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The Chronic Poor, The Transient Poor, And the Vulnerable in Indonesia Before and After the Crisis

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The Chronic Poor, the Transient Poor, and the Vulnerable in Indonesia Before and After the Crisis

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Abstract

Using cross-section data from household surveys, we estimate several categories of household poverty and vulnerability in Indonesia by combining the available information on current consumption levels, estimates of vulnerability to poverty, and estimates of expected consumption levels. The results indicate that the level of vulnerability to poverty among Indonesian households after the crisis unambiguously increased from pre-crisis levels. Furthermore, not only did the poverty rate in Indonesia increase significantly because of the crisis, but also much of this increase was due to an increase in chronic poverty. Likewise, the number of households that have high vulnerability to poverty has almost tripled. As a result, the total number of households in the vulnerable category has jumped from 18 percent of the population in 1996 to more than one third of the population in 1999.

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I. INTRODUCTION

Poverty status is one of the most important measures of household welfare. According to the consumption-based measure of poverty, a household is considered poor if its current per capita consumption falls below a certain threshold, which is referred to as the poverty line. The headcount poverty rate is widely used as an aggregate measure of welfare in any given area. Hence, poverty becomes a central theme in development, since the success or failure of development is often measured by the changes in the rate of poverty.

Headcount poverty is a static concept as it is a snapshot of welfare conditions at any given point in time. In reality, however, poverty is a very fluid condition since over time it has been demonstrated that many households frequently move in and out of poverty.[1] A nine-year panel survey of households in South Indian villages find that 20 percent of households were always poor, 12 percent were never poor, while the vast majority constantly moved in and out of poverty (Gaiha and Deolalikar, 1993). Similarly, using six year panel data of households in rural China, Jalan and Ravallion (2000) find that only 6.2 percent of households were 'always poor', less than 20 percent to be found as poor in any given year, while 54 percent of the sample had experienced at least one episode of poverty during the six year period.

Other panel evidence reveals similar transitions in and out of poverty. A summary of research in six developing countries using panel data that matches poverty data in households with at least two observations indicates that the fraction of households which have experienced an episode of poverty is at times much larger than either those who have never experienced such an episode or those who were persistently poor (Baulch and Hoddinott, 2000).

Indonesia was struck by an economic crisis starting in mid 1997.[2] The social impact of the crisis, particularly in terms of poverty incidence, has been substantial.[3] It is apparent that during an economic crisis the movement of some households out of poverty continues to occur, although at much smaller rate than the opposite movement of households falling into poverty. Skoufias *et al.* (2000) find that in Indonesia between 1997 and 1998, 16 percent of rural households moved from being non-poor to poor, but four percent of households still managed to escape poverty.

Obviously there is always a chance that at some point in the future those people who are currently not poor may fall below the poverty line, and it is also possible for people who are currently poor to escape from poverty. This leads us to the concept of 'vulnerability to poverty', which is defined as the risk that a household will become poor in the near future.

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[1] See Bane and Ellwood (1983).
[2] See Cameron (1999).
[3] See Pradhan *et al.* (2000) and Suryahadi *et al.* (2000).

Therefore, a household's vulnerability to poverty is measured as a probability, implying that households have greater or lesser degrees of vulnerability.

A household which is currently not poor can fall into poverty because of events such as a bad harvest, the loss of a job, an unexpected expense, sudden illness, a lull in business, or many other risks and shocks that people may face during the course of their life (Pritchett *et al.*, 2000). In developed countries, income instability is strongly associated with ordinary lifecourse events. In addition to those events driven by age, people increasingly have to cope with new problems, such as separation, divorce, and early retirement (Goodin *et al.*, 1999). In general, risks and shocks can be classified by the level at which they occur (individual, community, country), by the nature of the event (natural disasters, health problems, and social, economic, political, or environmental issues), and by the severity and frequency of the shocks (World Bank, 2000).

Vulnerability to poverty affects a large proportion of the population in developing countries. Since the future is uncertain, the degree of vulnerability usually increases with the time horizon, so that vulnerability over the coming week will be quite low, while over the year ahead it will be somewhat higher, and over several years higher still (Pritchett *et al.*, 2000). Poor people have developed elaborate mechanisms for dealing with risks, but many of these mechanisms only offer short-term protection at long-term cost, hence preventing any permanent escape from poverty (World Bank, 2000). There is also evidence that the poor are at greater risk of experiencing income shocks than the non-poor (Jalan and Ravallion, 1999).

The issue of vulnerability to poverty has assumed particular relevance in the aftermath of the recent economic crisis in East Asia, as many households were found to be more vulnerable than previously thought (Chaudhuri, 2000). In the case of Indonesia, the headcount poverty rate increased from 15.7 percent in February 1996 to 27.1 percent in February 1999 (Pradhan *et al.*, 2000). However, the increase in the poverty rate differed across urban and rural areas, as urban poverty doubled and rural poverty increased by three quarters during this period.

This study is an assessment of what happened to poverty and vulnerability to poverty in Indonesia before and after the crisis began. The analysis is based on a method for estimating vulnerability to poverty using cross-section data developed by Chaudhuri (2000), which is discussed in some detail in the following section. The third section of the paper discusses the data used in this study, while the fourth section presents and discusses the results of the analysis. Finally, section five summarizes the central conclusions.

II. METHODOLOGY

2.1. Method for Estimating Vulnerability[4]

The key to estimating a household's vulnerability to poverty is to obtain an estimate of the household's variance of consumption expenditures. A reliable estimate of consumption expenditure variance can be obtained from panel data collected over a sufficiently long period. However, as noted by Jalan and Ravallion (2000), most of the available standard data sources are based on a 'single visit' (cross-sectional) household survey and cannot be used for this purpose. Hence, there is a need to develop a method for estimating household consumption expenditure variance from cross-section data. This, however, obviously requires relatively strong assumptions about the stochastic process generating consumption.

Let us assume that for household *h* the stochastic process generating consumption is as follows:

$$\ln c_h = X_h \beta + \varepsilon_h \qquad (1)$$

where c_h is per capita consumption expenditure, X_h represents a bundle of observable household characteristics, β is a vector of parameter, and ε_h is any idiosyncratic factors (shocks) that contribute to differential per capita consumption for households that have the same characteristics.

Assuming c_h is log-normally distributed and hence ε_h is normally distributed, the coefficient estimates from equation (1) can be used to estimate the probability that a household with characteristics X_h will be poor as in the following:

$$\hat{v}_h = \hat{\Pr}(\ln c_h < \ln \underline{c} \mid X_h) = \Phi\left(\frac{\ln \underline{c} - X_h \hat{\beta}}{\hat{\sigma}}\right) \qquad (2)$$

where v_h denotes vulnerability to poverty, that is the probability that the per capita consumption level (c_h) will be lower than the poverty line ($\underline{c}$) conditional on household characteristics (X_h). Meanwhile, $\Phi(\cdot)$ denotes the cumulative density of the standard normal distribution and σ is the standard error of equation (1).

