al., 2014). In general, the Tobit regression method can be written as follows:

$$y_i^* = \mathbf{x}_i' \boldsymbol{\beta} + u_i, \quad i = 1, 2, \dots, n$$
$$y_i = \begin{cases} y_i^* & , \text{jika } y_i^* > 0 \\ 0 & , \text{jika } y_i^* \leq 0 \end{cases} \quad (10)$$

Where y_i^* was the dependent variable; x_i was the independent variable; β was the vector predictor of the model parameter; and u_i were model and distributed $N(0, \sigma^2)$.

Tobit Estimation

The Tobit model parameters was estimated by looking at the marginal effects of each independent variable on the conditional expectation function. There were four conditional expectation value functions that can be used to interpret the coefficient of Tobit estimation: (1) marginal effect on latent variable (2) marginal effect on actual variable (3) marginal effect on positive observations (4) marginal effect on probability.

(Simultaneous) Wald Test

Wald test is a statistical test used to determine the significance level of an independent variable in influencing the dependent variable partially (individually) with the hypothesis:

H0 : $\beta_i = 0$, meaning there was no partial influence between independent variables and the dependent variable.

H1 : $\beta_i \neq 0$, meaning there was a partial influence between independent variables and the dependent variable.

Based on the hypothesis, if (W arithmetic) was less than (t table), it can be concluded that alternative hypothesis is rejected, which means independent variable is unable to explain dependent variable or not statistically significant.

Likelihood-ratio Test

Simultaneous test or likelihood-ratio test is a statistical test that is used to see the significance of an independent variable in simultaneously influencing the dependent variable. The hypothesis constructed in Likelihood Ratio test is:

H0: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = \beta_6 = \beta_7 = 0$

H1: at least one parameter (β) is worth $\neq 0$

If the result (G arithmetic) is greater than ($\chi \alpha, k$), then the null hypothesis (H_0) is rejected. This means that variations of the regression model can explain variations of independent variables and vice versa.

Coefficient of Determination (Pseudo R²)

The coefficient of determination (Pseudo R²) is a coefficient that shows how much variation of the independent variable can explain the dependent variable. The value of Pseudo R² is between 0 and 1. If the value of coefficient of determination (Pseudo R²) is equal to zero, it indicates that the independent variable cannot explain the dependent variable. If the coefficient value of determination is one, it indicates that the independent variable can explain the dependent variable perfectly. In essence, the greater or closer the value of one is, the better the coefficient of determination (Pseudo R²) becomes.

Results and Discussion

Overview of Research Objects

Based on the provincial Susenas data for 2008, the province with the highest poverty rate was Papua Province. Papua's poverty rate was 32.31 percent of the total sample. The next provinces with the highest poverty rate was Gorontalo Province with 28.93 percent, Maluku Province with 27.78 percent, and D.I. Yogyakarta with 25.12 percent of the total population sample. Provinces with the lowest poverty rate in 2008 were DKI Jakarta with 3.61 percent, followed by Bangka Belitung Islands with 5.75 percent, and North Maluku with 7.69 percent. Based on the provincial Susenas data in 2010, the highest poverty level was still occupied by Papua Province with a poverty rate of 32.31 percent. The position was followed by Gorontalo Province with poverty rate of 28.21 percent, Maluku Province with poverty rate of 27.78 percent, and Bengkulu Province with poverty rate of 25.99 percent of the total population sample. In 2010, DKI Jakarta remained the province with the lowest poverty rate of 0 percent, followed by Riau Province with 8.24 percent and South Kalimantan Province with 8.61 percent.

