JICA Research Institute

JICA-RI Working Paper

Analyses of Multifaceted Poverty and Poverty Dynamics in Indonesia

Intrageneration Poverty Dynamics in Indonesia: Households' Welfare Mobility Before, During, and After the Asian Financial Crisis

Teguh Dartanto and Shigeru Otsubo

No. 117

March 2016

JICA Research Institute

JICA Research Institute

JICA Research Institute
10-5 Ichigaya Honmura-cho
Shinjuku-ku
Tokyo 162-8433 JAPAN
TEL: +81-3-3269-3374
FAX: +81-3-3269-2054

Intrageneration Poverty Dynamics in Indonesia: Households' Welfare Mobility Before, During, and After the Asian Financial Crisis

Teguh Dartanto* and Shigeru Otsubo†

Abstract

When the economic crisis hit in 1998, and economic growth dropped by 13.7 percent; exacerbated by domestic political turbulence, poverty figures sharply rose from 17.47 percent to 24.20 percent. It began to decline again as the economy quickly recovered from the crisis. The above details demonstrate that poverty is not a pure static phenomenon, but rather is dependent on dynamic characteristics that easily change over time. Households could move into (or out of) poverty in response to fluctuations in the economy. This study then aims to analyze the determinants of households' shifting welfare during the periods before, during and after the Asian financial crisis in Indonesia. Applying the spell approach of poverty experience and observing four waves of IFLS (Indonesian Family Life Survey) balanced panel datasets, we find that during 1993-1997 (pre-crisis) households could be classified as chronically poor (6.14 percent), transient poor (-) (6.31 percent), transient poor (+) (10.58 percent) and never poor (76.96 percent). However, during 1997-2000 (crisis), the probability of being transient poor (-) had jumped drastically from 5 percent (pre-crisis) to 14 percent (during the crisis). In the post crisis period, roughly 86 percent of the previously poor households could move out of poverty. This study also confirmed that the probability of being poor in the next period highly depends on past experiences with poverty. Moreover, reducing probability of being chronically poor by about half from 4.6 percent to 2.2 percent needs almost fifteen years. Furthermore, our estimations using the ordered logit model confirm that determinants of poverty dynamics include educational attainment, size of the household, share of education expenditure, distance to public transportation, ownership of livestock and liquid assets, and the impact suffered from earthquakes.

Keywords: chronic poor, transient poor, poverty dynamics, panel data, Asian financial crisis, Indonesia

JEL: I32, I38, C33

* Poverty and Social Protection Research Group, Institute for Economic and Social Research (LPEM), Faculty of Economics and Business, University of Indonesia and Japan International Cooperation Agency Research Institute

† Graduate School of International Development, Nagoya University, Japan

E-mail Addresses: teguh@lpem-feui.org or sotsubo@gsid.nagoya-u.ac.jp

This paper has been prepared as part of JICA Research Institute research project entitled "Analyses of Multifaceted Poverty and Poverty Dynamics in Indonesia."

1. Introduction

Indonesia's record in combating poverty from the 1970s to the 1990s earned the country international recognition. The incidence of poverty had continuously decreased from 40.1 percent to 11.3 percent during 1976-1996 (old poverty measurement). Sustained economic growth and a more equitable income distribution were the main factors behind the decrease of poverty in that era (Balisacan, Pernia, and Asra 2002; Suryahadi, Suryadarma, and Sumarto 2009; Miranti 2010). Unfortunately, in the late of 1990s, as economic crisis hit, economic growth dropped significantly by 13.7 percent, and inflation climbed to 78 percent; exacerbated by domestic political turbulence, poverty figures rose sharply from 17.47 percent (34.01 million) in 1996 to 24.20 percent (49.5 million) in 1998. Ali and Widyanti (2001) argue that a significant increase in poverty during the crisis was potentially a transient phenomenon. Price stabilization, particularly on food prices and the newly implemented social safety net program, contributed to poverty reduction during 1998-1999 from 24.2 percent to 23.43 percent.

As the economy quickly recovered from the crisis, poverty again began to decline. The stable economic growth and improving macroeconomic conditions were the main source of sustainable reduction in poverty in the post crisis era (De Silva and Sudarno 2014; Dartanto 2014). In this era, annual economic growth was 4.13 percent and the annual inflation rate was 8.3 percent on average. As a result, poverty decreased by 11.47 percent in 2013. Nonetheless, rates of poverty reduction never returned to those seen in the pre-crisis period, when Indonesia was one of world's leaders in poverty reduction. Poverty reduction may have slowed during this time because the main drivers of growth in the post-crisis period were capital-intensive sectors such as mining and telecommunications, which employ fewer people and thus deprive the poor of any benefit from a rising economy (Suryahadi, Hadiwidjaja, and Sumarto 2012).

The above details demonstrate that households in Indonesia could easily move into (or, out of) poverty before, during and after the Asian economic crisis. A currently non-poor

household could by chance fall below the poverty line due to events such as economic crisis, crop loss, job loss, death, as well as other shocks. On the contrary, a currently poor household may also escape from poverty if a member of the household gets employed or promoted to a better job, or attains additional education, or if there is improvement in infrastructure. In addition, social safety net programs such as subsidized rice and cash for work could potentially protect households from falling into poverty in the event of crisis. Poverty, therefore, does not appear to be a pure static phenomenon since the poor are human beings, who are growing and changing over time (Muller 2002; Chant 2003; INE 2007; Dercon and Shapiro 2007).

Since the incidence of poverty can change over time, it is important to conduct a dynamic analysis for each period of time in order to distinguish between the chronically, transiently, and never poor as well as to discover the important factors that differentiate these groups. There might be different determinants of poverty in the periods before, during and after the Asian financial crisis. This study then raises three main questions: first, is there any different pattern in the poverty dynamics before, during, and after the Asian financial crisis? Second, why do some households stay behind while others move out of poverty? Third, to what extent do economic fluctuations before, during, and after the crisis influence the probability of being poor? To answer these questions, this study utilizes the Indonesian Family Life Survey (henceforth, IFLS) panel data set to examine poverty dynamics in Indonesia for the period from 1993-2007, which spans the time before, during, and after the Asian financial crisis.

This study furthermore contributes to two main issues First, since there has been very little analysis of poverty dynamics in Indonesia, and particularly little analyzing the welfare movements of a set of households over time, this study provides a valuable contribution toward filling the literature gap of poverty studies in Indonesia, especially through its comparative analysis of poverty dynamics in the period before, during, and after the Asian financial crisis. Most other studies analyze changes in the incidence of poverty and,the depth and severity of poverty at a specific point in time. However, this study examines panel data spanning roughly 15

years so that we can observe clearly household movement in and out of poverty and clearly differentiate between chronic and transient poverty. Second, it will provide a deeper understanding of the recent situation of poverty in Indonesia. Analysis of households' welfare movement provides useful insights into what determines households' movement into and out of poverty and why some households remain poor. Therefore, the government can focus on or intervene in the biggest determinants of poverty. We can also conduct the path-dependent poverty analysis in Indonesia, which provides information on the probability of households remaining poor after being poor during the previous period.

The next section of this paper presents a literature review and past researches on poverty dynamics, and section three provides an overview of IFLS and households' mobility into (or out of) poverty during 1993-2007. Section four explains our research methodology. In the fifth section, which is also our main analytical section of the paper, we will introduce the results of logit and ordered logit model analysis of determinants for intra-generation poverty dynamics in Indonesia. The concluding section of the paper will summarize the main findings and discuss their policy implications.

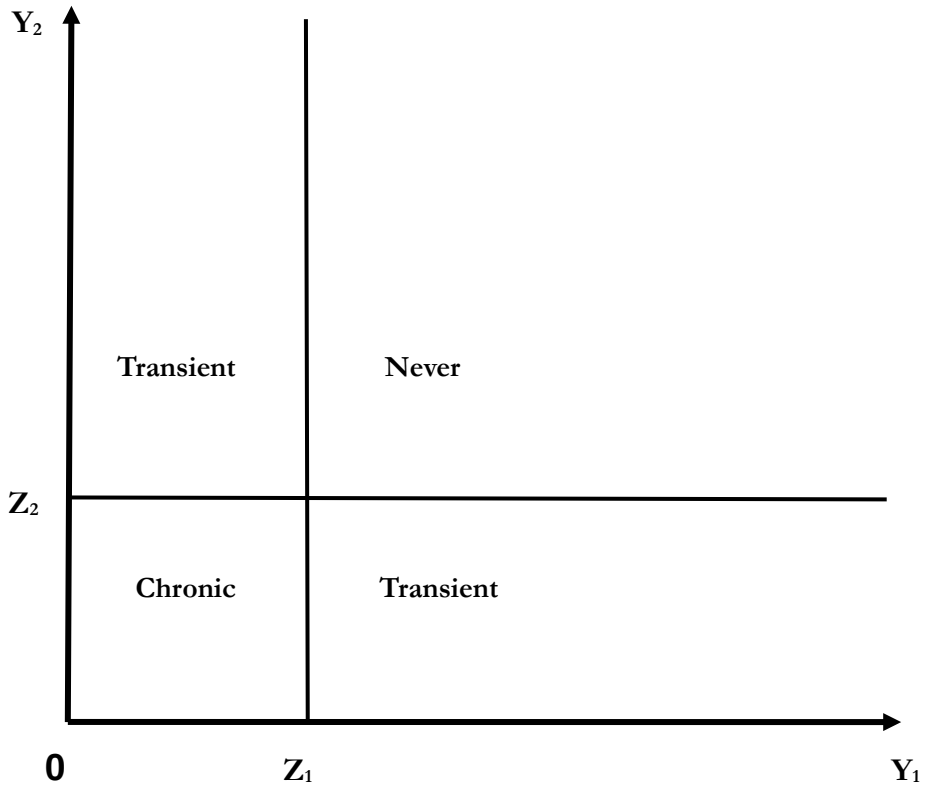
2. Literature Review

2.1 Concepts and Measures of Poverty Dynamics

There are two main methods commonly adopted in order to identify and measure chronic and transient poverty (income and consumption based poverty): the "spell" and "components" approaches, both of which are based on panel data (Yaqub 2000; McKay and Lawson 2003). The spell approach identifies chronic and transient poverty based on the number or length of spells of poverty households experience. The defining feature of chronic or transient poverty is its extended duration (Hulme et al. 2001; Hulme and Shepherd 2003). Chronic poor refers to the condition where consumption expenditures or income of household in each period is always

below the poverty line. Transient poor means that consumption expenditures or household income is sometimes below and sometimes over the poverty line. The further distinction between transient poor (+) and transient poor (-) will be explained below. Non-poor (never poor) indicates that consumption expenditures or household income in all periods is always above the poverty line (Hulme, Moore, and Shepherd 2001).

Figure 1. The Distinction between Chronic Poor, Transient Poor (-), Transient Poor (+) and Never Poor



Source: Dartanto and Nurkholis (2013)

The difference between chronic and transient poverty is typically based on longitudinal or panel data, which observes the living conditions of the same individual or households at several points in time. McKay and Lawson (2002) explain that the main difference between chronic and transient poverty is the need for either longitudinal or panel data or life history

survey. The longitudinal or panel data provides information about individuals or households during an observed period or during some consecutive periods of time. Chronic poverty then can be described as the household condition of being poor over an extended period of time, while transient poverty refers to a state of occasionally being poor or being non-poor during the period of investigation. Meanwhile a life history survey captures the dynamic aspect of living conditions from a list of retrospective questions. A life history, for instance the weight-for-height anthropometric measure, can fluctuate significantly in a short time horizon. These fluctuations may reflect various factors such as the period of the agricultural season or the effects of chronic disease. Hence, an individual having a weight-for-height measurement that is lower than the standard over an extended time of observation can be classified as chronically poor. Whereas, an individual with a weight-for-height measurement occasionally equal to or below the standard can be categorized as transitory poor. However, studies of poverty dynamics rarely utilize a life history due to the data availability.