It is plausible to also assume that the variance of ε_h depends upon household characteristics in some parametric way. Assuming specific functional form, this can be formulated as follows:

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[4] This section draws extensively on the work of Chaudhuri (2000).

$$\sigma^2_{e,h} = Z_h\theta = \sum_i \sum_{j \geq i} X^i_h X^j_h \theta_{ij} \quad (3)$$

The parameter θ can be estimated using a three-step feasible generalized least squares (FGLS) procedure. Firstly, estimate equation (1) using an ordinary least squares (OLS) procedure. Secondly, use the estimated residuals from equation (1) to estimate:

$$\hat{e}^2_{OLS,h} = Z_h\theta + \eta_h = \sum_i \sum_{j \geq i} X^i_h X^j_h \theta_{ij} + \eta_h \quad (4)$$

using OLS. Then use the estimate to transform equation (4) into:

$$\frac{\hat{e}^2_{OLS,h}}{Z_h \hat{\theta}_{OLS}} = \left(\frac{Z_h}{Z_h \hat{\theta}_{OLS}} \right) \theta + \frac{\eta_h}{Z_h \hat{\theta}_{OLS}} \quad (5)$$

This transformed equation is estimated using OLS to obtain an asymptotically efficient FGLS estimate, $\hat{\theta}_{FGLS}$. Note that $Z_h \hat{\theta}_{FGLS}$ is a consistent estimate of $\sigma^2_{e,h}$, the variance of the idiosyncratic component of household consumption.

This is then used to transform equation (1) into:

$$\frac{\ln c_h}{\sqrt{Z_h \hat{\theta}_{FGLS}}} = \left(\frac{X_h}{\sqrt{Z_h \hat{\theta}_{FGLS}}} \right) \beta + \frac{e_h}{\sqrt{Z_h \hat{\theta}_{FGLS}}} \quad (6)$$

OLS estimation of equation (6) yields a consistent and asymptotically efficient estimate of β. The standard error of the estimated coefficient, $\hat{\beta}_{FGLS}$, can be obtained by dividing the reported standard error by the standard error of the regression. Finally, the estimates of β and θ obtained through this FGLS method can be used to estimate the vulnerability to poverty of household *h* through the generalization of equation (2):

$$\hat{v}_h = \Phi \left(\frac{\ln \underline{c} - X_h \hat{\beta}}{\sqrt{\sum_i \sum_{j \geq i} X^i_h X^j_h \hat{\theta}_{ij}}} \right) \quad (7)$$

2.2. Poverty and Vulnerability Categories

As a result of the estimation process each household in the sample can be assigned an estimated degree of vulnerability to poverty, that is the risk or probability of each household falling into poverty in the near future. In addition, each household's expected

consumption, $X_h \hat{\beta}$, can also be estimated. Using a combination of household poverty and vulnerability status based on current consumption, the estimated degree of vulnerability to poverty, and the estimated expected consumption, households can now be grouped into several poverty and vulnerability categories as illustrated in Figure 1.

Figure 1. Poverty and Vulnerability Categories

		Current Consumption (c)			
		$c < \underline{c}$	$c \geq \underline{c}$		
Vulnerability to poverty (v)	$v \geq 0.5$	A	D	$E[c] < \underline{c}$	Expected Consumption (E[c])
		B	E	$E[c] \geq \underline{c}$	
	$v < 0.5$	C	F		

- Poor = A + B + C
  - Chronic Poor = A
  - Transient Poor = B + C
- Non-poor = D + E + F
  - High Vulnerability Non-poor = D + E
  - Low Vulnerability Non-poor = F
- High Vulnerability Group = A + B + D + E
  - Low Level of Consumption = A + D
  - High Variability of Consumption = B + E
- Low Vulnerability Group = C + F
- Total Vulnerable Group = A + B + C + D + E

Notes:

$\underline{c}$ = Poverty line

As a result of this process, we can obtain five overlapping groups of households: the 'poor', the 'non-poor', the 'high vulnerability group', the 'low vulnerability group', and the 'total vulnerable group'. The poor consist of the 'chronic poor' and the 'transient poor'. The chronic poor are the currently poor who have expected consumption levels below the poverty line and, hence, most likely will remain poor in the future. The transient poor, meanwhile, are the poor who have expected consumption levels above the poverty line. Some of the transient poor have low vulnerability, but some of them have high vulnerability.

The high vulnerability group is differentiated into two sub-groups based on the causes of high vulnerability, that is 'low level of (expected) consumption' and 'high variability of consumption'. The non-poor can be disaggregated into the 'vulnerable non-poor' and the 'non-vulnerable non-poor'.

Meanwhile, the 'total vulnerable group' is defined as a combination of the high vulnerability group and those who are currently poor. This means that the total vulnerable group includes all those who are currently poor plus those people who are currently non-poor but who have a relatively strong chance of falling into poverty in the near future. Hence, while vulnerability to poverty is defined as the risk or probability of falling below the poverty line, the definition of the total vulnerable group is based on both this risk as well as initial poverty status. As argued by Glewwe and Hall (1998) and Cunningham and Maloney (2000), to categorize a household as vulnerable it is necessary to combine the probability of bad outcomes as well as some measure of their 'badness' according to a given social welfare function.

To classify households into those groups which have either high or low vulnerability to poverty, a threshold of 0.5 vulnerability to poverty is applied. This midway dividing point has three attractive features. Firstly, this is the point in equation (7) where the expected log consumption coincides with the log of the poverty line. Secondly, it makes intuitive sense to say a household is 'vulnerable' if it faces a 50 percent or higher probability of falling into poverty in the near future. Thirdly, if a household is just at the poverty line and faces a mean zero shock, then this household has a one period ahead vulnerability of 0.5. This implies that, in the limit, as the time horizon goes to zero, then being "currently in poverty" and being "currently vulnerable to poverty" coincide (Pritchett *et al.*, 2000).

Further disaggregation of poverty categories such as that depicted in Figure 1, rather than simply dividing households into the poor and the non-poor, is useful as it demonstrates that the poor and the vulnerable consisted of heterogeneous groups. Each of these groups may respond differently to particular policies aimed at reducing poverty. Hence, it might be necessary to devise different policies for different groups (Jalan and Ravallion, 2000).

2.3. Measurement Error

Data collected through household surveys will most likely contain measurement errors. In estimating vulnerability, measurement error cannot be ignored as it tends to overstate the variance of consumption.[5] Fortunately, in the method described above, measurement error in consumption shows up in the error term of equation (4). Hence, despite the existence of measurement error, the method will result in a consistent estimate of the true variance of consumption.

[5] See, for example, Luttmer (2000) and Pritchett *et al.* (2000).

However, if the measurement error varies systematically with certain household characteristics, then the estimate of consumption variance will in fact remain contaminated by the measurement error. For example, because rural households consume some of their own production, which is harder to measure than goods purchased in the market place, then there is a possibility that measurement error will vary systematically across urban-rural areas. To overcome this problem, estimation must be conducted separately for urban and rural areas, requiring the methodology to be applied at a disaggregated level (Chauduri, 2000).

III. DATA

The data analyzed in this study are a combination of the National Socio-Economic Survey (SUSENAS) and the Village Potential (PODES) data set, which are both collected by Statistics Indonesia (Badan Pusat Statistik, BPS). The periods analyzed are 1996 and 1999, which respectively encompass the last SUSENAS consumption module conducted before the crisis and the first SUSENAS consumption module conducted after the crisis.

The SUSENAS is a nationally representative household survey, covering all areas of the country. A part of the SUSENAS is conducted every year, collecting information on the characteristics of over 200,000 households and over 800,000 individuals, including information on aggregated values of household consumption expenditure. This part of the SUSENAS is known as the 'Core' SUSENAS. Another part of the SUSENAS is conducted every three years, specifically collecting information on very detailed consumption expenditure from around 65,000 households.[6] This consumption module part of the SUSENAS is popularly known as the 'Module' SUSENAS.