The poverty transition showed that of 2,603 poor households in 2008, 1,675 households or 64.35 percent of households continued to experience poverty in 2010. Besides that, 928 households or approximately 35.65 percent of households were initially poor in 2008 but were able to get out of poverty in 2010. On the other hand, from 11,325 non-poor households in 2008, there were 1,681 households or about 14.84 percent of households fell into poverty in 2010. Meanwhile, there were 9,644 households or about 85.16 percent of households that were able to keep their condition above the poverty line in both periods. The economic characteristics of poor households that are the focus of this study are the employment of household heads and the access of household to credit. Based on the head of household job sector, the number of household heads working in agriculture sector was higher than the number of household heads that worked in non-agriculture sector. There were 7,260 households or about 52.13 percent of the total sample that work in agriculture sector. The number of poor households was also more prevalent in households whose primary employments were in the agriculture sector (36 percent) than in household with non-agriculture as primary employments (25 percent), as shown in Table 2 below.

Table 2: Distribution of Poor Households by Access to Micro Credit

Social Characteristics	Poverty Status	Rural Area		Urban Area		Total		Proportion
		Freq*	%	Freq*	%	Freq*	%	
Receiving Credit Access	Poor	238	17.40	80	5.85	318	2.28	0.23
	Not poor	807	58.99	243	17.76	1050	7.54	0.77
	Total	1045	76.39	323	23.61	1368	9.82	
Not Receiving Credit Access	Poor	3080	24.52	886	7.05	3966	28.48	0.32
	Not poor	6431	51.20	2163	17.22	8594	61.70	0.68
	Total	9511	75.72	3049	24.28	12560	90.18	

Source: Susenas (2010)

Discussion on the characteristics of poor households is seen from the demographic aspect including the sex of the head of household and the number of household members. Table 3 shows the distribution of households from the sex of the head of the household.

Table 3: Distribution of Poor Households by Sex of Household Head

Economic Characteristics	Poverty Status	Rural Area		Urban Area		Total		Proportion
		Freq*	%	Freq*	%	Freq*	%	
Female Household Heads	Poor	224	18.47	87	7.17	311	2.23	0.26
	Not poor	649	53.50	253	20.86	902	6.48	0.74
	Total	873	71.97	340	28.03	1213	8.71	
Male Household Heads	poor	3094	24.33	879	6.09	3973	28.53	0.31
	Not poor	6589	51.82	2153	16.93	8742	62.77	0.69
	Total	9683	76.15	3032	23.85	12715	91.29	

Source: Susenas (2010)

Based on Table 3, the number of households with female heads of households was relatively small, only 1,213 households or about 8.71 percent of the total sample. The number of households headed by a male numbered 12,715 households or reached 91.29 percent of all samples.

Table 4: Distribution of Poor Household Characteristics Based on Ownership of Jamkesmas (Health Insurance for the Poor) Cards

Social Characteristics	Poverty Status	Rural Area		Urban Area		Total		Proportion
		Freq*	%	Freq*	%	Freq*	%	
Owning Jamkesmas	Poor	1161	23.61	385	7.83	1546	11.10	0.31
	Not poor	2454	49.91	917	18.65	3371	24.20	0.69
	Total	3615	73.52	1302	26.48	4917	35.30	
Not Owning Jamkesmas	Poor	2157	23.94	581	6.45	2738	19.66	0.30
	Not poor	4784	53.09	1489	16.52	6273	45.04	0.70
	Total	6941	77.03	2070	22.97	9011	64.70	

Source: Susenas (2010)

Based on Table 4, it can be seen that there were 4,917 households or about 35.30 percent of the total sample having Jamkesmas cards. The number of households with Jamkesmas cards consists of 1,546 poor households and 3,371 non-poor households. Meanwhile, there are 2,738 households or about 19.66 percent of poor households that did not have the Jamkesmas cards. Furthermore, we will describe the condition of 33 provinces that have chronic as well as transient component poverty above and below the national average. Figure 1 shows some provinces with chronic component poverty above and below the average in Indonesia.