Figure 1 shows a simple illustration of the spell approach. Consider that Y_1 and Y_2 are the individual or household income or consumption in period-1 and period-2 respectively. It is assumed that both Y_1 and Y_2 are classified by increasing order. Z_1 and Z_2 are the poverty line in period-1 and period-2. An individual is defined as being among the **chronic poor**, if his/her consumption (Y_1 and Y_2) over time is below the poverty line (Z_1 and Z_2) in both periods. An individual is defined as being **transient poor**, if his/her consumption (Y_1 and Y_2) over a time is below a poverty line either in period-1 or period-2 of the time span and above the poverty line in another period. However, in Figure 1, we distinguish between **transient poor (+)** and **transient poor (-)**. Transient poor (+) refers to an individual or household whose income or consumption is below the poverty line in period-1 but above the poverty line in period-2. Transient poor (-), on the other hand, refers to an individual or household whose income or consumption is above the poverty line in period-1 but below the poverty line in period-2. The plus (+) sign indicates improving living conditions while the negative (-) shows a decline into poverty. Further, an

individual is defined as being **never poor** if his/her consumption (Y_1 and Y_2) in both periods is never below the poverty line (Z_1 and Z_2).

The second approach is the "components" approach that distinguishes the permanent component of a household income or consumption from its transitory variations. This approach classifies the chronic poor as those whose permanent component is below the poverty line (McKay and Lawson 2003). The most common approach to identify the permanent component is based on the intertemporal average of household income or consumption. The regression model capturing the relationship between a household's income or consumption and its characteristics is commonly applied in order to distinguish between the permanent component and the transitory component (Jalan and Ravallion 1998; McCulloch and Baulch 1999; Sawada et al. 2008).

The household relevant characteristics will be used in predicting the permanent income or consumption level. The accuracy and reliability of using this in identifying permanent and transitory components will depend on how well the household characteristics are able to explain the variations in income or consumption. A household may fluctuate in and out of poverty, but where the permanent component of its living standard is below the poverty line it is considered chronically poor (McKay and Lawson 2003).

2.2 Previous Research on Poverty Dynamics

Studies on the determinants of poverty dynamics often classify the poverty status of households into three groups: the chronic poor, transient poor, and non-poor or never poor. The distinction between chronic and transient poverty is not only important for the accuracy of poverty measurements, but also for the implications for public policy, as chronic and transient poverty would call for different alleviation strategies. In a country or region where the poverty problem is characterized as chronic, the appropriate strategy would be to redistribute assets and provide

basic physical and human capital infrastructure. If the predominant problem is transient poverty, the strategy would be geared toward providing safety nets and coping mechanisms to reduce households' vulnerability and help them return to a non-poor situation (Hulme and Shepherd 2003; McCulloch and Calandrino 2003).

Many studies have found that the important factors behind poverty status are human capital, demographics, geographical location, physical assets, and occupational status. Alisjahbana and Yusuf (2003) and Widyanti et al. (2009) in Indonesia, Adam and Jane (1995) in Pakistan, Jalan and Ravallion (1998) in rural China, Herrera (1999) in Peru, Haddad and Ahmed (2003) in Egypt and Mango et al. (2004) in Kenya have clearly shown that an increase in human capital indicated by educational attainment decreases the probability of being chronically poor and improves the ability of a household to respond to transitory shocks.

Changes in demographic factors, such as increased household size, have been confirmed to be positively related to chronic poverty by Jalan and Ravallion (1998) in rural China, Herrera (1999) in Peru, McCulloch and Baulch (1999, 2000) in Pakistan, Mango et al. (2004) in Kenya, Woolrad and Klasen (2005) in South Africa, and Widyanti et al. (2009) in Indonesia. McCulloch and Calandrino (2003) in rural Sichuan confirmed that chronic poverty is commonly found in rural areas, especially remote areas. Households living in urban areas have a higher probability of escaping from poverty (Fields et al. 2003; Bigsten et al. 2003; Kedir and McKay 2005). Lack of physical assets is another important factor often associated with chronic poverty (Adam and Jane 1995; Jalan and Ravallion 1998; McCulloch and Baulch 2000; Woolard and Klasen 2005). Lastly, occupation status is frequently found as one of the important factors determining household poverty status. Okidi and Kempaka (2002) in Uganda found that self-employed farming households are more likely to be among the chronic poor. Kedir and McKay (2005) found that heads of households living in Ethiopia working as waged employees could more easily escape poverty.

In the case of poverty dynamics in Indonesia, Grab and Grimm (2006), using the Indonesian Family Life Survey (IFLS) dataset, compared chronic and transient poverty over two time-spans and showed that absolute comparisons point out a significant decline in chronic poverty from 1993-1997 and 1997-2000. Both the decline in chronic and in transient poverty was largely driven by a substantial decline in poverty in rural Indonesia. Fields et al. (2003) using the IFLS panel datasets from 1993 and 1997 found that determinants of household income during that period were household location, age of the household head, employment status of the household head, change in the number of children, change in the gender of the household head, and change in employment status of the head. Alisjahbana and Yusuf (2003), also using the IFLS datasets from 1993 and 1997, observed that of the 84.8 percent of non-poor in 1993, 11.6 percent had fallen into poverty in 1997. Likewise, of the 15.2 percent of poor in 1993, 7.8 percent remained poor whereas the other 7.4 percent had escaped poverty. Suryahadi and Sumarto (2001) found that the chronic poor, who made up only 20 percent of the total poor before the crisis, by 1999 constituted 35 percent of the total poor.

3. Intra-generation Poverty Dynamics in Indonesia: Household Mobility into (and out of) Poverty During 1993-2007

Overview Indonesian Family Life Survey (IFLS) 1993, 1997, 2000 and 2007

We use four waves (1993, 1997, 2000 and 2007) of the Indonesian Family Life Survey (IFLS henceforth) to measure intra-generation poverty dynamics in Indonesia. IFLS1 and IFLS2 are a collaborative effort of RAND and the Demographic Institute of the University of Indonesia. IFLS3 and IFLS4 are a collaborative effort of RAND and the Center for Population and Policy Studies (CPPS) of the University of Gadjah Mada. IFLS2+ was also conducted in 1998 to capture the impact of the Asian financial crisis on households in Indonesia. IFLS2+ was conducted on 25 percent of the IFLS2 communities.[1]

[1] IFLS provides some advantages for completeness and variability of Indonesia's data as it provides dynamic view of the same individuals in Indonesia; creates the possibility of interrelated issues analysis;

The IFLS is a longitudinal survey in which the household sample for the first wave is the primary determinant of the sample in subsequent waves. The IFLS1 sampling scheme was stratified on provinces, then randomly sampled within provinces, covering thirteen major provinces where approximately 83 percent of the population resides. The provinces are North Sumatera, West Sumatera, South Sumatera, DKI Jakarta, West Java, Central Java, DI Yogjakarta, East Java, Bali, West Nusa Tenggara, South Kalimantan, and South Sulawesi. The IFLS survey collects data on individual respondents, their households, activities, and community facilities. The IFLS dataset contains uniquely detailed information on the households' demographics, economic characteristics, consumption behaviors, health status, and access to community facilities and social safety nets.

The first wave of IFLS conducted in 1993 interviewed 7,224 households. The second wave of IFLS was conducted in 1997, interviewing 7,619 households. Around 11.5 percent of those households are split-off households. When the IFLS3 was conducted in 2000, the number of split-off households (including those that split in 1997 and 1998) account for around 35 percent of all households interviewed (Witoelar 2006). IFLS4 interviewed 13,535 households divided into 6,596 original IFLS1 households, 3,366 old split-off households and 3,573 new split-off households (Table 1).[2]

gives extensive information for past-future variable relationships; presents possibilities to combine household and individual data with community-facility data; and produces pre- and post-crisis changes in behavior and outcomes.

[2] Since the first follow-up interview in 1997, IFLS has aimed to minimize attrition and constantly track respondents who move. At least one member from 19 out of every 20-target household has been re-contacted in each of the three follow-up surveys (Thomas et al. 2010). Successful follow-up is the result of costly tracking despite high mobility of the respondents, which can be seen from the IFLS4 in 2007 where over one-third original 1993 respondents had moved from the community in which they were interviewed for the baseline survey. This high mobility rate is derived from rapid economic growth, crisis in the late 1990s, and dislocation after the 2004 Indian Ocean tsunami. The combination of these events has heightened mobility above the already substantial baseline.

Table 1. Number of Household Interviewed: 1993, 1997, 2000 and 2007

Sample	1993	1997	2000	2007
Households Interviewed	7,224	7,619	10,435	13,535
Target Households Interviewed	7,224	6,742	7,789	9,962
Split-off Households Interviewed		877	2,646	3,573

Source: IFLS1, IFLS2, IFLS3 and IFLS4 and Witoelar (2006).
Note: Target households are households that were interviewed in any prior wave of the survey while split-off households are households that were split-off from the original family. IFLS2 target households are the IFLS1 original households. IFLS3 target households are the IFLS1 original households, IFLS2 split-off households, and IFLS2+ split-off households. IFLS4 target households are the IFLS1 original households, IFLS2 split-off households, IFLS2+ split-off households, and IFLS3 split-off households. The sample frame of IFLS1 is followed by the sample frame of national-socio economic survey (Susenas).

This study applies the spell approach (as mentioned in Figure 1), the official poverty line of 1993, 1997, 2000, and 2007 published by the central statistic agency (BPS), and the poverty measures of the FGT formula (Foster, Greer, and Thorbecke 1984).[3] This study only analyzes P0 (headcount index) of the FGT poverty measurement. The 1993, 1997, and 2000 poverty lines are calculated based on the adjustments of old-1993, 1996, and 1999 poverty line published by BPS. The average national poverty line is IDR 24,150 (1993), IDR 40,140 (1997), IDR 103,904 (2000) and IDR 166,642 (2007). Over fifteen years from 1993-2007, the poverty line has increased around 590 percent. The poverty line increased significantly during the Asian financial crisis; from 1997-2000, the poverty line increased 159 percent.

[3] The FGT class of poverty measures follows:

$$\pi_\alpha = \frac{1}{n}\sum_{i=1}^{q}\left(\frac{z - y_i}{z}\right)^\alpha$$

Where π is the poverty index, n is the total population size, z is the poverty line, y_i is the income of the i^{th} individual (or household), q represents the number of individuals just below or at the poverty line, and α is a parameter for the FGT class.