PODES, on the other hand, is a complete enumeration of villages throughout Indonesia. The information collected through this survey only includes village characteristics such as size, population, infrastructure, and local industries. The questionnaires are filled out by those local village officials responsible for collecting statistics. The information is obtained from official village documents as well as interviews with village officials. The PODES survey is conducted three times in every ten years, usually prior to and as a preparation for a full census. A PODES survey was conducted in 1996 preceding the economic census of that year, while another PODES survey was conducted in 1999 as a preparation for the population census in 2000. The 1996 PODES data set contains 66,486 villages, while the 1999 PODES contains 68,783 villages.

In the present study, two data sets have been created by merging the three individual data sets for each year. The created data sets combine information on household consumption from the SUSENAS consumption module, household characteristics from the core SUSENAS, and village level community variables from the PODES data set. The created 1996 data set contains observations from 57,724 households in 3,619 villages, while the 1999 data set contain observations from 57,921 households in 3,483 villages.

[6] These households are a randomly selected subset of the 200,000 households in the Core SUSENAS sample of the same year.

IV. RESULTS OF ESTIMATION

Using the method specified in section two, the merged data set discussed in section three has been used to estimate the degree of vulnerability to poverty across households throughout Indonesia. The poverty lines used in the estimation, have been taken from Pradhan *et al.* (2000) and are shown in Table A1 in the Appendix. The estimation process has been carried out by region, which are urban and rural areas in each province. Since at the time there were 26 provinces in Indonesia (excluding East Timor), and Jakarta is exclusively an urban area, estimations have been conducted in a total of 51 regions.

The set of household characteristics used in the estimation is listed in Table A2 in the Appendix, which also records the summary statistics of those variables. In addition, a set of community characteristics at the village level was used as controlling variables. The list of these variables and their summary statistics is also provided in Table A3 in the Appendix.

4.1. The Poor and the Vulnerable at the National Level

It is widely accepted that the crisis has caused the poverty rate to increase significantly in Indonesia. The results of the estimation confirm this. Table 1 shows the distributions of households across poverty categories as defined in Figure 1 in 1996 and 1999. The table reveals that the headcount poverty rate in Indonesia increased from 15.6 percent in 1996 to 27.4 percent in 1999, which is an increase by 11.8 percentage points or 76 percent from the pre-crisis level.[7]

Table 1. Household Distributions across Poverty Categories, 1996 and 1999 (%)

Poverty Category	1996	1999	Change
Poor:			
- Transient Poor	12.4	17.9	5.5
- Chronic Poor	3.2	9.5	6.3
- Total	15.6	27.4	11.8
High Vulnerability:			
- Low Level of Consumption	4.7	13.4	8.7
- High Variability of Consumption	2.1	5.0	2.9
- Total	6.8	18.4	11.6
Total Vulnerable Group	18.1	33.7	15.6
Average Vulnerability to Poverty	16.4	27.2	10.8

[7] These headcount poverty rates differ very slightly from the ones reported in Pradhan *et al.* (2000), i.e. 15.7 percent in 1996 and 27.1 percent in 1999. The differences arise because some observations were lost in the merging of the SUSENAS and PODES data sets.

Disaggregation of the poor indicates that the proportions of both transient poor and chronic poor within the total population have increased significantly. The transient poor increased from 12.4 percent in 1996 to 17.9 percent in 1999, while the chronic poor jumped from 3.2 percent to 9.5 percent during the same period. This means that while the headcount rate of transient poverty only increased by 5.5 percentage points, which is an increase of less than 45 percent from the 1996 rate, the headcount rate of chronic poverty increased by 6.3 percentage points, or an increase of almost double its 1996 figure. Thus, proportionally the bulk of the increase in the number of the poor occurred mostly among the chronic poor. As a result, the chronic poor, who made up only about 20 percent of the total poor before the crisis, now constitute about 35 percent of the total poor.

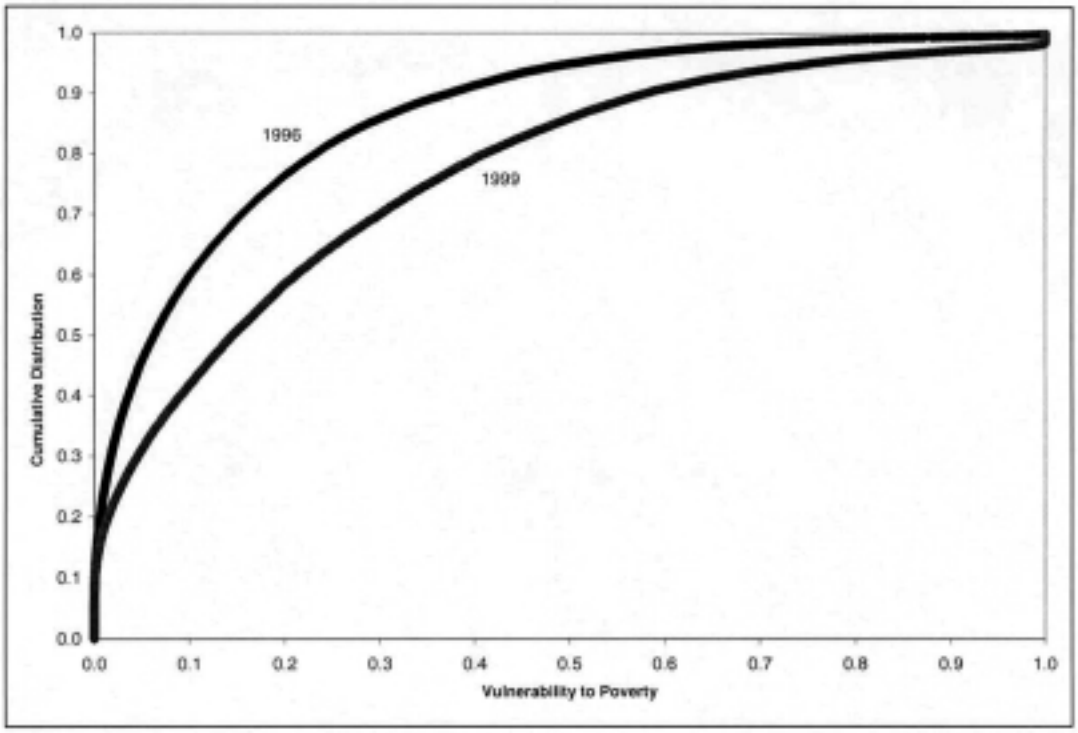
Similarly, the proportion of those in the high vulnerability group has increased significantly. In total, this group increased from 6.8 percent in 1996 to 18.4 percent in 1999, an increase of more than 170 percent over the pre-crisis figure. This increase in the proportion of the high vulnerability group is driven by increases in the proportions of both those who have low levels of consumption as well as those who have high variability of consumption. The latter more than doubled from 2.1 percent in 1996 to 5 percent in 1999, while the former presents an even more alarming trend since it almost tripled from 4.7 percent in 1996 to 13.4 percent in 1999.