Figure 1. Provinces with Chronic Component of Poverty in Indonesia

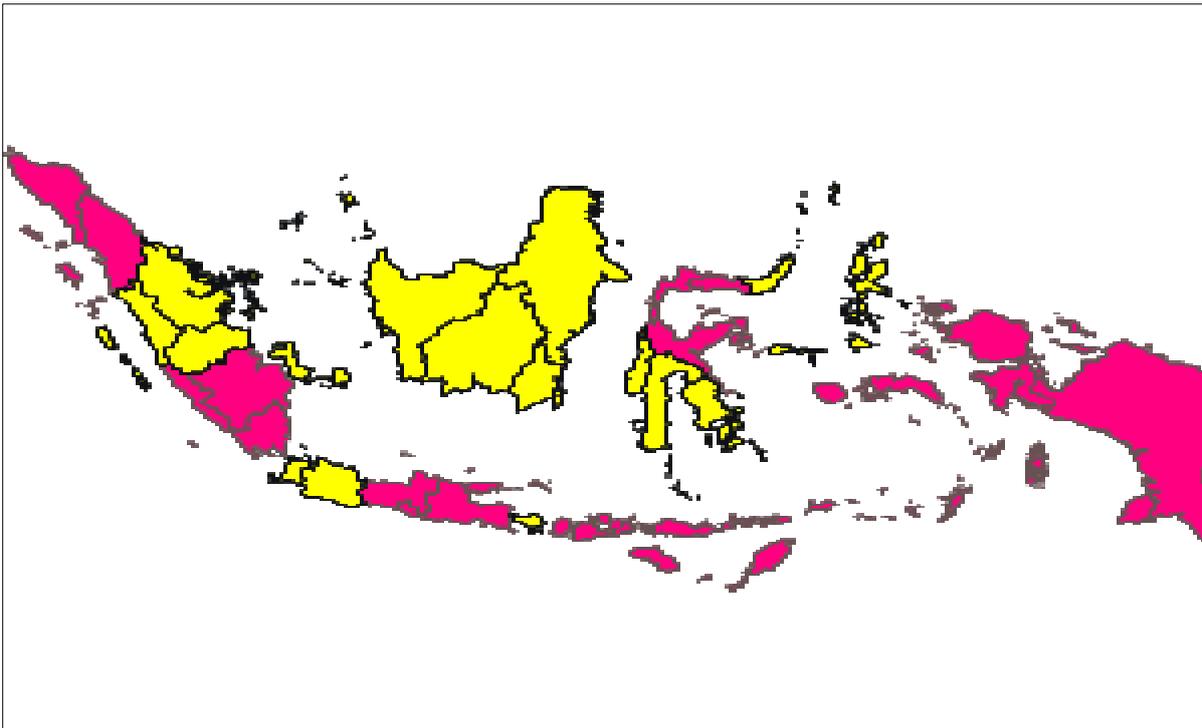
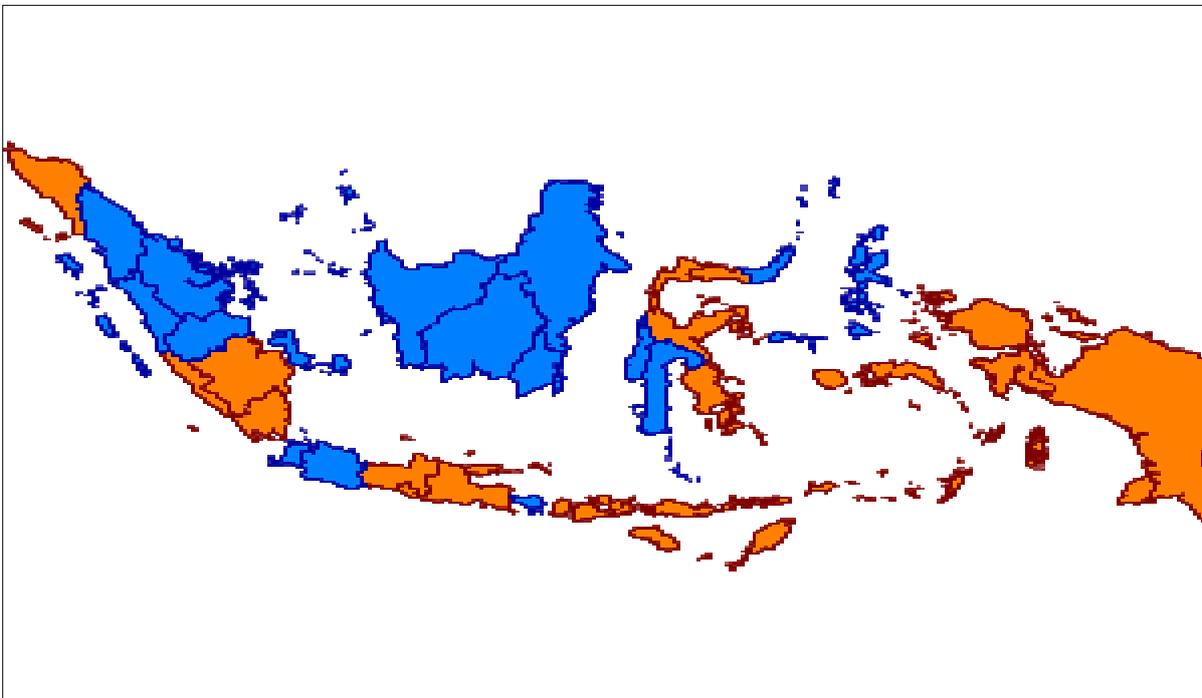