Table 2. Trend of Household Expenditure by Deciles: 1993, 1997, 2000 and 2007

Decile	Expenditure by Decile (IDR/Month/Capita) (1993=100)								The Growth Rate (%)							
	1993		1997		2000		2007		1993-1997		1997-2000		2000-2007		1993-2007	
	Nom.	Real	Nom.	Real	Nom.	Real	Nom.	Real	Nom.	Real	Nom.	Real	Nom.	Real	Nom.	Real
1	13,465	13,465	25,294	18,570	54,928	20,374	143,159	28,276	87.9	37.9	117.2	9.7	160.6	38.8	963.2	110.0
2	21,430	21,430	39,962	29,340	82,969	30,775	208,947	41,270	86.5	36.9	107.6	4.9	151.8	34.1	875.0	92.6
3	27,337	27,337	50,193	36,851	103,852	38,520	260,402	51,434	83.6	34.8	106.9	4.5	150.7	33.5	852.6	88.1
4	33,312	33,312	60,422	44,361	125,101	46,402	312,247	61,674	81.4	33.2	107.0	4.6	149.6	32.9	837.3	85.1
5	39,943	39,943	72,108	52,941	147,975	54,887	370,850	73,249	80.5	32.5	105.2	3.7	150.6	33.5	828.4	83.4
6	47,964	47,964	87,246	64,055	174,684	64,793	441,107	87,126	81.9	33.5	100.2	1.2	152.5	34.5	819.7	81.6
7	58,363	58,363	106,102	77,899	210,065	77,917	528,410	104,369	81.8	33.5	98.0	0.0	151.5	33.9	805.4	78.8
8	73,136	73,136	132,373	97,187	257,380	95,467	650,392	128,463	81.0	32.9	94.4	-1.8	152.7	34.6	789.3	75.6
9	99,972	99,972	183,630	134,819	354,956	131,659	867,331	171,311	83.7	34.9	93.3	-2.3	144.3	30.1	767.6	71.4
10	218,672	218,672	616,081	452,320	788,605	292,508	1,741,944	344,061	181.7	106.8	28.0	-35.3	120.9	17.6	696.6	57.3
Average Expenditure (IDR/Month/Capita)	63,365	63,365	137,360	100,848	230,073	85,338	552,524	109,132	116.8	59.2	67.5	-15.4	140.2	27.9	772.0	72.2
Rural	47,495	47,495	97,956	71,918	185,834	68,929	440,713	87,048	106.2	51.4	89.7	-4.2	137.2	26.3	827.9	83.3
Urban	83,954	83,954	188,478	138,378	287,464	106,625	697,577	137,782	124.5	64.8	52.5	-22.9	142.7	29.2	730.9	64.1
Average Poverty Line (IDR/Capita/Month)	24,150	24,150	40,140	29,470	103,904	38,540	166,642	32,914	66.2	22.0	158.9	30.8	60.4	-14.6	590.0	36.3
Rural	20,525	20,525	34,317	25,195	92,498	34,309	143,752	28,393	67.2	22.8	169.5	36.2	55.4	-17.2	600.4	38.3
Urban	28,852	28,852	47,693	35,016	118,701	44,028	196,337	38,780	65.3	21.4	148.9	25.7	65.4	-11.9	580.5	34.4
Consumer Price Index (1993=100)	100		136		270		506		36		98		88		406	

Source: Authors' Calculation based on IFLS1, 2, 3 and 4

The average expenditure per-capita (nominal) calculated based on the IFLS dataset increased massively, by around 772 percent from 1993-2007. However, the real expenditure per-capita only increased 72.2 percent due to fourfold increased in the CPI from 1993-2007. In the crisis period, the massive increase in poverty rates was caused by both a 15.4 percent decrease in the real expenditure per-capita and a 30.8 percent increase in the poverty line. Following the crisis, the success of the government in maintaining macroeconomics' and price's stability and sustained economic growth, indicated by a 28 percent increase in the real expenditure per-capita and a 15 percent decrease in the real poverty line, has significantly contributed to poverty reduction in Indonesia. In general, the economic growth in Indonesia can be described as a pro-poor growth since the lowest-income group (10 percent of households) enjoys the benefit of the growth more than other groups.

Household Mobility into (out of) Poverty 1993, 1997, 2000 and 2007 [4]

Figure 2 shows clearly households' mobility into (or out of) poverty over fifteen years. Households' welfare mobility by decile is shown in Appendix 1. Households' welfare movement over this long period provides useful insights into which aspects of the poverty problem in Indonesia can be characterized as either chronic poor or transient poor. Some households that are below the poverty line at the point of time may only be transient poor as a result of specific events. Understanding this distinction is important as either chronic or transient poverty would call for different policies to alleviate poverty.

We observe 5,891 households of IFLS1 that are resurveyed in IFLS2, IFLS3 and IFLS4 (a balanced panel dataset). By 1993, using new calculations for the poverty line[5], the percentage of poor was 21.93 percent. During 1993-1997, around 63 percent of poor households in 1993 could move out of poverty while around 8 percent of non-poor households fell into poverty. The Asian financial crisis led households to more easily fall into poverty. Around 40 percent of households that were able to move out of poverty in 1997 finally fell into poverty in 2000 due to the crisis (Figure 2). The economic recovery during 2000-2007 enabled some households who were previously falling into poverty to move out of poverty. The probability of being out of poverty was around 84 percent.

Looking at household welfare mobility during four periods, this study finds that the chronic poor comprise roughly 1.3 percent of the total sample while the never poor are around 60

[4] The number of surveyed households in Table 1 shows the complete dataset of IFLS while the number in Figures 2, 3, 4 and 5 are only the balanced panel datasets. Therefore, there will be a difference in the number of observations in Table 1 and Figures 2, 3, 4 and 5. For instance, in Table 1 the number of households is 7,224, but in Figure 2, it is only 5,891 households.

[5] Since 1998, a change in the method of calculating the poverty line was adopted by adjusting the calculations for non-food items, including: the cost of education (originally based on the cost of elementary education, the increase to cover the costs of junior high school education), the cost of health care (initially based on standard costs at a primary Health Center, then increased to include the cost of services of a general practitioner), and the transportation costs (initially only costs of transportation within a city were estimated, then transportation costs were increased to also provide for inter-city transportation costs in accordance with the increased mobility of the population). Applying the new poverty line to the 1996 Susenas database resulted in a poverty rate of 17.47 percent, while applying the old poverty line resulted only in a 11.3 percent poverty rate. The new method of calculation increased the poverty line around 6.17 percentage points.

percent. The rest of households are categorized as either transient poor (-) or transient poor (+). By disaggregating IFLS data, this study found that the highest percentage of chronically poor (30 percent) live in rural area of East Java, and that one-fourth of households living in South Sumatera, West Nusa Tenggara, and South Sulawesi are vulnerable to being transient poor. These facts indicate that chronic poverty is a rural and landless phenomenon while transient poverty is closely related to agricultural or resource-based provinces. Landless households living in rural area of Java rely heavily on selling labor in agricultural sectors. This finding confirmed the result of LPEM FEUI, PSE-KP UGM and PSP-IPB (2004b). Unstable incomes and low wages cause households facing difficulties to smooth their consumption over time. Thus, small shocks such as sickness easily send them falling into poverty. On the other hand, the vulnerability of households living in South Sumatera, South Sulawesi, and West Nusa Tenggara is mainly due to the fluctuations of either prices or conditions in agricultural sectors, since the economy of those provinces are agriculture based. An increase in commodity prices will lift them out of poverty while a bad season or price decrease could send them into poverty.

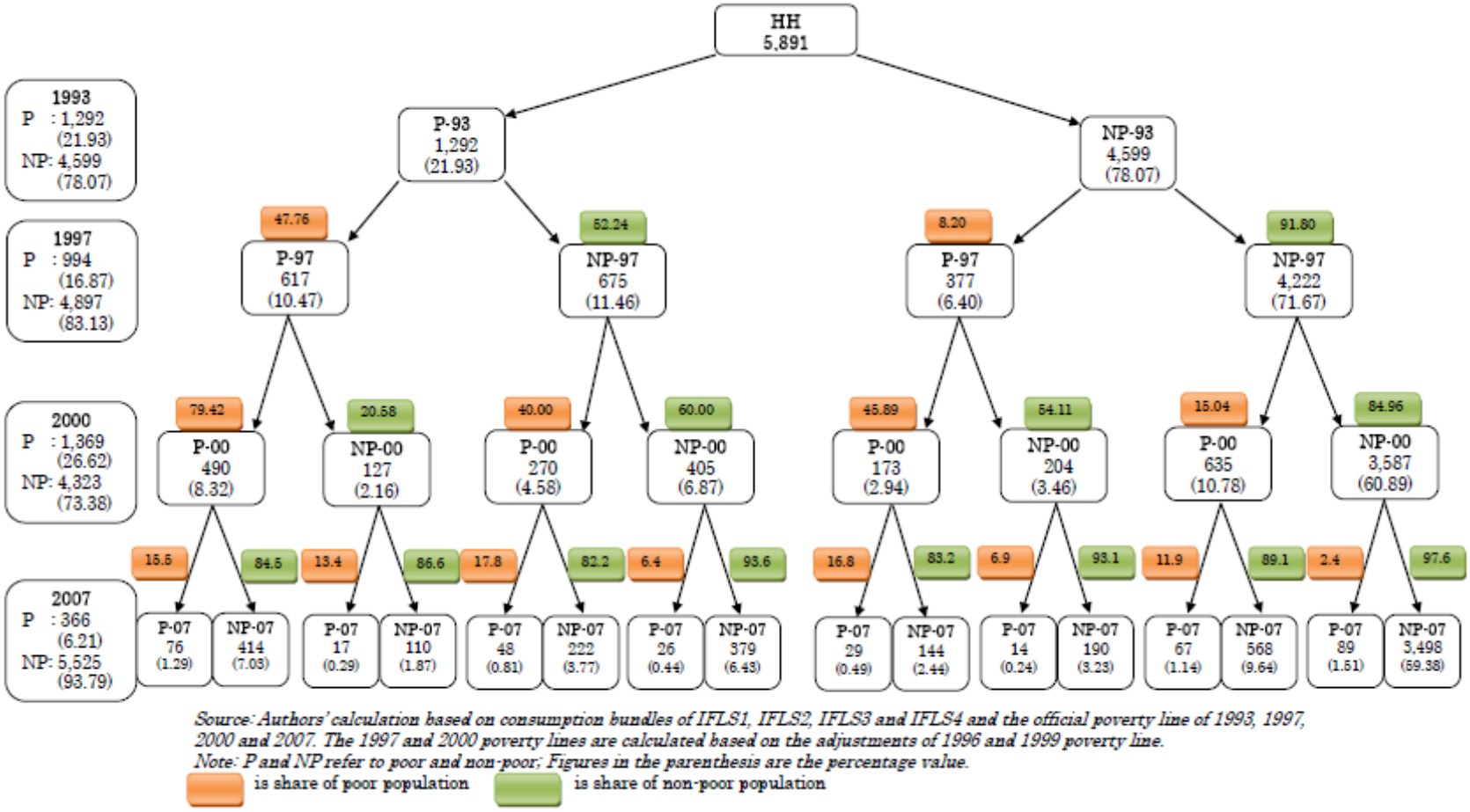
Table 3. Path Dependence Analysis

No.	Past Condition	Household Probability in 1997	
		Poor	Non-Poor
1	P-93=0	7.89	92.11
2	P-93=1	37.32	62.68
No.	**Past Condition**	**Household Probability in 2000**	
		Poor	**Non-Poor**
1	P-93=0 & P-97=0	15.12	84.88
2	P-93=1 & P-97=0	40.00	60.00
3	P-93=0 & P-97=1	45.17	54.83
4	P-93=1 & P-97=1	67.18	32.82
No.	**Past Condition**	**Household Probability in 2007**	
		Poor	**Non-Poor**
1	P-93=0 & P-97=0 & P-00=0	2.45	97.55
2	P-93=1 & P-97=0 & P-00=0	5.90	94.10
3	P-93=0 & P-97=1 & P-00=0	6.67	93.33
4	P-93=0 & P-97=0 & P-00=1	10.95	89.05
5	P-93=1 & P-97=1 & P-00=0	12.60	87.40
6	P-93=0 & P-97=1 & P-00=1	15.03	84.97
7	P-93=1 & P-97=0 & P-00=1	16.92	83.08
8	P-93=1 & P-97=1 & P-00=1	21.54	78.46

Source: Authors` Estimation
Note: 0 is non-poor while 1 is poor. P-93=0 means household having no experience of poverty in 1993.