As a result of both increases in the proportions of those who are poor and those who have high vulnerability to poverty, the total vulnerable group in the population increased dramatically from 18.1 percent in 1996 to 33.7 percent in 1999. This is an increase of 15.6 percentage points or proportionally more than 86 percent over the original pre-crisis rate.[8]

Similarly, the average vulnerability to poverty across households — the mean of the estimates of $\hat{v}_h$ in equation (7) — has also increased markedly from 16.4 percent in 1996 to 27.2 percent in 1999, which is almost a two-thirds increase over the pre-crisis vulnerability level. Figure 2 depicts the cumulative distribution functions (CDF) of vulnerability to poverty in both 1996 and 1999. The figure shows that the 1999 CDF lies to the right of the 1996 CDF with no crossings, which means that the 1996 CDF stochastically dominates the 1999 CDF. This implies that the proportion of the high vulnerability group in the population is higher in 1999 than in 1996 no matter what 'vulnerability threshold' is chosen. In other words, the vulnerability to poverty among Indonesian households after the crisis has unambiguously increased from its pre-crisis level.

[8] Using two panel data sets, Pritchett *et al.* (2000) estimate that the proportion of households that are vulnerable to poverty in Indonesia in 1997-99 is between 30 and 50 percent. This study, however, uses a different definition of household vulnerability: a household is defined as vulnerable if it has a 50 percent or higher probability of falling below the poverty line at least once after three annual shocks.

Figure 2. Cumulative Distribution Function of Vulnerability to Poverty



4.2. The Poor and the Vulnerable across Regions

Indonesia is a large and diverse country with a total population of over 200 million, made up of more than 300 different ethnic groups. As of 1999, Indonesia was composed of 26 provinces, 341 districts (*kabupaten/kota*), 4,044 sub-district (*kecamatan*), and 69,065 villages (*desa/kelurahan*). The national aggregate figures discussed in the previous sub-section certainly mask large variations across regions and population groups. Table 2 shows the distribution of population by poverty categories across provinces before the crisis in 1996, while Table 3 shows the post-crisis distribution in 1999, and Table 4 shows the changes that have occurred between the two periods. In all tables provinces have been sorted from the lowest to the highest incidence of the total vulnerable group.

Table 2. Poverty Categories by Province, 1996 (%)

No.	Province	Poor			High Vulnerability Group			TVG	AV
		TP	CP	Total	LLC	HVC	Total		
1	Jakarta	0.8	0.0	0.8	0.0	0.0	0.0	0.8	1.7
2	West Sumatra	2.8	0.0	2.8	0.0	0.1	0.1	2.9	3.4
3	Central Kalimantan	3.7	0.1	3.8	0.1	0.2	0.2	3.9	4.7
4	Riau	4.3	0.8	5.0	1.1	0.6	1.7	5.4	7.2
5	East Kalimantan	3.8	1.6	5.4	2.6	1.6	4.2	7.3	7.6
6	Aceh	6.9	0.5	7.4	0.6	0.5	1.1	7.7	7.7
7	Jambi	7.0	0.9	7.9	1.1	0.5	1.6	8.6	12.7
8	North Sumatra	8.1	0.3	8.4	0.4	0.7	1.1	8.8	10.0
9	Bali	7.0	1.4	8.4	1.6	1.2	2.8	9.2	9.4
10	South Kalimantan	7.2	0.4	7.6	1.6	1.3	2.9	9.8	8.8
11	South Sumatra	8.1	1.1	9.2	2.9	1.0	3.9	11.7	12.8
12	Bengkulu	8.5	1.9	10.4	3.1	1.3	4.4	12.3	12.5
13	West Java	10.9	1.0	11.9	1.6	1.2	2.8	13.1	12.7
14	South Sulawesi	11.4	3.0	14.4	4.0	1.8	5.8	16.3	15.0
15	Yogyakarta	14.2	1.8	16.0	2.7	2.3	5.1	18.3	15.5
16	Central Sulawesi	12.9	3.5	16.4	5.8	1.4	7.2	19.6	17.3
17	Lampung	15.2	2.1	17.3	3.5	1.8	5.3	20.0	18.1
18	East Java	16.4	2.4	18.8	3.5	2.7	6.3	21.2	19.1
19	Central Java	18.5	2.4	20.9	4.0	3.5	7.5	23.9	21.9
20	North Sulawesi	14.2	5.2	19.4	7.6	5.6	13.2	24.0	20.3
21	West Kalimantan	16.4	5.1	21.5	7.1	4.0	11.1	25.3	19.1
22	Southeast Sulawesi	16.1	10.9	27.0	14.4	5.3	19.8	33.3	26.5
23	Maluku	11.8	22.6	34.4	30.9	3.7	34.6	44.5	36.6
24	West Nusatenggara	23.0	13.5	36.4	20.2	6.8	27.0	45.9	33.7
25	Papua	6.9	40.2	47.2	50.4	3.8	54.1	58.9	49.2
26	East Nusatenggara	13.4	39.9	53.2	52.6	5.7	58.3	68.6	53.0

Notes:
- TP = Transient Poor, CP = Chronic Poor, LLC = Low Level of Consumption, HVC = High Variability of Consumption, TVG = Total Vulnerable Group, AV = Average Vulnerability
- Sorted from the lowest to the highest incidence of the total vulnerable group

Table 3. Poverty Categories by Province, 1999 (%)

No.	Province	Poor			High Vulnerability Group			TVG	AV
		TP	CP	Total	LLC	HVC	Total		
1	Jakarta	2.9	0.1	3.0	0.3	0.6	0.9	3.7	6.2
2	Riau	6.1	3.3	9.4	5.1	0.7	5.7	11.6	9.9
3	West Sumatra	8.0	1.4	9.4	3.8	1.5	5.3	12.9	12.1
4	Aceh	12.4	1.2	13.6	1.8	1.3	3.1	15.1	14.0
5	Bali	10.7	3.2	13.9	5.0	2.1	7.1	16.7	15.0
6	North Sumatra	12.9	2.2	15.1	3.1	1.4	4.5	16.8	16.3
7	Jambi	12.6	4.5	17.1	6.8	1.5	8.3	20.1	16.3
8	Bengkulu	13.4	7.2	20.6	8.0	1.7	9.7	22.2	16.4
9	Central Kalimantan	7.3	5.0	12.2	14.2	1.6	15.8	22.9	21.8
10	South Kalimantan	12.8	7.3	20.0	10.2	1.7	11.9	23.9	19.7
11	East Kalimantan	11.6	10.2	21.8	12.5	4.8	17.2	26.4	21.1
12	South Sulawesi	17.7	5.4	23.0	7.6	3.6	11.2	27.1	22.4
13	North Sulawesi	9.9	14.1	24.0	19.0	0.8	19.8	29.3	23.4
14	South Sumatra	17.5	6.0	23.5	11.5	4.3	15.8	31.4	23.4
15	West Java	19.7	7.2	26.8	10.8	5.4	16.2	33.1	26.8
16	Yogyakarta	16.6	10.3	26.9	14.8	5.2	20.0	33.6	26.7
17	West Kalimantan	14.6	14.7	29.4	19.6	3.9	23.5	36.0	29.5
18	Central Java	23.0	9.9	32.9	14.4	6.8	21.2	40.6	31.9
19	East Java	23.3	10.3	33.6	14.6	7.3	21.9	41.0	32.3
20	Central Sulawesi	11.9	16.1	28.0	29.1	2.3	31.4	42.6	36.6
21	Southeast Sulawesi	16.7	19.9	36.6	23.9	6.9	30.9	43.3	34.0
22	Lampung	20.8	17.2	38.1	24.0	7.8	31.8	48.1	35.6
23	West Nusa Tenggara	21.5	20.1	41.6	27.4	9.1	36.6	52.7	39.7
24	Maluku	11.4	36.8	48.2	47.5	0.5	48.0	59.2	48.6
25	Papua	3.5	54.5	58.0	57.8	0.6	58.4	62.0	57.4
26	East Nusa Tenggara	10.6	51.4	62.0	63.0	3.7	66.7	75.4	60.4