Figure 2. Provinces with Transient Component of Poverty in Indonesia



Regression Estimation Results

Table 5: Estimation of Chronic and Transient Component of Poverty Model

Variable	Model Chronic Component of Poverty	Model Transient Component of Poverty
Edu	-0.0042 ***	-0.0012 ***
	(0.0003808)	(0.0001104)
	[0.000]	[0.000]
Hhsize	0.0266***	0.0069 ***
	(0.0009423)	(0.0002731)
	[0.000]	[0.956]
Dsex	0.0017	0.0001
	(0.0059062)	(0.0017085)
	[0.772]	[0.956]
Dlocation	-0.0120 ***	-0.0032 ***
	(0.0040055)	(0.0011611)
	[0.003]	[0.005]
Dsector	0.0440 ***	0.0120 ***
	(0.0034464)	(0.0009986)
	[0.000]	[0.000]
Dcredit	-0.0387 ***	-0.0080 ***
	(0.0056182)	(0.0016103)
	[0.000]	[0.000]
Dinsurance	-0.0042	-0.0011
	(0.003271)	(0.0009483)
	[0.190]	[0.248]
Constanta	-0.1782 ***	-0.0483 ***
	(0.0064341)	(0.0018639)
	[0.000]	[0.000]
Number of Observations	13.928	13.928
Prob>Chi-square	0.0000	0.0000
Pseudo R-Square	0.2066	0.2044

Information:

- (1) *** 1% significance level; ** 5% significance level; * 10% significance level.
- (2) The number in () states the Standard Error
- (3) The number in [] denotes a probability value

Based on Table 5, the regression model of chronic component of poverty has five significant variables in the Wald test with 0 percent error rate, one significant variable with 5 percent error rate, and 2 insignificant variables, namely the sex of the head of household with an error rate of 77 percent and ownership of health insurance for the poor (Jamkesmas) with an error rate of 19 percent. Besides that, chi-square test results on this model indicated that this model was significant with an error rate close to 0 percent. The performance of Chronic Component of Poverty model was indicated by the coefficient of determination (Pseudo R-squared) value of 0.2066. This meant that as much as 20.66% variation of the dependent variable in the form of chronic component of poverty could be explained by independent variables in the form of education of the head of household, household size, dummy variable of household head, dummy variable of household location, ladder, dummy variable of credit access, and dummy variable of ownership of health for the poor insurance (Jamkesmas). The remaining 79.34 percent of the variation of the dependent variable was explained by independent variables outside the model.