Table 3 shows the probability of being poor or non-poor by considering households' past experiences in poverty. The Asian financial crisis increased the probability of being poor. A household experiencing two periods living below the poverty line (P-93=1 & P-97=1) has roughly a 67 percent chance of being poor at the some point in the future.. This figure is fourfold larger than the probability of being poor faced by a household without a prior experience with poverty. Observing the long period of data (1993-2007), we also find more generally that the probability of being poor in a subsequent period of time highly depends on any past experience living in poverty. More experiences in poverty increase the probability of being poor in the next period. The probability of being poor again for those with poverty experiences in each of the last three periods is almost 9 times higher than those without prior experience living in poverty. Moreover, the period of time in which a household experiences poverty also strongly influences the future probability of being poor. Two households, each with one experience living in poverty during 1993-2000, would have a different likelihood of being poor in 2007 depending on when they were previously poor. A household with a more recent experience in poverty has a higher probability of being poor compared to others. One possible reason is that households experiencing poverty in 1993 or in 1997 might be more prepared to smooth consumption compared to those who experienced poverty in 2000; thus, they could maintain their welfare over the poverty line.

Figure 2. Intra-Generation Poverty Dynamics: Households' Mobility into (or out of) Poverty during 1993-2007 [8]



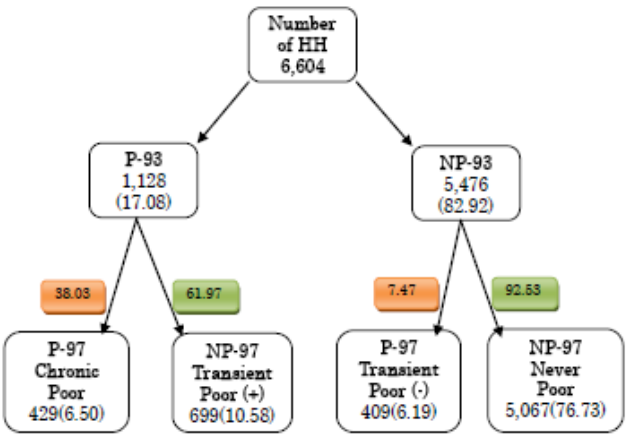
Source: Authors' calculation based on consumption bundles of IFLS1, IFLS2, IFLS3 and IFLS4 and the official poverty line of 1993, 1997, 2000 and 2007. The 1997 and 2000 poverty lines are calculated based on the adjustments of 1996 and 1999 poverty line.
Note: P and NP refer to poor and non-poor; Figures in the parenthesis are the percentage value.
is share of poor population is share of non-poor population

[8] The number of households in Fig. 2 is less than those in Fig.3, Fig.4, Fig.5 and Fig.6 because the observation in Fig. 2 is of the balanced panel dataset of four waves of IFLS. Therefore, there will always be differences in the number of observation for each following figure.

Household Mobility into (or out of) Poverty Before the Asian Financial Crisis (1993-1997)

In the period before the Asian financial crisis (1993-1997), by observing 6,604 households, we find that the number of poor declined from 17.08 percent to 12.69 percent. Roughly 61.97 percent of the 1993 poor households were able to move out of poverty while the other 429 poor households (38.03 percent) remained in poverty. These remaining poor households are considered to be among the chronic poor group while the households that escaped from poverty are considered to be the transient poor (+). Unfortunately, 7.47 percent (409 households of 5,476 households) of previously non-poor households fell into poverty in this time period. This group could be categorized as transient poor (-), indicating that they were newly impoverished during 1993-1997. Around 50 percent of transient poor (-) are households living in Java—the most industrialized area in Indonesia. The Asian financial crisis, starting in 1997, shrunk economic activities particularly in industrial and service sectors located in urban area; thus, it affected many households in Java that fell into poverty.

Figure 3. Pre-Asian Financial Crisis 1993-1997



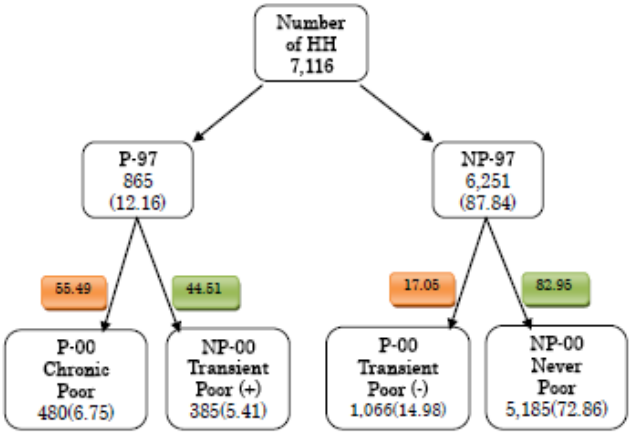
Source: Authors' calculation

Household Mobility into (or out of) Poverty During the Asian Financial Crisis (1997-2000)

The pattern of household mobility into (or out of) poverty during the period of crisis is totally different than before the crisis, due to a drastic decrease in economic growth and a massive increase in inflation as well as the poverty line. The percentage of those who fell into poverty is larger than those who escaped from poverty. Observing the 7,116 surveyed samples (Figure 4), we note that the number of poor increased from 12.16 percent to 21.73 percent. Roughly 17.05 percent of non-poor households in 1997 (or 14.98 percent of the total sample) fell into poverty. The number of transient poor (-) increased significantly during the crisis period compared to the pre-crisis period. Before the crisis, the number of transient poor (-) was only 6.19 percent of total sample, while during the crisis, this number jumped to 14.98 percent. The Asian financial crisis more than doubled the risk of falling into poverty as compared to the normal period.

There are unique regional characteristics of household welfare movement in this period. Households in Java comprised 58 percent of the transient poor (-), while households outside Java were relatively resilient from the crisis. Surprisingly, households in East Java comprised roughly 21 percent of chronically poor in Indonesia. More than 10 percent of households living in South Sumatera and South Sulawesi were able to move out of poverty during the crisis period. This is because the economic structure outside Java is dominated by agriculture and a resource-based economy; therefore, the crisis has a little effect on household welfare. Some households outside Java even benefitted from the crisis due to the currency depreciation. For example, farmers' incomes in the local currency suddenly jumped (Suryahadi, Sumarto, and Pritchett 2003).

Figure 4. During Asian Financial Crisis 1997-2000



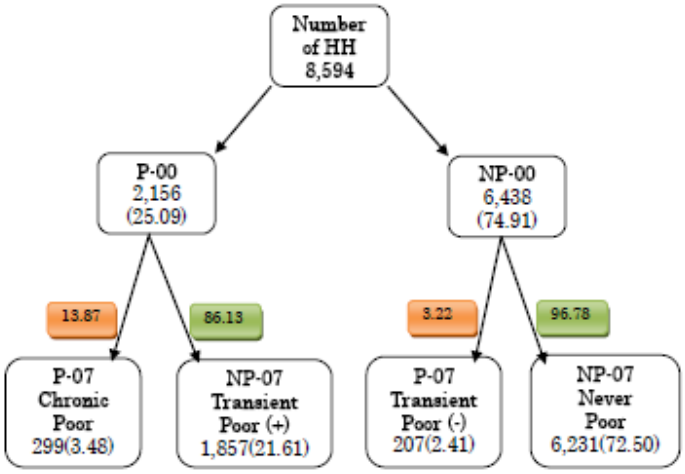
Source: Authors' calculation

Household Mobility into (or out of) Poverty After the Asian Financial Crisis (2000-2007)

Observing 8,594 surveyed samples from the year 2000 (Figure 5), this study finds 25.09 percent of households are poor, while 74.91 percent are non-poor. The number of poor households in 2000 was almost 1.5 times the number of poor in 1993. Shrinking economic growth and massive inflation are two reasons behind this high increase in the poverty rate during the crisis. However, the economic recovery, indicated by stable macroeconomic conditions such as economic growth, inflation, lending rate, etc., contributed to significant decreases poverty in the period following the crisis (Dartanto 2014). Around 86.13 percent of previously poor households (1,857 of 2,156 household) were able to escape from poverty while 13.87 percent of poor households in 2000 remained in poverty in 2007. Around 96.78 percent of non-poor households in 2000 maintained their welfare as non-poor in 2007. By comparing the chronic poor in Figures 3, 4 and 5, this study observes that the percentage of chronically poor in Indonesia is continuously decreasing from 6.50 percent (pre-crisis), 6.75 percent (crisis) and 3.48 percent (post-crisis). On the other hand, the percentage of transient poor (+),

those who can escape from poverty, was at its highest in the period following the crisis. This indicates that the economic recovery benefits poverty reduction.

Figure 5. Post-Asian Financial Crisis 2000-2007



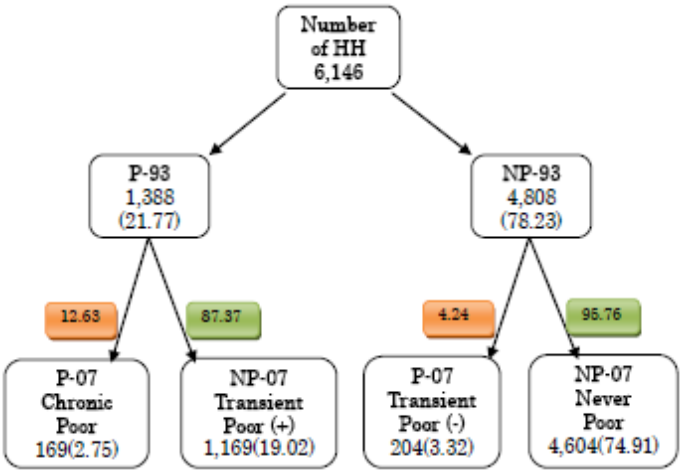
Source: Authors' calculation

Households Mobility into (or out of) Poverty in Long Run (1993-2007)

Figure 6 shows households' mobility into (or out of) poverty over the entire period from 1993-2007. Analyzing the poverty dynamics or households' mobility by utilizing a long period of panel data (fifteen years) will provide a complete picture of the changes in poverty in Indonesia during this time. This analysis will contribute to a deeper understanding of the recent situation of poverty in Indonesia and will also provide useful insights into why some households remain poor and why some others have been able to move out of poverty. Observing the 6,146 surveyed samples (Figure 6), the poor initially comprised 21.77 percent of the population, and then dropped to 6.05 percent over the course of fifteen years (1993-2007). In 2007, the chronic poor comprised around 2.75 percent, while transient poor (-) comprised around 3.32 percent of the population. Roughly 13 percent of poor households in 1993 remained poor in 2007, whereas 4.24 percent of non-poor household in 1993 were vulnerable

to becoming poor in 2007. Poverty alleviation policies and macroeconomic stability implemented by the government from 1993-2007 lifted around 87 percent of households out of poverty (Suryahadi, Suryadarma, and Sumarto 2009; Miranti, 2010; Dartanto, 2014)

Figure 6. Long Run of Poverty Dynamics 1993-2007



Source: Authors' calculation

4. Research Methodology

4.1 The Model of Determinants of Poverty Dynamics

This study utilized the spell approach to categorize households in Indonesia into four groups based on the length of the spell of poverty experienced: chronic poor, transient poor (-), transient poor (+) and never poor. This study believes that there is a hierarchy of these statuses in which one status can be viewed as more favorable than others. Following Dartanto and Nurkholis (2013), the hierarchy from worst to best is chronic poor, transient poor (-), transient poor (+) and never poor.