Notes:
- TP = Transient Poor, CP = Chronic Poor, LLC = Low Level of Consumption, HVC = High Variability of Consumption, TVG = Total Vulnerable Group, AV = Average Vulnerability
- Sorted from the lowest to the highest incidence of the total vulnerable group

Table 4. Changes in Poverty Categories by Province, 1996-99
(Percentage Point Change)

No.	Province	Poor			High Vulnerability Group			TVG	AV
		TP	CP	Total	LLC	HVC	Total		
1	Jakarta	2.0	0.1	2.2	0.3	0.6	0.9	2.8	4.4
2	Papua	-3.4	14.3	10.9	7.4	-3.2	4.3	3.1	8.1
3	North Sulawesi	-4.3	8.9	4.6	11.4	-4.8	6.7	5.3	3.1
4	Riau	1.9	2.5	4.4	4.0	0.1	4.1	6.2	2.8
5	West Nusatenggara	-1.5	6.6	5.2	7.2	2.4	9.6	6.8	6.1
6	East Nusatenggara	-2.8	11.6	8.8	10.4	-2.0	8.4	6.8	7.5
7	Aceh	5.5	0.7	6.2	1.1	0.8	1.9	7.5	6.3
8	Bali	3.7	1.8	5.5	3.5	0.9	4.3	7.6	5.5
9	North Sumatra	4.8	1.9	6.7	2.7	0.7	3.4	8.0	6.3
10	Bengkulu	4.9	5.2	10.1	4.9	0.5	5.3	9.9	3.9
11	Southeast Sulawesi	0.6	9.0	9.6	9.5	1.6	11.1	10.0	7.5
12	West Sumatra	5.2	1.4	6.7	3.8	1.4	5.1	10.0	8.7
13	West Kalimantan	-1.8	9.7	7.8	12.5	-0.1	12.4	10.7	10.5
14	South Sulawesi	6.3	2.4	8.6	3.6	1.8	5.4	10.8	7.3
15	Jambi	5.6	3.6	9.3	5.7	1.0	6.7	11.5	3.6
16	South Kalimantan	5.6	6.9	12.5	8.6	0.5	9.0	14.1	10.8
17	Maluku	-0.4	14.2	13.8	16.6	-3.2	13.4	14.7	12.0
18	Yogyakarta	2.3	8.5	10.8	12.1	2.9	15.0	15.3	11.2
19	Central Java	4.5	7.5	12.0	10.4	3.3	13.7	16.7	10.0
20	Central Kalimantan	3.6	4.9	8.5	14.2	1.4	15.6	19.0	17.1
21	East Kalimantan	7.8	8.6	16.4	9.8	3.2	13.0	19.1	13.5
22	South Sumatra	9.4	5.0	14.3	8.5	3.4	11.9	19.6	10.6
23	East Java	6.9	7.9	14.8	11.0	4.6	15.6	19.9	13.2
24	West Java	8.8	6.2	14.9	9.2	4.2	13.4	20.0	14.1
25	Central Sulawesi	-1.0	12.6	11.6	23.3	0.9	24.3	23.0	19.3
26	Lampung	5.6	15.1	20.8	20.5	6.0	26.5	28.1	17.5

Notes:
- TP = Transient Poor, CP = Chronic Poor, LLC = Low Level of Consumption, HVC = High Variability of Consumption, TVG = Total Vulnerable Group, AV = Average Vulnerability
- Sorted from the lowest to the highest change in the incidence of the total vulnerable group

Tables 2 and 3 reveal that the proportions of the poor and the vulnerable groups in the population have varied greatly across provinces. In 1996, the total vulnerable group ranged from less than 1 percent of the population in the capital Jakarta to almost 70 percent in the province of East Nusa Tenggara. In this pre-crisis period, there were practically no incidences of chronic poverty in Jakarta and West Sumatra.[9] Very low incidences of

[9] These findings for Jakarta may seem surprisingly low, especially to those who regularly see many evidently very poor and vulnerable people living in miserable condition in temporary shacks and squatter settlements in and around the city. We can only speculate on the reason for this apparent oversight, but the most likely explanation lies with the way survey data is collected. It is apparent that many of these individuals do not possess Jakarta identity cards and are not officially registered with the local authority as residents. Hence, their existence is not reflected is the survey data.

chronic poverty were also observed in some provinces, particularly in the islands of Sumatra, Kalimantan, and Java. In addition, the data reveal that no households in Jakarta had high vulnerability to poverty, that is with a greater than 50 percent chance of falling into poverty in the near future. Very low proportions of the high vulnerability group were also observed in West Sumatra and Central Kalimantan.

On the other hand, around a half of the population in East Nusa Tenggara and Papua were poor and, worse still, most of them were in the chronically poor category. In addition, the high vulnerability group in these provinces also made up more than a half of the population. As a result, the total vulnerable group in these provinces were almost 70 and 60 percent respectively. Other provinces with similarly high proportions of the poor and the vulnerable were West Nusa Tenggara and Maluku. Both these provinces had poverty rates of more than 30 percent and a total vulnerable group of more than 40 percent.

In 1996, most provinces had incidences of chronic poverty which were much lower than transient poverty levels. There were only three exceptions to this: Papua, East Nusa Tenggara, and Maluku. The worst incidence of chronic poverty was found in Papua and East Nusa Tenggara, where around 40 percent of the population in both provinces were chronically poor. Meanwhile, the highest incidence of transient poverty was found in West Nusa Tenggara where almost a quarter of its population were in that category.

By 1999, as shown in Table 3, Jakarta and East Nusa Tenggara retained the highest and the lowest ranks respectively, but both experienced significant increases in the incidences of both poverty and vulnerability. In Jakarta the proportion of the total vulnerable group increased from 0.8 percent in 1996 to 3.7 percent in 1999, while in East Nusa Tenggara the proportion increased from 68.6 percent to 75.4 percent. As a matter of fact, no single province was spared the negative impact of the crisis in terms of increases in the proportions of the poor and the vulnerable.

As revealed by Table 4, Lampung suffered the highest increase of those households in the total vulnerable group, from 20 percent in 1996 to 48.1 percent in 1999. This is an increase of 28.1 percentage points or 140 percent over the base year. There are only two other provinces which experienced an increase of 20 percentage points or more in the proportion of the total vulnerable group: Central Sulawesi and West Java.

Meanwhile, Jakarta experienced the lowest increase in the total vulnerable group in terms of percentage point increases. The proportion of the total vulnerable group in this province increased by 2.8 percentage points between 1996 and 1999. However, since vulnerability levels in Jakarta were very low in 1996, this amounted to a proportional increase of almost 350 percent. This, in fact, is the second highest proportional increase after Central Kalimantan, which experienced an increase of more than 480 percent.

Despite regional variations, most provinces still exhibit a similar pattern to the changes in poverty categories that can be observed at the national level. Firstly, the increase in the total vulnerable group has been due to increases in both the proportion of the poor and the proportion of those in the high vulnerability group. Increases in both categories have occurred in every province. Secondly, the increase in poverty was mostly driven by the

increase in chronic poverty. All provinces experienced a much higher proportional increase in the incidence of chronic poverty compared to the increase in transient poverty.

