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Working Paper

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August 2004

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Jakarta
August 2004

[*] We would like to thank Lant Pritchett, Emmanuel Skoufias, and anonymous referees for comments and suggestions. However, they are in no way responsible for the content of this paper. We are grateful to Statistics Indonesia (BPS) and UNICEF for providing access to the relevant data.

Sumarto, Sudarno

Assessing the impact of Indonesian social safety net programs on household welfare and poverty dynamics/Sudarno Sumarto, Asep Suryahadi, Wenefrida Widyanti. – Jakarta: Lembaga Penelitian SMERU, 2004

ii, 30 hal. ; 28 cm.

ISBN: 979-98902-4-1

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362.5/DDC 21

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Abstract

In early 1998 the Government of Indonesia established several social safety net (SSN) programs to help the poor and the newly poor cope with the impact of the impending economic crisis, covering food security, employment creation, education, health, and community empowerment. This article evaluates the impact of these programs on household welfare and poverty, utilizing a panel data set of over 10 thousand households which were visited four times in a 14 month period. The impact of participation in the social safety net programs on household consumption is found to be generally positive. However, only the subsidized rice program appears to have significantly reduced the risk of poverty among participating households.

I. INTRODUCTION

A number of academic papers have noted that, prior to the crisis, Indonesia was one of the fastest growing economies in the world. Between 1986 and 1996, average real GDP growth was more than 7 percent per year. Furthermore, other social indicators also improved significantly in the period leading up to the crisis: life expectancy increased, infant mortality rates fell, and school enrollment rates rose. In addition, the provision of basic infrastructure – water supplies, roads, electricity, schools, health facilities – also improved significantly. Starting in mid 1997, Indonesia was struck by a currency crisis. By the first half of 1998, this had already developed into a full blown economic and political crisis, exacerbated by a natural disaster (*El Niño* drought). During this crisis period, Indonesians saw the value of their currency fall to as low as 15 percent of its pre-crisis value within a year, and an economic contraction of an unprecedented magnitude (GDP shrank by 13.7 percent in 1998), skyrocketing domestic prices and particularly food[1], mass rioting in the capital Jakarta and a few other cities. The crisis culminated in the fall of the New Order government which had been in power since the mid 1960s in May 1998.

The social impact of the crisis has been substantial and it was still unfolding four years after the crisis started.[2] It has been estimated that the national poverty rate increased from 15.7 percent in February 1996 to 27.1 percent in February 1999.[3] During the period, the number of urban poor doubled, while the rural poor increased by 75 percent. Another study, tracking the poverty rate over the course of the crisis, showed that the poverty rate increased by 164 percent in the period between the onset of the crisis in mid 1997 to its peak in the final months of 1998.[4] In the labor market, the impact of the crisis was felt more strongly on real wages, which fell by around one third in the year from August 1997 to August 1998, than on unemployment. The open unemployment rate rose only slightly from 4.7 percent to 5.5 percent in the same period, and the underemployment rate rose from 35.8 percent to 39.1 percent [5] A year later, real wage growth has turned positive in most sectors, but the unemployment rate has continued to climb up reaching 6.4 percent in 1999.[6]

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[1] The general inflation rate was 78 percent in 1998, while food prices escalated by 118 percent.

[2] Studies on the social impact of the Indonesian crisis include, but not limited to, Frankenberg *et al.* (1999), Manning (2000), Poppele *et al.* (1999), Skoufias *et al.* (2000), Strauss (2002), and Wetterberg *et al.* (1999).

[3] See Pradhan *et al.*, 2001.

[4] See Suryahadi *et al.*, 2000.

[5] Here underemployment is defined as those who work less than 35 hours per week.

[6] See Manning (2000) and Suryahadi (2003).