We then propose an ordered logit model to examine the determinant factors that can affect the poverty status of households. We also ascertain the important factors that enable the

poor to escape from poverty. The ordered logit model is useful for understanding the relative effect of different household characteristics on their poverty status, but it is less useful for distinguishing between categories of poverty. Independent variables (predictors) in the model are essentially divided into two groups: the initial variables and change variables.[9]

The initial variables represent the initial condition and position of households that will affect the future poverty status of those households. For instance, poor agricultural households with a small area of land in the initial year might continuously be poor in the future because a small area of land cannot produce more than a subsistence level of food. These households usually do not have enough resources to invest in modern agricultural technology or to buy good seed for the next production. Households that experienced health shocks and were without any insurance in the initial years might become poor in the future since they could not work or could have to allocate all resources for medical treatments. They could be forced to sell land for medical treatments which also might impoverish them in the future (Dartanto and Nurkholis 2010). Changes in marital or employment status, or education attainment might also cause non-poor households in the initial period to become a poor household in the future. The explanatory variables included in the model consider the data available in the IFLS1-4 and refer to previous studies such as McKay and Lawson (2003), Haddad and Ahmed (2003), Woolrad and Klasen (2005), and Dartanto and Nurkholis (2013).

The ordered logit model is shown below:

$$y_i = HHC_i^0\gamma + INFRA_i^0\delta + SECO_i^0\vartheta + \Delta VAR_i\varphi + e_i \qquad [1]$$

where,

- y= a household poverty status: 0 = chronic poor, 1 = transient poor (-), 2 = transient poor (+), 3 = never poor;

[9] This study intends to apply an ordered logit model instead of an ordered probit model. In the discrete choice model, conventional wisdom says that the choice between the logit versus the probit is trivial and arbitrary. Amemiya (1985, 269) said that a major justification for the logit model is that the logistic distribution function is similar to the normal distribution function but has a much simple form.

- HHC^0 = a vector of family characteristics in the initial year including marital status, education attainment, number of household members and age;
- $INFRA^0$ = a vector of village infrastructure in the initial year including access to transportation (distance to bus terminal/stop), the availability of an electricity grid, formal financial institutions and paramedics, and the availability of public projects in village.
- $SECO^0$ = a vector of household socio-economic characteristics and shocks in the initial year including ownership of livestock and liquid assets, share of education expenditure to total expenditure, and food share among households. Shocks include experiences of unemployment, crop loss, earthquake and flood.
- ΔVAR = a vector of changes in variables during the observation period including change in marital status, number of household members, and educational attainment;
- $\gamma, \delta, \vartheta, \varphi$ = parameters of explanatory variables;
- i = household observation
- e = error term;

4.2 Estimation Procedure

Eq. 1 is an ordered response model with four outcomes y={0,1,…,3}. An ordered probit model (logit model) for y (conditional on a vector of explanatory variables **x**) can be derived from a general form of a latent variable model. Assume that a latent variable y* is determined by,

$$y^* = x\beta + e, e|x \sim Normal(1,0) \qquad [2]$$

where β is a k x 1 coefficient vector, and for reasons to be seen, vector **x** does not contain a constant. Let $\alpha_1 < \alpha_2 < \alpha_3$ be an unknown cut off point (threshold parameters), and define

$$\begin{aligned} y = 0 \ \ if \ \ y^* \leq \alpha_1; \\ y = 1 \ \ if \ \ \alpha_1 < y^* \leq \alpha_2; \\ y = 2 \ \ if \ \ \alpha_2 < y^* \leq \alpha_3; \\ y = 3 \ \ if \ \ y^* > \alpha_3 \end{aligned} \qquad [3]$$

Given the standard normal assumption for *e*, the conditional distribution of *y* given ***x*** simplifies the computation of each response probabilities:

$$P(y = 0|x) = \Phi(\alpha_1 - x\beta)$$

$$P(y = 1|x) = \Phi(\alpha_2 - x\beta) - \Phi(\alpha_1 - x\beta) \qquad [4]$$

$$P(y = 2|x) = \Phi(\alpha_3 - x\beta) - \Phi(\alpha_2 - x\beta)$$

$$P(y = 3|x) = 1 - \Phi(\alpha_3 - x\beta)$$

Replacing Φ (the normal distribution) with the logit function, Λ, gives the ordered logit model. (For the detailed explanation of the ordered response model, see Wooldridge (2010).) The parameters of this model can be estimated by using the maximum likelihood estimation. The signs of estimated coefficients from the ordered probit/logit models have exactly the same meaning as those obtained from the ordinary-least-square (OLS) estimations. A negative sign implies that the choice probabilities shift to lower categories when the independent variable increases. The magnitudes of the estimated coefficients, however, cannot be interpreted directly as in the case of OLS estimations. In most cases, we are interested in the response probabilities or marginal effects $P(y = j|x)$ of the ordered probit/logit models. (For the detailed explanation of the response probabilities, see Wooldridge (2010).)

5. Determinants of Intra-generation Poverty Dynamics in Indonesia

This study estimates five models: pre-crisis (1993-1997), during crisis (1997-2000), post-crisis (2000-2007), short run (pool data) and long run (1993-2007). Estimating different periods of samples aims to ensure a consistent and robust estimation. The models were estimated using maximum likelihood estimation, with robust standard errors. The estimation results of the ordered logit model are shown in Table 5. All models show that the Wald chi-square statistics of log likelihood of the ordered logit model are statistically significant, indicating at least one

of the covariates or independent variables affects the poverty status of households. Generally, the built ordered logit models of poverty dynamics show their consistency and robustness. The marginal effects of changes in the probability of households categorized as poor, transient poor (-), transient poor (+) and non-poor responding to change in independent variables (predictors) are shown in Table 6. The marginal effects (the predicted probability of household poverty status) were evaluated at means of independent variables $(y = j|x)$.

Demographic Variables

All models statistically confirm two demographic variables—the number of household members and educational attainment—are the most consistent and significant factors distinguishing the poverty status of households (Table 5). Given a fixed income, an increase in the number of members prompts a household to reduce their consumption in order to support the additional member(s). Hence, these households tend to be among the chronic poor and transient poor (-). This finding is similar to the previous works of Herrera (1999), Haddad and Ahmed (2003), Woolard and Klasen (2005), and Dartanto and Nurkholis (2013). The probability of being transient poor (-) increases as the size of the household does, and this probability varies depending the period of the sample (Table 6).

Meanwhile, better education raises the probability of being never poor because higher education levels provide more opportunities for better jobs and higher incomes. This finding also confirms the conclusions of other studies, such as Adam and Jane (1995), Jalan and Ravallion (1998), McCulloch and Baulch (2000), Alisjahbana and Yusuf (2003), Bigsten et al. (2003), and Widyanti et al. (2009). A one-year increase in the completion of school raises the probability of being never poor by 2.42 percent (pre-crisis), 1.28 percent (during crisis), 1.58 percent (post crisis), 1.31 percent (short run), and 1.97 percent (long run) (Table 6). The impact of education on changing poverty status in the short term is very small, but in long run it appears significant. Thus, the government should not expect that the outcome of education

policies would appear immediately. Dartanto and Otsubo (2013) also confirmed that education attainment not only improves one's welfare directly, but also benefits neighbors in the same society indirectly through its positive externality.

Married households have a lower probability of being chronic poor compared to non-married households. However, the impact of marital status in the long run is not significant. A married household has more labor supply to produce more outputs or greater income than a single household. Moreover, a younger household head has a higher likelihood of being poor than an older one. Households with younger heads have relatively less experience, income, and capital accumulation, so they tend to be poor.

Village Infrastructure

Village infrastructure is an important factor for poverty status in Indonesia, but the magnitudes of its impact on changing poverty status depends on the period of the sample. Table 5 confirms that the distance to bus stop/terminal is the only consistent and significant variable in influencing households' poverty status during all periods. Living one kilometer farther from a bus stop/terminal reduces the probability of being never poor of household by 0.31 percent (pre-crisis), 0.15 percent (during crisis), 0.19 percent (post crisis), 0.21 percent (short run), and 0.31 percent (long run). Reducing the distance by building roads and bridges can connect the village to market, reduce transportation costs, and increase people's mobility. Connecting the village to market likely enables people to sell their products directly to market, while reducing transportation costs lowers the price of goods and services which in turn are directly related to reducing the cost of living. This combination enables people to improve their welfare and escape from poverty.

The availability of a formal financial institution in the village reduces the probability of being chronically poor particularly in the periods of 1993-1997 and 1997-2000. Formal credit institutions provide households with (i) working capital to start up or operate business,

or (ii) consumption credit to smooth their consumption at a reasonable interest rate. On average, households with access to a formal financial institution have a lower probability of being among the chronic poor (-0.87 percent). Moreover, the positive impact of infrastructure development, such as widening access to electricity in Indonesia, is clearly confirmed by this research and also by Dartanto and Nurkholis (2013). Expanding electricity access to poor households would decrease the probability of being chronically poor by almost 2 percent (in the period of 1997-2000). Increasing access to electricity can substantially enhance the productivity of households and household-based microenterprises. Electricity makes possible the use of appliances (such as pumps, sewing machines, or power tools) that substantially increase productivity and hence the income-generating potential of microenterprises, while information and communication technologies enhance the availability of market information and the possibility of social and political participation (LPEM FEUI, PSE-UGM, PSP-IPB 2004a, 2004b).

Socio Economic Conditions

Assets represented by livestock and liquid assets have significant effects on determining the poverty status of households. Households with assets tend to be among the never poor since they can easily smooth their consumption by converting liquid assets as well as livestock to cash. Livestock and liquid assets are the most important factors in protecting households from falling into poverty during the crisis period. Ownership of livestock and liquid assets reduce the probability of being chronically poor by 1.45 percent (pre crisis), 1.52 percent (during crisis), 0.96 percent (post crisis), 0.78 percent (short run) and 0.58 percent (long run). Further, the community vitality (social closeness) represented by occurrence of food sharing among households within a community significantly determines households' poverty status. Households living in a village with a high rate of food sharing among households tend to be among the never poor, particularly during the crisis period. Food sharing, common in rural area,

serves as a safety net that can help households to smooth their consumption during times of hardship.