Due to this significant increase in the incidence of chronic poverty during the crisis, there are now seven provinces with higher proportions of chronic poverty than transient poverty. Before the crisis, only three provinces were in this condition. However, all provinces in Java and Sumatra still have significantly lower incidences of chronic poverty than transient poverty. Higher incidence of chronic poverty rather than transient poverty mostly occurs in provinces in Eastern Indonesia, as well as the provinces in Nusa Tenggara and Kalimantan.

4.3. The Poor and the Vulnerable across Urban and Rural Areas

Despite the fact that the crisis has hit urban areas relatively harder than rural areas (Sumarto *et al.*, 1998), the incidence of poverty in rural areas remains higher than in urban areas (Pradhan *et al.*, 2000). Table 5 shows the distribution of population by poverty categories differentiated by urban and rural areas in 1996 and 1999. The table confirms that throughout the entire period, the proportions of the population who are poor and who are vulnerable to poverty has remained much higher in rural than in urban areas.

Table 5. Poverty Categories by Urban and Rural Areas, 1996 & 1999 (%)

Area	Poor			High Vulnerability Group			TVG	AV
	TP	CP	Total	LLC	HVC	Total		
1996:								
Rural	15.7	4.7	20.4	6.8	2.9	9.7	23.8	21.1
Urban	6.4	0.6	7.0	1.0	0.7	1.7	7.8	8.1
1999:								
Rural	21.3	13.2	34.5	18.3	6.5	24.8	42.5	33.6
Urban	12.9	3.9	16.8	6.1	2.7	8.8	20.4	17.4
Change:								
Rural	5.6	8.5	14.1	11.5	3.6	15.0	18.7	12.5
Urban	6.5	3.3	9.8	5.1	2.0	7.1	12.6	9.3

Notes: TP = Transient Poor, CP = Chronic Poor, LLC = Low Level of Consumption, HVC = High Variability of Consumption, TVG = Total Vulnerable Group, AV = Average Vulnerability

In 1996, the total vulnerable group made up 23.8 percent of the rural population and only 7.8 percent of the urban population. In 1999, however, the proportion rose to 42.5 percent in rural areas and 20.4 percent in urban areas, indicating that the increase has been proportionally much higher in urban areas than in rural areas. The increase in the proportion of those in the total vulnerable group of 12.6 percentage points in urban areas is an increase of more than 160 percent over the pre-crisis rate, while the increase of 18.7 percentage points in rural areas is equal to a proportional increase of nearly 80 percent. This

means that the growth of the total vulnerable group in urban areas was more than double the growth in rural areas.

In both urban and rural areas, the increase in the total vulnerable group was due to increases in the proportion of population who are poor and also the proportion of the population with high vulnerability to poverty. The headcount poverty rate increased from 20.4 percent in 1996 to 34.5 percent in 1999 for rural areas and from 7 percent to 16.8 percent for urban areas. Proportionally, the poverty rate in urban areas has increased by 140 percent, while the increase in rural areas was much lower, at less than 70 percent. The proportion of those in the high vulnerability group, meanwhile, has increased from 9.7 percent to 24.8 percent for rural areas and from 1.7 to 8.8 percent for urban areas. This means that the proportion of the high vulnerability group in urban areas has increased by more than fourfold, while the increase in rural areas was also much lower at around 150 percent. This clearly confirms the findings in other studies which have suggested that the crisis affected urban areas relatively more severely than rural areas.[10]

The increase in the poor population in rural areas, however, has occurred mostly in the category of chronic poverty. For every two additional transient poor people in rural areas, there were three additional people in the chronic poor category. As a result, the ratio of chronic to transient poverty in rural areas has more than doubled from around 30 percent before the crisis to more than 60 percent in 1999. Meanwhile, in urban areas, although proportionally the increase in chronic poverty was also much higher than the increase in transient poverty, the numbers of those in the transient poverty category remained much higher than those in chronic poverty. Nevertheless, the ratio of chronic to transient poverty in urban areas has jumped from less than 10 percent pre-crisis to more than 30 percent after the crisis began.

4.4. The Poor and the Vulnerable across Sectors

The incidence of poverty in Indonesia varies widely across sectors (Pradhan *et al.*, 2000). Table 5 shows the distribution of population across poverty categories by occupational sectors of the heads of households. It is widely recognized that the bulk of the poor in Indonesia are employed in agriculture. Both before and after the crisis, Table 6 reveals that both the poverty rate and the proportion of the total vulnerable group in the agricultural sector were much higher than in other sectors. Furthermore, the table indicates that not only is the poverty rate in the agricultural sector much higher than in other sectors, but it also contains a much higher proportion of the chronic poor.

[10] See, for example, Sumarto *et al.* (1998).

Table 6. Poverty Categories by Occupational Sector of Heads of Households, 1996 & 1999 (%)

Area	Poor			High Vulnerability Group			TVG	AV
	TP	CP	Total	LLC	HVC	Total		
1996:								
Agriculture	19.0	7.2	26.1	10.3	4.3	14.6	31.2	26.8
Industry	9.8	1.1	10.9	1.7	0.7	2.4	11.9	12.0
Trade	7.6	0.3	7.9	0.6	0.6	1.2	8.5	9.7
Services	7.6	0.4	8.0	0.6	0.5	1.1	8.4	8.2
Receiving transfers	5.9	0.8	6.7	1.1	1.1	2.2	7.5	8.7
1999:								
Agriculture	21.7	18.7	40.4	25.8	7.8	33.6	51.0	39.3
Industry	17.2	6.8	24.1	9.2	4.1	13.3	28.4	23.4
Trade	15.8	2.1	18.0	3.5	3.1	6.6	20.9	18.8
Services	15.1	3.4	18.5	5.4	3.0	8.3	22.0	18.7
Receiving transfers	12.9	3.7	16.6	6.3	2.9	9.2	20.7	17.9
Change:								
Agriculture	2.7	11.5	14.3	15.5	3.5	19.0	19.8	12.5
Industry	7.4	5.7	13.2	7.5	3.4	10.9	16.5	11.4
Trade	8.2	1.8	10.1	2.9	2.5	5.4	12.4	9.1
Services	7.5	2.9	10.5	4.8	2.5	7.2	13.6	10.5
Receiving transfers	7.0	2.9	9.9	5.2	1.8	7.0	13.2	9.2

Notes: TP = Transient Poor, CP = Chronic Poor, LLC = Low Level of Consumption, HVC = High Variability of Consumption, TVG = Total Vulnerable Group, AV = Average Vulnerability

Before the crisis, the agricultural sector had a much higher proportion of both transient and chronic poor than other sectors of the economy. As a result of the crisis, the chronic poor in the agricultural sector jumped from 7.2 percent in 1996 to 18.7 percent in 1999, an increase of 11.5 percentage points or almost a 160 percent proportional increase from the 1996 rate. Interestingly, the crisis has only increased the proportion of the transient poor in this sector by less than 3 percentage points, from 19 percent in 1996 to 21.7 percent in 1999. As a result, the proportion of the transient poor in the agricultural sector after the onset of the crisis was only slightly higher than other sectors.

In all sectors the transient poor make up the majority of those in the poor category. This remains true in 1999 even though proportionally the increase among the chronic poor has been much higher than among the transient poor. This is because the incidence of chronic poverty in most sectors prior to the crisis was very small. In the industrial sector, for example, although the chronic poor jumped more than sixfold from 1.1 percent in 1996 to 6.8 percent in 1999, the transient poor still make up the majority of the poor, having increased from 9.8 percent in 1996 to 17.2 percent in 1999.