The estimation result of transient component of poverty model shows that there were 5 significant independent variables in Wald test with 0 percent error rate, one significant variable with error rate of 5 percent, and two insignificant variables that were dummy variable of household head sex with error rate of 95 percent as well as variable of health insurance for the poor with an error rate of 24 percent. In addition, the results of Chi-square test on this model indicated that this model was significant, with the error rate approaching 0 percent. The performance of the transient component of poverty model was shown by the coefficient of determination (pseudo R-squared) value of 0.2044. This meant that as much as 20.44 percent of the variation of the dependent variable in the form of transient component of poverty could be explained by the independent variable. The remaining 79.66 percent of the variation of the dependent variable was explained by independent variables outside the model.

Based on Table 6, the estimation result of the marginal effect on actual variable for chronic component of poverty model shows that there were four significant independent variables in Wald test with 0 percent error rate, one significant variable with error rate of 5 percent, and two insignificant variables, which were the dummy variable of sex of head of household with error rate of 77 percent and variable of health insurance for the poor with error rate equalling to 18 percent. The results of the marginal effect calculation on the actual variable for the transient component of poverty model had four significant variables in the Wald test with 0 percent error rate, one significant variable with 10 percent error rate, and 2 insignificant variables, i.e., the head of household with an error rate of 95 percent and ownership of public health insurance for the poor (Jamkesmas) with an error rate of 25 percent.

When viewed from the estimation coefficient of the latent variable, the variables of Edu, Hhsize, Dsex, Dlocation, Dsector, Dcredit and Dinsurance had greater value in the chronic component of poverty model than in the transient component of poverty model. Similarly, the marginal effect estimation on the actual variables in both models demonstrated greater coefficients in the chronic component of poverty than in the transient component of poverty, with the exception of the household head education variable. This indicated that all variables had a greater influence on the value of chronic component of poverty.

Table 6: Result of Estimation of Marginal Actual Variable Effect on Chronic Component of Poverty Model and Transient Component of Poverty

Variable	<i>Chronic Component of Poverty Model</i>	<i>Transient Component of Poverty Model</i>
Edu	-0.0097 ***	-0.0099 ***
	(0.00089)	(0.00089)
	[0.000]	[0.000]
Hhsize	0.0624***	0.0555 ***
	(0.00217)	(0.00215)
	[0.000]	[0.000]
Dsex	0.0040	0.0007
	(0.01393)	(0.01381)
	[0.773]	[0.956]
Dlocation	-0.0283 ***	-0.0264 ***
	(0.0096)	(0.00956)
	[0.003]	[0.006]
Dsector	0.1031 ***	0.0972 ***
	(0.00217)	(0.0009986)
	[0.000]	[0.000]
Dcredit	-0.0852 ***	-0.0611 ***
	(0.1148)	(0.0016103)
	[0.000]	[0.000]
Dinsurance	-0.0100	-0.0088
	(0.003271)	(0.00763)
	[0.189]	[0.248]

Information:

- (1) *** 1% significance level; ** 5% significance level; * 10% significance level.
- (2) The number in () states the Standard Error
- (3) The number in [] denotes a probability value

Based on Table 6, the result of estimation of the marginal effect on actual variable for chronic component of poverty model shows that there were four significant independent variables in the Wald test with 0 percent error rate, one significant variable with an error rate of 5 percent, and two insignificant variables, which were the dummy variable of sex of head of household with an error rate of 77 percent and variable of health insurance for the poor with an error rate equalling to 18 percent. The results of the marginal effect calculation on the actual variable for the transient component of poverty model had four significant variables in the Wald test with 0 percent error rate, one significant variable at 10 percent, and 2 insignificant variables, i.e., the head of household with an error rate of 95 percent and ownership of public health insurance for the poor (Jamkesmas) with an error rate of 25 percent.