Table 5. Ordered Logit Estimations of Determinants of Poverty Dynamics

Variable	Pre-Crisis (93-97)		During Crisis (97-00)		Post Crisis (00-07)		Short Run (Pool Data)		Long Run (93-07)	
	Coeff.	Robust SE	Coeff.	Robust SE	Coeff.	Robust SE	Coeff.	Robust SE	Coeff.	Robust SE
Demographic Variables										
Marital Status (1= Marriage, 0=other)	0.241	0.091***	0.189	0.085**	0.197	0.088**	0.240	0.050***	0.065	0.105
The Number of Household Member (person)	-0.286	0.016***	-0.320	0.016***	-0.305	0.016***	-0.291	0.009***	-0.270	0.018***
Educational Attaintment (years of completed schooling)	0.144	0.012***	0.126	0.009***	0.131	0.008***	0.112	0.005***	0.122	0.012***
Age (years)	0.006	0.003***	0.000	0.002	0.008	0.002**	0.000	0.001	0.004	0.003
Village Infrastructure										
Distance to Bus Stop/Terminal (km)	-0.020	0.004***	-0.008	0.004**	-0.010	0.005**	-0.011	0.002***	-0.017	0.004***
Formal Credit Institution (1=available, 0= others)	0.207	0.065***	0.220	0.062***	0.032	0.062	0.193	0.036***	-0.017	0.071
Paramedic (1=available, 0= others)	0.152	0.079**	-0.290	0.126**	0.398	0.611	-0.211	0.061***	0.148	0.083*
Electricity (1= available, 0= others)	0.314	0.101***	0.325	0.147**	-0.449	0.331	0.228	0.077***	0.143	0.116
Recent Public Projects (1= available, 0= others)			0.012	0.061	0.028	0.060			0.082	0.102
Socio Economic Condition										
Food Share among HH (Percentage Average of Total Food Consumption in a community)	-0.021	0.015	0.061	0.031**	0.079	0.029***	0.054	0.011***	-0.014	0.025
Ownership of Livestocks and Liquid Assets (saving, jewelry, etc.)	0.328	0.031***	0.292	0.032***	0.327	0.033***	0.175	0.016***	0.268	0.035***
Share of Education Expenditure to Total Expenditure	0.029	0.003***	0.020	0.004***	0.010	0.004**	0.024	0.002***	0.034	0.004***
Unemployment (1=experience, 0=others)	0.337	0.179*	-0.090	0.155	-0.077	0.142	0.021	0.081	-0.155	0.156
Crop Loss (1=experience, 0=others)	-0.062	0.091	0.067	0.087	0.077	0.082	-0.112	0.045**	0.029	0.090
Earthquake (1= experience, 0= others)					-0.256	0.087***			-0.261	0.099***
Flood (1= experience, 0= others)					0.025	0.126			0.190	0.147
Change in Variables										
Change in Marrital Status (1= divorce, 0=others)	-0.146	0.128	-0.004	0.128	-0.173	0.096*	-0.143	0.063***	0.063	0.094
Change in Educational Attaintment (1= increase, 0=others)	0.361	0.072***	0.735	0.070***	0.345	0.063***	0.460	0.038***	0.412	0.069***
Change in Household Size (1= increase, 0= others)	-0.422	0.074***	-0.551	0.066***	-0.399	0.072***	-0.477	0.040***	-0.513	0.085***
/cut0	-2.254	0.208	-2.407	0.277	-2.648	0.729	-2.878	0.130	-3.535	0.262
/cut1	-1.463	0.206	-0.960	0.273	-2.097	0.727	-1.876	0.128	-2.700	0.258
/cut2	-0.642	0.205	-0.616	0.273	-0.163	0.724	-0.974	0.127	-0.956	0.255
Number of Observation	**6,604**		**6,149**		**6,247**		**18,998**		**5,132**	
Log Pseudolikelihood	**-4,781**		**-5,044**		**-4,651**		**-15,421**		**-3,637**	
Wald Chi-Square	**724**		**720**		**754**		**1,859**		**498**	
Pseudo R-Square	**0.085**		**0.074**		**0.081**		**0.076**		**0.076**	

Source: Authors' Calculation

Note: 1. Number of observation in the short period is pooled data.2. The observations in Table 4 are different from the number of households in Fig. 2, Fig. 3, Fig. 4, Fig. 5 and Fig. 6 due to the fact that the observations used in econometric estimation have been cleaned for missing values and outliers. When we merged the expenditure data, socio-economic variables and community level data, we dropped some households due to mismatching household IDs, missing values, or outliers.

The share of education expenditures to total expenditures significantly determines the poverty status for all periods.[10] Households with a higher proportion of education expenditures tend to be among the non-poor in the next period. However, the impact of education investment on poverty status takes longer to appear. Table 6 confirms that one percent increase in the share of education expenditure raises the probability of being never poor by 0.45 percent (short run) and 0.6 percent (long run).

Unexpected results are found in shock variables. We expect households experiencing shocks, either from natural disaster or socio-economic shocks, tend to fall into the categories of chronic and transient poor (-). The magnitudes of the impact of shocks such as unemployment, crop loss, and flood are not consistent in influencing households' poverty status. Only earthquake consistently and significantly influences the poverty status. Households affected by earthquake reduce their probability of being never poor by 5.24 percent. Earthquake can cause the loss of productive assets as well as the deaths of productive family members, both of which directly reduce households' welfare. Households are also sometimes forced to spend a lot of money during the recovery process.

Change in Variables

Lastly, this section discusses the impact of some changes in household members, marital status, and educational attainment on the poverty status of households. An increase of one family member is associated with falling into poverty. Households with a high dependent ratio are not able to save or allocate their resources into other productive activities to assist them in moving out of poverty. An increase in the size of household member will increase the probability of being among the transient poor (-) by 1.94 percent (pre crisis), 6.22 percent (during crisis) and 0.82 percent (post crisis). This finding should encourage all levels of government to continuously and actively promote a family-planning program. Change in the demographic

[10] The education expenditure represents the household investment decision on human capital.

variable of marital status due to divorce also positively increases the probability of households being among the chronic and transient poor (-) in the short run (pool data) but this evidence could not be observed in the long run. A divorce results in the loss of productive family members—either mother or father—which might reduce a household's economic power. This is consistent with Woolard and Klasen's (2005) finding that female-headed households tend to fall into poverty in South Africa.

Further, change in the level of educational attainment of a household head is positively correlated to the probability of being never poor. A household head who increases the level of educational attainment increases the probability of being never poor by 5.56 percent (pre crisis), 14 percent (crisis), 6.64 percent (post crisis), 8.39 percent (short run) and 7.43 percent (long run). Increasing educational attainment is associated with a high opportunity for getting formal jobs, a higher salary and likelihood of promotion, and also better knowledge to start/manage business. All of these reduce the probability of being poor. This finding strongly supports the conclusion that an investment in human capital through education is one effective policy for alleviating poverty.

Table 6. Estimation of Marginal Effects (dy/dx)

Variable	Pre-Crisis (1993-1997)				During Crisis (1997-2000)				Post Crisis (2000-2007)				Short Period (Pool Data)				Long Period (1993-2007)			
	CP	TP(-)	TP(+)	NP	CP	TP(-)	TP(+)	NP	CP	TP(-)	TP(+)	NP	CP	TP(-)	TP(+)	NP	CP	TP(-)	TP(+)	NP
Demographic Variables																				
Marital Status (1= Marriage, 0=other)	-1.15	-1.10	-1.73	3.98	-1.04	-2.08	-0.61	3.73	-0.61	-0.40	-2.99	3.99	-1.14	-1.49	-1.99	4.63	-0.14	-0.17	-0.85	1.16
The Number of Household Member (person)	1.26	1.24	2.01	-4.50	1.67	3.43	1.05	-6.15	0.88	0.58	4.53	-5.99	1.29	1.72	2.40	-5.41	0.58	0.69	3.50	-4.77
Educational Attaintment (years of completed schooling)	-0.64	-0.62	-1.01	2.27	-0.66	-1.35	-0.41	2.42	-0.38	-0.25	-1.95	2.57	-0.49	-0.66	-0.92	2.07	-0.26	-0.31	-1.58	2.15
Age (years	-0.03	-0.03	-0.04	0.10	0.00	0.00	0.00	-0.01	-0.02	-0.02	-0.13	0.17	0.00	0.00	0.00	0.01	-0.01	-0.01	-0.05	0.07
Village Infrastructure																				
Distance to Bus Stop/Terminal (km)	0.09	0.08	0.14	-0.31	0.04	0.09	0.03	-0.15	0.03	0.02	0.14	-0.19	0.05	0.07	0.09	-0.21	0.04	0.04	0.23	-0.31
Formal Credit Institution (1=available, 0= others)	-0.93	-0.91	-1.46	3.30	-1.17	-2.38	-0.72	4.26	-0.09	-0.06	-0.47	0.62	-0.87	-1.15	-1.59	3.61	0.04	0.04	0.22	-0.30
Paramedic (1=available, 0= others)	-0.70	-0.68	-1.08	2.46	1.36	2.93	0.95	-5.23	-1.39	-0.90	-6.21	8.49	0.87	1.18	1.70	-3.75	-0.33	-0.39	-1.96	2.68
Electricity (1= available, 0= others)	-1.56	-1.48	-2.28	5.32	-1.94	-3.71	-1.03	6.68	1.06	0.71	6.11	-7.88	-1.11	-1.44	-1.90	4.45	-0.33	-0.38	-1.90	2.61
Recent Public Projects (1= available, 0= others)					-0.06	-0.13	-0.04	0.23	-0.08	-0.05	-0.42	0.56					-0.18	-0.22	-1.08	1.48
Socio Economic Condition																				
Food Share among HH (Percentage Average of Total Food Consumption in a community)	0.09	0.09	0.15	-0.33	-0.32	-0.65	-0.20	1.17	-0.23	-0.15	-1.18	1.56	-0.24	-0.32	-0.44	1.00	0.03	0.04	0.19	-0.25
Livestocks and Liquid Assets (saving, jewelry, etc.)	-1.45	-1.42	-2.30	5.16	-1.52	-3.13	-0.95	5.60	-0.94	-0.62	-4.86	6.42	-0.78	-1.04	-1.44	3.25	-0.58	-0.68	-3.49	4.75
Share of Education Expenditure to Total Expenditure	-0.13	-0.13	-0.20	0.46	-0.10	-0.21	-0.06	0.38	-0.03	-0.02	-0.14	0.19	-0.11	-0.14	-0.20	0.45	-0.07	-0.09	-0.44	0.60
Unemployment (1=experience, 0=others)	-1.29	-1.30	-2.21	4.81	0.49	0.99	0.29	-1.77	0.23	0.15	1.15	-1.53	-0.09	-0.12	-0.17	0.38	0.36	0.42	2.07	-2.84
Crop Loss (1=experience, 0=others)	0.28	0.27	0.44	-0.99	-0.34	-0.71	-0.22	1.28	-0.22	-0.14	-1.13	1.49	0.51	0.68	0.93	-2.12	-0.06	-0.07	-0.38	0.52
Earthquake (1= experience, 0= others)									0.81	0.53	3.91	-5.24					0.62	0.72	3.51	-4.86
Flood (1= experience, 0= others)									-0.07	-0.05	-0.37	0.49					-0.38	-0.45	-2.38	3.21
Variable Changes																				
Change in Marrital Status (1= divorce, 0=others)	0.69	0.66	1.05	-2.39	0.02	0.04	0.01	-0.07	0.53	0.35	2.62	-3.50	0.67	0.88	1.19	-2.74	-0.13	-0.16	-0.80	1.09
Change in Educational Attaintment (1= increase, 0=others)	-1.55	-1.52	-2.49	5.56	-3.86	-7.80	-2.35	14.00	-0.96	-0.64	-5.04	6.64	-1.99	-2.66	-3.73	8.39	-0.93	-1.09	-5.42	7.43
Change in Household Size (1= increase, 0= others)	2.03	1.94	3.03	-7.01	3.25	6.22	1.73	-11.20	1.25	0.82	6.05	-8.11	2.34	3.02	3.95	-9.30	1.24	1.44	6.91	-9.60
Probability (y = *j* | x)	**4.62**	**5.03**	**9.89**	**80.45**	**5.52**	**14.37**	**6.04**	**74.07**	**2.97**	**2.07**	**21.80**	**73.16**	**4.64**	**7.07**	**12.92**	**75.37**	**2.21**	**2.74**	**18.01**	**77.04**

Source: Authors' estimation

Table 6 also shows the percentage of households in each poverty status during each period. The probability of being chronically poor decreases over time from 4.6 percent before the crisis to 3 percent following the crisis. The probability of being transient poor (-) and (+) moved into the opposite direction and also fluctuated depending on the economic condition. In the crisis period, the probability of being transient poor (-) jumped from 5 percent to 14.4 percent while that of being transient poor (+) decreased from 9.9 percent to 6 percent. Economic shocks such as the Asian financial crisis sent some households into poverty due to layoffs and high inflation that eroded purchasing power, whereas the economic recovery facilitated households to actively engage in productive activities that enable them to move out of poverty.