Similarly, the proportion of those in the high vulnerability group has increased significantly across all sectors. As a result, the total vulnerable group as a proportion of the entire population has also increased significantly across all sectors. The agricultural sector has continued to have the highest proportion of the total vulnerable population throughout the entire period. After the crisis erupted, the total vulnerable group in the agricultural sector constitutes more than a half of those employed in this sector, a much higher rate than any other sector. The second highest rate is found in the industrial sector, where almost 30 percent of the population are considered vulnerable to poverty. Meanwhile, the trade and services sectors and those who are receiving transfers have a much lower rate at around 20 percent.

4.5. The Poor and the Vulnerable across Educational Level

Education is one of the key determinants of poverty as people with superior levels of educational attainment improve their chances of obtaining better job with higher wages. Furthermore, since people acquire skills through education, a higher level of educational attainment is associated with an increase in the marginal productivity of labor. Hence, it is expected that education is negatively correlated with poverty: the higher the level of education, the lower the poverty rate.[11] Table 7 shows the distribution of population by poverty categories across the education levels of heads of households before and after the onset of the crisis.

For those households with a tertiary educated head, the crisis seems to have had little impact on poverty in absolute terms. The headcount poverty rate for this group of the population has increased from 0.4 percent in 1996 to 1.9 percent in 1999. Even though proportionally this is a very large increase, the poverty rate of less than two percent in 1999 is still considered very low. This does not imply that the crisis has had little impact on this group, for like the rest of the population, their welfare level has certainly fallen. However, in most cases their reduced welfare level still remains well above the poverty line, so that their headcount poverty rate remains relatively low. In addition, both before and after the crisis, the small number of poor among this group were mostly in the transient poor category rather than the chronically poor.

[11] In a society where education is not always freely available, however, the poverty status of parents in turn may determine children's educational attainment.

Table 7. Poverty Categories by Educational Level of Heads of Households, 1996 & 1999 (%)

Education Level	Poor			High Vulnerability Group			TVG	AV
	TP	CP	Total	LLC	HVC	Total		
1996:								
Not completed primary	18.3	6.4	24.7	9.4	4.3	13.8	29.8	25.8
Primary	13.1	1.9	15.1	2.6	1.1	3.7	16.2	15.4
Lower secondary	6.2	1.0	7.1	1.1	0.4	1.5	7.5	8.1
Upper secondary	2.2	0.2	2.4	0.4	0.1	0.4	2.6	3.3
Tertiary	0.4	0.0	0.4	0.0	0.0	0.0	0.1	0.1
1999:								
Not completed primary	21.7	19.0	40.6	26.3	8.4	34.8	52.2	40.1
Primary	22.5	7.6	30.1	10.9	5.6	16.4	35.8	29.4
Lower secondary	14.0	2.8	16.8	4.2	1.4	5.6	18.9	17.2
Upper secondary	8.0	0.6	8.6	1.2	0.4	1.6	9.4	9.0
Tertiary	1.7	0.2	1.9	0.8	0.1	0.9	2.6	3.2
Change:								
Not completed primary	3.4	12.6	15.9	16.9	4.1	21.0	22.4	14.3
Primary	9.4	5.7	15.0	8.3	4.5	12.7	19.6	14.0
Lower secondary	7.8	1.8	9.7	3.1	1.0	4.1	11.4	9.1
Upper secondary	5.8	0.4	6.2	0.8	0.3	1.2	6.8	5.7
Tertiary	1.3	0.2	1.5	0.8	0.1	0.9	2.5	3.1

Notes: TP = Transient Poor, CP = Chronic Poor, LLC = Low Level of Consumption, HVC = High Variability of Consumption, TVG = Total Vulnerable Group, AV = Average Vulnerability

The crisis, however, has had an especially pronounced impact on the poverty rates of those households headed by individuals without a tertiary education. Even among those with an upper secondary education, the headcount poverty incidence jumped from 2.4 percent in 1996 to 8.6 percent in 1999, an increase of more than three and a half times. Among the least educated, those who have not completed primary school education - the poverty rate increased significantly, from 24.7 percent to 40.6 percent over the same period.

Furthermore, among this least educated group, the increase in the incidence of poverty has occurred mostly among those who are the chronically poor, jumping almost threefold from 6.4 percent to 19 percent during the period, while the incidence of transient poverty only increased slightly, from 18.3 percent to 21.7 percent. As a result, among the lowest educated in the community, those in the chronic poverty category were only around a quarter of the total poor before the crisis, but by 1999 they contributed almost half of the poor in this group. At other levels of education, the proportion of the transient poor remains much higher than the chronic poor.

4.6. The Poor and the Vulnerable across Gender

In qualitative and participatory poverty assessments, female-headed households are often identified as the poorest of the poor.[12] Table 8 shows the distribution of population by poverty categories differentiated by the gender of the head of the household. It reveals that the poverty rate among those households headed by females does not differ widely from the poverty rate among male-headed households. In fact, the poverty rate of male-headed households tends to be slightly higher than that of female-headed households, particularly after the onset of the crisis.

Table 8. Poverty Categories by Gender of Heads of Households, 1996 (%)

Gender	Poor			High Vulnerability Group			TVG	AV
	TP	CP	Total	LLC	HVC	Total		
1996:								
Male	12.4	3.3	15.7	4.8	2.1	6.9	18.2	16.5
Female	12.1	3.0	15.1	4.1	2.1	6.1	17.1	15.5
1999:								
Male	17.9	9.6	27.6	13.6	5.0	18.6	33.9	27.3
Female	17.6	8.2	25.8	11.9	4.9	16.7	31.9	25.7
Change:								
Male	5.5	6.3	11.9	8.8	2.9	11.7	15.7	10.8
Female	5.5	5.2	10.7	7.8	2.8	10.6	14.7	10.2

Notes: TP = Transient Poor, CP = Chronic Poor, LLC = Low Level of Consumption, HVC = High Variability of Consumption, TVG = Total Vulnerable Group, AV = Average Vulnerability

Similarly, male-headed households tend to have a slightly higher proportion of those in the high vulnerability category than female-headed households. As a result, the total vulnerable group among male-headed households also tends to be slightly higher than among female-headed households. Hence, the results of this study do not support the view that female-headed households are the poorest of the poor.[13] However, this probably requires some qualification because the category of female-headed households is a heterogeneous one. As well as those households in which women are actually supporting themselves (and others) on their own, as in the case of widows and divorced or single mothers, it also includes households nominally "headed" by females at the time of the survey because the husband was absent, but was still providing remittances.

[12] See Dreze and Srinivasan (1997).

[13] Similarly, Dreze and Srinivasan (1997) find that in India there is no evidence that female-headed households are poorer than male-headed households, while Glewwe and Hall (1998) find that in Peru female-headed households are no more vulnerable than male-headed households.

V. CONCLUSION

The poverty rate in any given area is often used as a measure of welfare of the households in that area. The grouping of households into non-poor and poor is based on an assessment of whether current household consumption is above or below a poverty line. This study expands the definition of poverty status by combining information on current consumption with the probability that future consumption levels will fall below the poverty line and estimates of expected consumption levels. As a result, households in this study have been grouped into several poverty and vulnerability categories.

The results of this study indicate that not only did the poverty rate in Indonesia increase as a result of the crisis, but much of the increase has been due to an increase in chronic poverty. 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. Similarly, the proportion of those in the high vulnerability group has almost tripled from 6.8 percent to 18.4 percent. Both these changes have affected the proportion of the total vulnerable group in the population which has leapt from 18.1 percent before the crisis to 33.7 percent by 1999. Meanwhile, average vulnerability to poverty, the probability that a household will be poor in the near future, has also increased sharply from 16.4 percent in 1996 to 27.2 percent in 1999. The change in the distribution of vulnerability indicates that vulnerability to poverty among Indonesian households has unambiguously increased from its pre-crisis level.