When viewed from the estimation coefficient of the latent variable, the variables of Edu, Hhsize, Dsex, Dlocation, Dsector, Dcredit and Dinsurance had greater value in the chronic component of poverty model than in the transient component of poverty model. Similarly, the marginal effect estimation on the actual variables in both models demonstrated greater coefficients in the chronic component of poverty than in the transient component of poverty, with the exception of the household head education variable. This indicated that all variables had a greater influence on the value of chronic component of poverty.

Lagrange Multiplier (LM) Test

1. Based on the result of Lagrange Multiplier (LM) test on chronic component of poverty model that can be seen in Table 8, LM test value of 2.4214 was obtained. The critical value at the α level of 1% was 6.3670, at α of 5% was 3.8457, and at α of 10% was 2.8012. Because the LM test value < critical values, then H_0 is not rejected so it can be concluded that the errors were normally distributed and homoscedastic. Therefore, the result of estimation of Tobit parameter was consistent and efficient. The following is the result of Lagrange Multiplier (LM) test:

Table 7: Results of Lagrange Multiplier Test on Chronic Component of Poverty Model

<i>Bootstrap Critical Value</i>			
LM	$\alpha = 10\%$	$\alpha = 5\%$	$\alpha = 1\%$
2.4214	2.8012	3.8457	6.3670

2. Based on Lagrange Multiplier (LM) test on transient component of poverty model that can be seen in Table 9, LM test value of 45,577 was obtained. The critical value at the α level of 1% was 6.623, at α of 5% was 4,013, and α of 10% was 2,622. Because the value of LM test > critical values, then H_0 is rejected so it can be concluded that the distribution of error was not normal and not homoscedastic. Therefore, the result of estimation of Tobit parameter was inconsistent and inefficient. However, this regression will be

replaced by a regression interval that gives a result that is not much different. The following is the result of Lagrange Multiplier (LM) test:

Table 8: Results of Lagrange Multiplier Test on Transient Component of Poverty Model

<i>Bootstrap Critical Value</i>			
LM	$\alpha = 10\%$	$\alpha = 5\%$	$\alpha = 1\%$
46.577	2.622	4.013	6.6230

Wald Test Results

In the chronic component of poverty model, variables of Edu and Hhsize, dummy variable of Sector, dummy variable of Credit, and dummy variable of location partially had been proved to significantly influence the chronic component of poverty. Variables of Edu nad Hhsize, dummy variable of sector, and dummy variable of credit had a probability value of 0,000 or less than $\alpha = 1\%$. While the dummy variable of location had a probability value of 0.003 or less than $\alpha = 5\%$, the dummy variables of sex and ownership of Jamkesmas cards were partially not proven to affect the chronic component of poverty. In the transient component of poverty model, variables of Edu and Hhsize, dummy variable of Sector, dummy variable of Credit, and dummy variable of location partially were proved to significantly influence the transient component of poverty. Variables of Edu and Hhsize, dummy variable of sector, and dummy variable of credit had a probability value of 0,000 or less than $\alpha = 1\%$. Dummy variable of location had a probability value of 0.005, which means less than $\alpha = 5\%$. Meanwhile, the dummy variables of sex and of JAMKESMAS card ownership were partially not proven to affect the transient component of poverty.

Likelihood Ratio (LR) Test Result

The Likelihood Ratio (LR) test results in the chronic component of poverty model show that Chi-square probability value was 0,000 or close to 0 percent. This value indicated that the value of Chi-square probability was less than the significance level $\alpha = 1\%$, so H_0 is rejected. It can be interpreted that all variables in the chronic component of poverty model, which were education of household head, household size, sex of head of household, household location, job sector of head of household, access to credit, and possession of health insurance for the poor, simultaneously and significantly influenced the dependent variable in the form of chronic component of poverty. Meanwhile, the result of Likelihood Ratio (LR) test on the transient component of poverty model has shown that the Chi-square probability value was 0.000 or close to 0 percent. This value indicated that the value of Chi-square probability was less than the significance level $\alpha = 1\%$ and thus, H_0 is rejected. It can be interpreted that all the variables in the transient component of poverty model, which were the education of the head of household, the size of the household, the sex of the household head, the location of

the household, the occupation of the head of the household, the access to credit, and the ownership of health insurance for the poor, simultaneously and significantly influenced the dependent variable in the form of transient component of poverty.