Comparing the probability of being chronically poor between the short and long runs provides the useful insight that reducing chronic poverty needs a longer period to be effective. Reducing the probability of being chronically poor by about a half from 4.6 percent (short run) to 2.2 percent (long run) needs almost fifteen years. This means that alleviating chronic poverty requires more resources, programs, and continuous and consistent policies from the government. Table 6 also shows that the probability of being transient poor (-) decreased from 14.4 percent (during crisis) to 2.1 percent (post-crisis). This means that economic crisis or economic turbulence increased by around sevenfold the probability of being transient poor. To address transient poverty, the government should focus on social safety nets and also manage macroeconomic stability, especially inflation and economic growth. The safety nets provide protection to vulnerable households while economic growth can create job opportunities.

6. Concluding Remarks

After observing four IFLS panel data sets (1993, 1997, 2000, and 2007), we found that the incidence of poverty has decreased drastically from 21.93 percent (1993) to 6.21 percent (2007), almost 1 percent per-annum. Applying the spell approach, this study finds that, during

1993-2007, households can be categorized as the chronic poor (1.3 percent), never poor (60 percent) and transient poor (38.7 percent). The financial (or economic) crisis coupled with domestic political turbulence increased the probability of being poor. Roughly 17 percent of non-poor households fell into poverty during the crisis period, double the percentage befodre the Asian financial crisis. When the economy recovered from the crisis, more than 80 percent of households who were previously falling into poverty could move out of poverty. The Asian financial crisis increased the probability of being among the chronic and transient poor (-). The probability of being transient poor (-) had jumped drastically from 5 percent (pre-crisis) to 14 percent (during the crisis). Further, the probability of being poor in the next period highly depends on a household's past experience in poverty. More experiences living in poverty increase the probability of being poor in the future. The probability of being poor for those experiencing poverty in the last three periods is almost 9 times as high as those without prior experience in poverty. The government therefore should pay more attention to this vulnerable group by providing more safety nets to protect them from falling into poverty.

Our estimations using the ordered logit model confirm that the determinants of poverty dynamics are educational attainment, size of household, share of education expenditure, distance to public transportation, ownership of livestock and liquid assets, and the shock of an earthquake. Livestock and liquid assets are the most important in protecting households falling into poverty in the crisis period. Ownership of livestock and liquid assets will reduce the probability of being chronically poor by 1.45 percent (pre crisis) and 1.52 percent (during crisis). Further, the shock of an earthquake will render households more vulnerable to being poor. Households affected by earthquake reduce their probability of being never poor by 5.24 percent.

This study suggests that, in addition to government provision of social safety nets for transient poor, there are three main areas on which poverty alleviation policies should focus: education investment (human capital investment), family planning, and infrastructure

(connectivity) development. The impact of education on changing poverty status could not be seen immediately, but a one-year increase of the completed schooling raises the probability of being never poor by 1.97 percent in the long run. Meanwhile, an increase of one family member is associated with falling into poverty. Though family planning may be a sensitive and controversial issue, this policy in the short run may work to protect households from falling into poverty due to additional members. Family planning would possibly help households to fairly allocate resources on human capital and enable the government to plan and provide public services. Lastly, connectivity is an important issue for alleviating poverty in Indonesia. Accelerating development or improving the quality of road infrastructure can probably speed the reduction of poverty in Indonesia. Reducing one kilometer of distance from the village to a bus stop/terminal will increase the probability of households being non-poor by 0.31 percent. Connectivity may contribute to poverty reduction by reducing transportation costs, expediting the flow of goods and services, and promoting people's mobility.

References

Amemiya, T. 1985. *Advanced Econometrics*. Cambridge: Harvard University Press.

Adam, R. H., and J. H. Jane. 1995. “Sources ofIncome Inequality and Poverty in Rural Pakistan.” *International Food Policy Research Institute Research Report 102*. Washington, DC: International Food Policy Research Institute.

Alisjahbana, A., and A. A. Yusuf. 2003. “Poverty Dynamics in Indonesia: Panel Data Evidence.” Working Paper in Economics and Development Studies 200303. Bandung: Padjadjaran University.

Balisacan, Arsenio M., E. M. Pernia, and A. Asra. 2002. “Revising Growth and Poverty Reduction in Indonesia: What Do Subnational Data Show?” ERD Working Paper 25. Manila: Asian Development Bank.

Bidani, B., and M. Ravallion. 1993. “A New Regional Poverty Profile for Indonesia.” *Bulletin of Indonesian Economic Studies* 29 (3): 37–68.

Bigsten, A., B. Kebede, A. Shimeles, and M. Taddesse. 2003. “Growth and Poverty Reduction in Ethiopia: Evidence from Household Panel Surveys.” *World Development* 31 (1): 87–106.

Chant, S. 2003. “New Contributions to the Analysis of Poverty: Methodological and Conceptual Challenges to Understanding Poverty from a Gender Perspectives.” Women and Development Unit. Santiago, Chile: United Nations. Accessed April 6, 2012. http://www.eclac.org/publicaciones/xml/6/13156/lcl1955i. pdf.

Contreras, D., R. Cooper, J. Herman, and C. Nielson. 2004. “Dinámica de la Pobrezay Movilidad Social: Chile 1996–2001.” Santiago: Departamento de Economía University of Chile.

De Silva, I., and S. Sudarno. 2014. “Does Economic Growth Really Benefit the Poor? Income Distribution Dynamics and Pro-Poor Growth in Indonesia.” *Bulletin of Indonesian Economic Studies.* 50 (1): 227-42.

Dartanto, T. 2014. “Why Is Growth Less Inclusive in Indonesia?” *ADB Country Report,* Manila: Asian Development Bank.

Dartanto, T., and Nurkholis. 2010. “Income Shocks and Consumption Smoothing Strategies: An Empirical Investigation of Maize Farmer’s Behavior in Kebumen, Central Java, Indonesia.” *Modern Economy* 1 (3): 149-55. doi:10.4236/me.2010.13017.

———. 2013. “The Determinants of Poverty Dynamics in Indonesia: Evidence from Panel Data.” *Bulletin of Indonesian Economic Studies*. 49 (1): 61-84.

Dartanto, T., and S. Otsubo. 2013. “Measurements and Determinants of Multifaceted Poverty: Absolute, Relative, and Subjective Poverty in Indonesia.” JICA Research Institute Working Paper 54.

Dercon, S., and P. Krishnan. 2000. “Vulnerability, Seasonality, and Poverty.” *Journal of Development Studies* 36 (6): 25–53.

Dercon, S., and J. S. Shapiro. 2007. “Moving on, Staying Behind, Getting Lost: Lessons on Poverty Mobility from Longitudinal Data.” In *Moving Out of Poverty: Cross-Disciplinary Perspectives on Mobility*, edited by D. Narayan, and P. Petesch, 77-126. New York: World Bank and Palgrave Macmillan.

Fields, G., P. Cichello, S. Freije, M. Menendez, and D. Newhouse. 2003. “Household Income Dynamics: A Four-Country Story.” *Journal of Development Studies* 40 (2): 30-54.

Foster, J. E., J. Greer, and E. Thorbecke. 1984.“A Class of Decomposable Poverty Measures. *Econometrica* 52: 761–76.

Frankenberg, E., and L. Karoly. 1995. *The 1993 Indonesian Family Life Survey: Overview and Field Report.* Santa Monica, CA: RAND.

Frankenberg, E., and D. Thomas. 2000. *The Indonesia Family Life Survey (IFLS): Study Design and Results from Waves 1 and 2.* Santa Monica, CA: RAND. CA. DRU-2238/1-NIA/NICHD.

Grab, J., and M. Grimm. 2006. “Robust Multiperiod Poverty Comparisons.” Paper presented at the Chronic Poverty Research Centre (CPRC), University of Manchester, Manchester, . Accessed January 15, 2011. http://www.chronicpoverty.org/uploads/publication_files/CP_2006_Grimm_Graeb.pdf.
Haddad, L., and A. Ahmed. 2003. “Chronic and Transitory Poverty: Evidence from Egypt, 1997–99.” *World Development* 31 (1): 71-85.
Hall, A. L. 2007. “Moving Away from Poverty: Migrant Remittances, Livelihoods, and Development.” In *Moving Out of Poverty: Cross-Disciplinary Perspectives on Mobility*, edited by D. Narayan, and P. Petesch, 307-32. New York: World Bank and Palgrave Macmillan.
Herrera, J. 1999. “Ajuste Económico, Desigualdad, y Movilidad.” Working Paper DT/99/07. Paris: Développement et Insertion Internationale (DIAL).
Hulme, D., K. Moore, and A. Shepherd. 2001. “Chronic Poverty: Meanings and Analytical Frameworks.” Chronic Poverty Research Centre Working Paper 2. Manchester: University of Manchester. Accessed January 15, 2011. http://www.chronicpoverty.org/uploads/publication_files/WP02_Hulme_et_al. pdf.
Hulme D., and A. Shepard. 2003. “Conceptualizing Chronic Poverty.” *World Development* 31 (3): 403–24.
Jalan, J., and M. Ravallion. 1998. “Determinants of Transient and Chronic Poverty: Evidence from Rural China.” World Bank Policy Research Working Paper 1936. Washington, DC.
Kedir, A.M., and A. McKay. 2005. “Chronic Poverty in Urban Ethiopia: Panel Data Evidence.” *International Planning Studies* 10 (1): 49–67.
LPEM FEUI, PSE-KP UGM, and PSP-IPB. 2004a. *Infrastructure and Poverty Alleviation.* Jakarta: University of Indonesia, LPEM-FEUI.
LPEM FEUI, PSE-KP UGM, and PSP-IPB. 2004b. *Macroeconomic Policy and Poverty Reduction in Indonesia: A Summary of Mid Term Reports.* Jakarta: University of Indonesia, LPEM-FEUI.
Mango, N., J. Cheng‘ole, G. Kariuki, and W. Ongadi. 2004. “Social Aspects of Dynamic Poverty Traps: Cases from, Vihiga, Baringo and Marsabit Districts, Kenya.” Accessed February 27, 2011. http://dyson.cornell.edu/special_programs/AFSNRM/Basis/Documents/Reports/SADPTcasestudies.pdf.
Miranti, R. 2010. “Poverty in Indonesia 1984-2002: The Impact of Growth and Changes in Inequality.” *Bulletin of Indonesian Economic Studies* 46 (1): 79-97.
McCulloch, N., and B. Baulch. 1999. “Distinguishing the Chronically from the Transitory Poor-Evidence from Pakistan.” IDS Working Paper 97. Brighton: Institute of Development Studies, University of Sussex.
McCulloch, N., and B. Baulch. 2000. “Simulating the Impact of Policy on Chronic and Transitory Poverty in Rural Pakistan.” *Journal of Development Studies* 36 (6): 100–30.
McCulloch, N., and M. Calandrino. 2003. “Vulnerability and Chronic Poverty in Rural Sichuan.” *World Development* 31 (3): 611-28.
McKay, A. and D. Lawson. 2002. “Chronic Poverty: A Review of Current Quantitative Evidence.” CPRC Working Paper 15. Manchester: University of Manchester.
Accessed February 27, 2011. http://www.chronicpoverty.org/uploads/publication_files/WP15_Mckay_Lawson.pdf
———. 2003. “Assessing the Extent and Nature of Chronic Poverty in Low Income Countries: Issues and Evidence.” *World Development* 31 (3): 425–39.
Muller, G. P. 2003. “Explaining Poverty: On the Structural Constraints of Income Mobility.” *Social Indicator Research* 59: 301–19.
Okidi, J. A., and G. Kempaka. 2002. “An Overview of Chronic Poverty and Development Policy in Uganda.” CPRC Working Paper 11. Manchester: University of Manchester.