Geographically, the crisis has resulted in significant increases in the incidence of chronic poverty in some provinces. The number of provinces with a higher proportion of chronic rather than transient poverty has increased from three in 1996 to seven in 1999. However, this higher incidence of chronic rather than transient poverty has mostly occurred in those provinces in Eastern Indonesia, Nusa Tenggara, and Kalimantan. On the other hand, in most provinces throughout Java and Sumatra the incidence of chronic poverty remains significantly lower than transient poverty.

The crisis has hit urban areas harder than rural areas. The proportions of both the poor and the vulnerable have increased much faster in urban than in rural areas. However, the increase in the poor population that has occurred in rural areas has been recorded mostly among those in the chronic poor category. For every two additional individuals in the transient poor category people in rural areas, there are three additional people in the chronic poor category. Meanwhile, in urban areas, the incidence of transient poverty remains much higher than that of chronic poverty. Nevertheless, the ratio of chronic to transient poverty in both urban and rural areas has increased significantly from its pre-crisis level.

Across sectors, the agricultural sector has continued to have the highest proportion of both the poor (particularly the chronic poor) and the vulnerable, both before and after the onset of the crisis. By 1999, the total vulnerable group in the agricultural sector constituted more than half of the population in that sector. This is much higher than the industrial sector where less than 30 percent of the population were considered vulnerable to poverty, while the trade and services sectors and those who are receiving transfers recorded even lower rates of around 20 percent.

In terms of education levels of the heads of households, the headcount poverty rate among those households headed by individuals with a tertiary education remains very low after the crisis. The crisis, however, has had a pronounced impact on the poverty rates of those families where the head of the household has less than a tertiary education. Even among those with upper secondary education, their poverty incidence has jumped more than threefold from around 2.4 to 8.6 percent. Meanwhile, among the least educated group, those who have not completed primary school, the increase in poverty has occurred mostly among the chronically poor. As a result, although those in the chronic poor category were only a quarter of the total poor before the crisis, by 1999 they constituted almost half of the poor in this group.

The results of this study also indicate that the poverty rate and vulnerability to poverty among households headed by females do not differ widely from the poverty rate among male-headed households. In fact, the poverty rate, and in particular the incidence of chronic poverty and the proportion of those in the high vulnerable group among male-headed households, tends to be slightly higher than that of female-headed households.

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APPENDIX

Table A1. Poverty Lines (Rp./month)

Province	1996		1999	
	Urban	Rural	Urban	Rural
Aceh	31,234	28,096	74,087	70,199
North Sumatra	34,295	29,867	83,462	74,460
West Sumatra	34,911	29,971	85,361	78,499
Riau	37,828	33,301	92,643	82,033
Jambi	36,946	32,033	85,216	77,004
South Sumatra	33,203	29,544	85,579	79,962
Bengkulu	34,530	30,289	86,026	77,966
Lampung	32,842	28,768	88,877	78,637
Jakarta	41,860	-	102,814	-
West Java	39,070	33,675	94,405	86,024
Central Java	35,532	31,712	85,009	78,461
Yogyakarta	37,213	33,298	92,644	83,304
East Java	33,774	30,413	85,024	80,020
Bali	37,525	35,502	97,794	94,405
West Nusa Tenggara	34,854	32,483	87,783	84,718
East Nusa Tenggara	36,780	33,653	84,144	77,856
East Timor	43,012	38,181	97,017	90,621
West Kalimantan	37,966	34,112	93,380	87,982
Central Kalimantan	37,816	31,089	95,514	85,587
South Kalimantan	36,983	32,482	86,921	82,932
East Kalimantan	38,277	35,599	96,070	92,977
North Sulawesi	35,924	30,508	87,474	82,179
Central Sulawesi	32,286	29,069	81,251	76,802
South Sulawesi	32,235	27,441	84,561	74,376
Southeast Sulawesi	33,747	29,281	86,630	80,279
Maluku	42,163	37,598	102,797	100,169
Papua	42,872	44,702	88,486	97,129

Table A2. Household Characteristics

Variable	1996		1999	
	Mean	S.D.	Mean	S.D.
Household size	5.07	1.94	4.87	1.89
Square of household size	29.52	22.84	27.31	21.66
Dependency ratio in the household [a)]	0.33	0.21	0.31	0.21
Dummy of marital status of household head	0.90	0.30	0.89	0.32
Age of household head (year)	45.02	12.71	45.65	12.89
Age square of household head	2,188.09	1252.02	2,250.30	1281.49
Education level of household head:				
- dummy of less than primary	0.39	0.49	0.35	0.48
- dummy of primary	0.32	0.47	0.32	0.47
- dummy of lower secondary	0.11	0.31	0.12	0.33
- dummy of upper secondary	0.14	0.35	0.16	0.37
- dummy of tertiary	0.04	0.20	0.05	0.21
Dummy of gender of household head	0.08	0.28	0.09	0.29
Sector of occupation of household head:				
- dummy of agriculture	0.41	0.49	0.39	0.49
- dummy of industry	0.09	0.29	0.10	0.30
- dummy of trade	0.16	0.37	0.17	0.38
- dummy of services	0.29	0.45	0.28	0.45
- dummy of receiving transfers	0.05	0.21	0.05	0.22

[a)] Dependency ratio is defined as the proportion of the total number of household members who are 15 years of age or younger.

Table A3. Community Characteristics

Variable	1996		1999	
	Mean	S.D.	Mean	S.D.
Population density (person/hectare)	45.17	141.72	43.21	84.42
Proportion of agricultural households	0.50	0.34	0.50	0.37
Proportion of officially poor households	0.24	0.29	0.42	0.27
Proportion of electrified houses	0.57	0.33	0.71	0.31
Dummy for whether the village has a hospital	0.11	0.31	0.11	0.31
Dummy for whether the village has a polyclinic	0.24	0.42	0.28	0.45
Dummy for whether the village has a community health center	0.53	0.50	0.55	0.50
Dummy for whether the village has a medical doctor who resides in the village	0.38	0.49	0.40	0.49
Dummy for whether the village has a public transport facility	0.91	0.29	0.92	0.28
Dummy for whether the village has a vocational course facility	0.34	0.47	0.30	0.46
Dummy for whether the village has an upper secondary or tertiary education institution	0.31	0.46	0.34	0.48
Dummy for whether the village has an industry	0.83	0.37	0.80	0.40
Dummy for whether the village has a trade facility	0.42	0.49	0.48	0.50
Dummy for whether the village has a bank	0.23	0.42	0.19	0.40
Dummy for whether the village has a cooperative	0.48	0.50	0.50	0.50
Dummy for whether the village has a public communication facility	0.47	0.50	0.54	0.50
Dummy for whether there are households in the village which use liquid petroleum gas or kerosene as a source of energy	0.38	0.49	0.46	0.50
Dummy for whether there are households in the village which use piped or pumped water	0.26	0.44	0.29	0.45
Dummy for whether there are households in the village which have their own toilet	0.55	0.50	0.63	0.48
Education level of village head:				
- dummy of less than upper secondary	0.41	0.49	0.34	0.47
- dummy of upper secondary	0.42	0.49	0.43	0.50
- dummy of tertiary	0.17	0.38	0.22	0.42