Result of Pseudo R² Coefficient

The results of regression processing that are shown in Table 6 obtained the coefficient of determination (Pseudo R-Square) for chronic component of poverty model of 0.2066. This figure can be interpreted that 20.66% of variation of dependent variable in the form of chronic component of poverty can be explained by independent variable. In the transient component of poverty model, the coefficient of determination (Pseudo R-Square) was 0.2044. It can be interpreted that 20.44% of variation of dependent variable in the form of transient component of poverty can be explained by independent variable. The first discussion in this study is the description of the dynamic poverty in Indonesia between 2008 and 2010. In general, the DAG method produces a poverty component value scale that is greater than the poverty component scale that is generated through the JR method. In the DAG method, the chronic component of poverty value was also higher than the transient component of poverty value. Meanwhile, JR method produced transient component of poverty value that was higher than the chronic component of poverty value.

The use of the DAG method that resulted in the chronic component of poverty value higher than the transient component of poverty indicated that poverty in Indonesia was dominated by chronic poverty. This meant that more households were experiencing poverty for a relatively long duration. The use of the JR method that resulted in a transient component of poverty value that was higher than chronic component of poverty value indicated that poverty in Indonesia was dominated by transitional poverty. This meant that more households were experiencing a poverty transition. The findings from different methods have provided a very different illustration of poverty. One method described poverty with the result of majority of chronic poverty, while other method provided an illustration of poverty with transitional poverty as the majority. Such findings were consistent with the results of studies conducted by Muyanga et al (2008) in Kenya. He also found that the DAG and JR methods resulted in different poverty features. The DAG method produced chronic component of poverty that was higher than the transient component of poverty, while the JR method gave the opposite result (Muyanga, Bundi, & Ayieko, 2007).

In the case of poverty in Indonesia, the findings of dynamic poverty using the DAG method were more rational compared to the findings using JR method. This rationality is based on the factual condition of poverty in Indonesia which already shows lower poverty levels than in previous years. According to the National Economic Committee (2013) and National Development Planning Agency (Bappenas) (2014), low levels of poverty are characteristic of

chronic poverty in a region (Bappenas, 2008). Statistics has shown that with a poverty rate of 12.66% in 2012, the poverty rate declined year after year. The pattern of poverty continued to decline, but the decline in poverty rate also decreased. Over the last four years, the poverty rate has fallen below one percentage point and over the past decade. The lowest poverty rate decline occurred in 2014, with the exception of 2006.

Conclusion

Based on the Component approach with the DAG (2006) method, the poverty condition in Indonesia between 2008 and 2010 was dominated by chronic poverty. The value of chronic component of poverty reached 78 percent and the value of transient component of poverty was 22 percent. Specifically, provinces with the highest chronic components were Papua, West Papua, Maluku, Central Sulawesi, and Bengkulu. Based on regression analysis of Tobit method, it was found that simultaneously, variables of head of household, household size, sex of head of household, household location, occupation of head of household, access to credit, and access to public health insurance for the poor significantly influenced the chronic component of poverty. Meanwhile, partially, significant variables that had been shown to influence chronic component of poverty were education of household head, household size, household residence location, work sector of household head, and access to credit. The sex of the head of the household and the access to public health insurance for the poor partially did not affect the chronic component of poverty. Based on the regression analysis of the Tobit method, it was found that simultaneously, variables of head of household education, household size, household head, household location, occupation of head of household, and access to credit and public health insurance for the poor significantly influenced transient component of poverty. Meanwhile, partially, significant variables that had been shown to influence the transient component of poverty were the education of the household head, household size, household residence location, occupation of head of household, and access to credit. The variables of sex of head of household and access to public health insurance for the poor partially did not affect the transient component of poverty.

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