Said, A., and W. D. Widyanti. 2001. “The Impact of Economic Crisis on Poverty and Inequality in Indonesia.” Paper presented at the Symposium on Poverty Analysis and Data Initiative (PADI), Manila, Philippines, April 30-May 3 2001. http://www3.pids.gov.ph/ris/wbi/Country percent20paper_Indonesia.PDF

Sawada, Y., M. Shoji, S. Sugawara, and N. Shinkai. 2008. “The Role of Infrastructure in Mitigating Poverty Dynamics: The Case of an Irrigation Project in Sri Lanka.” JBICI Discussion Paper 16. Tokyo: JBIC Institute. Accessed April 27, 2012. http://www.jbic.go.jp/en/research/report/discussion-paper/pdf/dp16_e.pdf.

Sparrow, R., A. Suryahadi, and W. Widyanti. 2010. “Social Health Insurance for the Poor: Targeting and Impact of Indonesia’s Askeskin Program.” SMERU Working Paper May 2010. Jakarta: SMERU Institute. Accessed April 13, 2012. http://www.smeru.or.id/report/workpaper/askeskin/askeskin_eng.pdf.

Strauss, J., F. Witoelar, B. Sikoki, and A. M. Wattie. 2009. “The Fourth Wave of the Indonesian Family Life Survey (IFLS4): Overview and Field Report,” WR-675/1-NIA/NICHD.

Strauss, J., K. Beegle, B. Sikoki, A. Dwiyanto, Y. Herawati, and F. Witoelar. 2004. “ The Third Wave of the Indonesia Family Life Survey (IFLS): Overview and Field Report,” WR-144/1-NIA/NICHD.

Sumarto, S., A. Suryahadi, and W. Widyanti. 2005. “Assessing the Impact of Indonesian Social Safety Net Programmes on Household Welfare and Poverty Dynamics.” *European Journal of Development Research* 17 (1): 155–77.

Suryadarma, D., W. Widyanti, A. Suryahadi, and S. Sumarto. 2006. “From Access to Income: Regional and Ethnic Inequality in Indonesia.” SMERU Working Paper May 2006. Jakarta: SMERU Institute. Accessed April 10, 2012. http://www.eaber.org/node/22547.

Suryahadi, A., S. Sumarto, and L. Pritchett. 2003. “Evolution of Poverty during the Crisis in Indonesia.” *Asian Economic Journal* 17 (3): 221–41.

Suryahadi, A., D. Suryadarma, and S. Sumarto. 2009. “The Effects of Location and Sectoral Components of Economic Growth on Poverty: Evidence from Indonesia.” *Journal of Development Economics* 89: 109–17.

Suryahadi, A., G. Hadiwidjaja, and S. Sumarto. 2012. “Economic Growth and Poverty Reduction in Indonesia Before and After the Asian Financial Crisis.” *Bulletin of Indonesian Economic Studies* 48 (2): 209-27.

Thomas, D., F. Witoelar, E. Frankenberg, B. Sikoki, J. Strauss, C. Sumantri, and W. Suriastini. 2010. “Cutting the Cost of Attrition: Results from the Indonesia Family Life Survey.” *Journal of Development Economics* 98: 108-23.

Widyanti, W., A. Suryahadi, S. Sumarto, and A. Yumna. 2009. “The Relationship between Chronic Poverty and Household Dynamics: Evidence from Indonesia.” SMERU Working Paper January 2009. Jakarta: SMERU Institute.

Witoelar, F. 2006. “Intra-household Differences in Education and Home Leaving in Indonesia.” *ASEAN Economic Bulletin* 23 (1): 5-97.

Woolard, I., and S. Klasen. 2005. “Determinants of Income Mobility and Household Poverty Dynamics in South Africa.” *Journal of Development Studies* 41 (5): 865–97.

Wooldridge, J. M. 2010. *Econometric Analysis of Cross Section and Panel Data: Second Edition*. Cambridge, USA: MIT Press.

Yaqub, S. 2000. *Poverty Dynamics in Developing Countries*. Sussex, England. Institute of Development Studies.

Appendix 1. Households' Welfare Mobility during 1993-2007

		1993					1997					2000					2007				
		1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5
1993	1	1,178					49.3	26.9	13.8	7.1	2.9	44.3	25.6	16.0	9.6	4.5	40.7	25.5	18.3	10.4	5.0
	2		1,177				26.1	28.7	23.2	14.4	7.6	25.7	28.8	21.5	16.0	8.0	24.1	28.3	21.2	15.9	10.5
	3			1,178			16.0	23.2	27.1	22.8	11.0	17.6	23.3	25.9	21.3	12.0	18.5	23.0	24.5	19.6	14.3
	4				1,177		6.1	14.1	23.6	30.2	25.9	8.1	15.4	22.0	28.2	26.3	10.7	15.0	20.2	27.2	26.8
	5					1,178	2.5	7.0	12.4	25.5	52.6	4.3	7.0	14.6	24.9	49.2	5.9	8.1	15.7	26.8	43.4
1997	1	581	307	189	72	29	1,178					48.5	27.1	13.7	7.4	3.4	41.2	27.8	15.9	10.4	4.7
	2	317	338	273	166	83		1,177				28.2	28.7	21.9	14.9	6.3	26.1	28.0	21.9	15.5	8.5
	3	162	273	319	278	146			1,178			13.3	23.5	27.8	23.9	11.4	16.8	22.0	24.4	22.8	14.0
	4	84	169	268	356	300				1,177		6.5	14.4	24.2	29.9	25.1	10.9	14.8	22.0	25.5	26.8
	5	34	90	129	305	620					1,178	3.6	6.3	12.4	23.9	53.9	5.1	7.3	15.9	25.7	46.0
2000	1	522	303	207	95	51	571	332	157	76	42	1,178					46.7	25.6	16.0	7.6	4.2
	2	301	339	274	181	82	319	338	277	169	74		1,177				26.1	28.3	21.9	16.4	7.3
	3	189	253	305	259	172	161	258	328	285	146			1,178			24.5	23.6	23.4	13.5	0.0
	4	113	188	251	332	293	87	175	282	352	281				1,177		8.2	14.7	24.6	28.5	24.0
	5	53	94	141	310	580	40	74	134	295	635					1,178	4.1	6.9	14.0	24.1	50.9
2007	1	480	284	218	126	70	485	307	198	128	60	550	307	176	97	48	1,178				
	2	300	333	271	177	96	328	330	259	174	86	301	333	289	173	81		1,177			
	3	216	250	289	238	185	187	258	287	259	187	188	258	278	289	165			1,178		
	4	123	187	231	320	316	123	182	269	300	303	89	193	276	335	284				1,177	
	5	59	123	169	316	511	55	100	165	316	542	50	86	159	283	600					1,178

Note: Figures upper the diagonal are a percent of households while figures lower the diagonal are a number of households.

Source: Authors' Calculation based on IFLS 1, 2, 3 and 4

Appendix 2. Descriptive Statistics

Variable	Pre-Crisis (93-97)		During Crisis (97-00)		Post Crisis (00-07)		Short Run (Pool)		Long Run (93-07)	
	Mean	STD	Mean	STD	Mean	STD	Mean	STD	Mean	STD
Demographic Variables										
Marital Status (1= Marriage, 0=other)	0.84	0.36	0.82	0.38	0.83	0.37	0.83	0.37	0.86	0.35
The Number of Household Member (person)	4.67	2.13	4.54	2.04	4.42	1.96	4.55	2.05	4.76	2.09
Educational Attaintment (years of completed schooling)	3.92	3.69	4.23	4.18	5.83	4.38	4.65	4.17	3.91	3.63
Age (years)	45.71	14.12	48.66	13.83	47.91	14.08	47.40	14.07	45.29	13.73
Village Infrastructure										
Distance to Bus Stop/Terminal (km)	4.65	7.48	4.99	7.57	3.55	6.80	4.40	7.32	4.74	7.44
Formal Credit Institution (1=available, 0= others)	0.60	0.49	0.60	0.49	0.56	0.50	0.59	0.49	0.59	0.49
Paramedic (1=available, 0= others)	0.79	0.40	0.93	0.25	1.00	0.05	0.91	0.29	0.79	0.41
Electricity (1= available, 0= others)	0.90	0.30	0.96	0.19	0.99	0.12	0.95	0.22	0.90	0.30
Recent Public Projects (1= available, 0= others)			0.63	0.48	0.59	0.49			0.90	0.30
Socio Economic Condition										
Food Share among HH (Percentage Average of Total Food Consumption in a community)	2.20	1.77	1.59	1.38	1.63	1.05	2.09	2.04	2.27	1.50
Ownership of Livestocks and Liquid Assets (cow, buffalo, sheep, saving, jewelry, etc.)	1.27	1.06	2.22	0.95	2.27	0.92	1.91	1.08	1.27	1.06
Share of Education Expenditure to Total Expenditure	7.65	12.89	5.86	9.11	5.63	8.68	6.41	10.49	7.65	12.68
Unemployment (1=experience, 0=others)	0.04	0.20	0.04	0.20	0.04	0.21	0.05	0.22	0.12	0.33
Crop Loss (1=experience, 0=others)	0.12	0.33	0.13	0.34	0.14	0.34	0.16	0.36	0.21	0.41
Earthquake (1= experience, 0= others)					0.14	0.34			0.13	0.34
Flood (1= experience, 0= others)					0.07	0.25			0.07	0.25
Variable Changes										
Change in Marrital Status (1= divorce, 0=others)	0.06	0.23	0.05	0.22	0.10	0.30	0.07	0.25	0.15	0.35
Change in Educational Attaintment (1= increase, 0=others)	0.41	0.49	0.49	0.50	0.39	0.49	0.43	0.49	0.64	0.48
Change in Household Size (1= increase, 0= others)	0.28	0.45	0.26	0.44	0.30	0.46	0.28	0.45	0.30	0.46

Source: Authors' Estimation

Abstract (in Japanese)

要約

インドネシアでは、1998 年の経済危機発生と政治的混乱が一因となった経済成長の 13.7%の下落による鈍化によって、貧困率も 17.7%から 24.2%に悪化した。一方で、インドネシアの経済が早期に回復すると、貧困率もまた下がり始めた。このことは、貧困が静的な現象ではなく、時とともに変化するダイナミックな性格を有していることを表している。経済の変動に応じて、家計は貧困から脱出し、また逆に貧困に転落しうる。

本研究は、アジア経済危機の前、間、後において家計の厚生の変化に影響を及ぼす要因について分析を行うことを目的としている。本研究では、スペルアプローチを採用し、また IFLS（Indonesian Family Life Survey）に基づいて、危機前の 1993 年から 1997 年の間の家計を、慢性的貧困(6.14%)、一時的貧困（貧困への転落）(6.31%)、一時的貧困（貧困からの脱出）(10.58%)、非貧困(76.96%)の 4 つのグループに分類しうることを確認した。しかしながら、危機の期間である 1997 年から 2000 年にかけて一時的貧困（貧困への転落）の確率が、危機前の 5%から危機の間では 14%に上昇した。危機後の期間においては、貧困家計のおよそ 86%が貧困から脱出した。

本研究は、次の期間も貧困である確率は過去貧困であった経験に大きく依存すること、また慢性的貧困の確率が 4.6%から 2.2%に半減するのにおよそ 15 年を要することも明らかにした。さらに、順序ロジットモデルを用いた推計では、貧困動態の決定要因は、就学率、家計サイズ、教育支出の割合、公共交通機関への距離、家畜と流動資産の所有権、地震による被害の大きさなどであった。

Working Papers from the same research project

"Analyses of Multifaceted Poverty and Poverty Dynamics in Indonesia"

JICA-RI Working Paper No. 54

Measurements and Determinants of Multifaceted Poverty: Absolute, Relative, and Subjective Poverty in Indonesia

Teguh Dartanto and Shigeru Otsubo