A study measuring the impact of the Indonesian crisis on poverty and vulnerability indicated that it had led to a significant increase in both chronic and transient poverty rates. The transient poor increased from 12.4 percent of the population in 1996 to 17.9 percent in 1999, while the chronic poor jumped from 3.2 percent of the population to 9.5 percent during the same period. [7]

To mitigate the social impact of the crisis, the Government of Indonesia sought to strengthen safety net provision by establishing new social safety net programs.[8] These programs were launched in early 1998, but many did not start until the second half of that year. It was hoped that through the implementation of these programs, the worst impact of the crisis, such as widespread hunger, malnutrition, poverty, unemployment, and children dropping out of schools, could be prevented or at least reduced.[9]

This article is an attempt to evaluate the impact of these social safety net programs on household welfare and vulnerability to poverty. In particular, this article examines the impact of these programs on household consumption, on the probability of non-poor household avoiding poverty, and on the probability of poor households to escape from poverty. In interpreting the findings of this study, it is necessary to take account of the fact that the transient and chronic poor may respond differently to different types of intervention.

The rest of the paper is organized as follows. Section two reviews the newly established Indonesian social safety net programs as a response to the crisis. Section three briefly explains the source of the data used in this study. Section four discusses household welfare dynamics and social safety net program participation. Section five evaluates the impact of participation in the social safety net programs on household welfare and vulnerability to poverty. Finally, section five provides concluding remarks.

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[7] See Suryahadi and Sumarto, 2003. In this study chronic poor is defined as those 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.

[8] In Indonesia, these programs are widely known as the "JPS" programs, an acronym of *Jaring Pengaman Sosial* or 'Social Safety Net'.

[9] The funding for these social safety net programs came from the state budget as well as loans provided by the World Bank, Asian Development Bank, and bilateral donors, either directly through project support or indirectly through program loans which provide budget support.

II. THE INDONESIAN SOCIAL SAFETY NET PROGRAMS

Program Background

During the high growth period prior to the crisis, the Indonesian people never relied heavily on government run safety net programs. The country has neither the economic apparatus nor the political mechanism necessary to deliver large scale and widespread transfer programs. Instead, the government's social spending was largely focused on 'social services' such as health and education, while families and communities provided the bulk of 'social insurance'. There was some subsidized health care and a compulsory social security program for formal sector employees,[10] but Indonesia did not have a social safety net system like there is now. Establishing the social safety net programs in Indonesia in 1998 was, therefore, more of casting a new net rather than merely expanding an existing one.

Brief Details of the Program[11]

At the onset of the Indonesian crisis, an important concern was raised over whether achievements that had been made in the social sectors and poverty reduction over the previous decades could be sustained. Furthermore, there were some warnings about looming severe social impacts of the crisis.[12] This prompted the Indonesian government to react rapidly and instituted a number of interventions aimed at safeguarding real incomes as well as access to social services for the poor.

There were several new social safety net programs launched. These programs were intended to help protect the traditionally poor as well as the newly poor due to the crisis through four strategies: (i) ensuring the availability of food at affordable prices for the poor, (ii) supplementing purchasing power among poor households through employment creation, (iii) preserving access of the poor to critical social services, particularly health and education, and (iv) sustaining local economic activity through regional block grant programs and extension of small scale credits. Table 1 recapitulates the areas and major programs of the newly established Indonesian social safety net system.[13]

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[10] The social security program was made compulsory for all formal sector employees through the 1992 law on Workers' Social Security (McLeod, 1993).

[11] This sub-section is summarized from Sumarto *et al.* (2002).

[12] Poppele *et al.* (1999) argue that some of the predictions on catastrophic social impacts of the crisis were not well founded.

[13] See Sumarto *et al.* (2002) and Suryahadi *et al.* (2001).

Table 1. Areas and Major Programs of the Indonesian Social Safety Net

Safety Net Area	Program
Food security	Special Market Operation (OPK) program: sales of subsidized rice to targeted households.
Employment creation	"Padat karya": a loose, uncoordinated, collection of several 'labor intensive' programs in a variety of government departments.
Education	Scholarships and block grants: providing: ▪ Scholarships directly to elementary (SD), lower secondary (SLTP), and upper secondary (SMU) students; and ▪ Block grants to selected schools
Health	Health Sector Social Safety Net (JPS-BK): a program providing subsidies for: ▪ Medical services; ▪ Operational support for health centers; ▪ Medicine and imported medical equipment; ▪ Family planning services; ▪ Nutrition (supplemental food); and ▪ Midwife services.
Community empowerment	Regional Empowerment to Overcome the Impact of Economic Crisis (PDM-DKE): a 'community fund' program that provides block grants directly to villages for either public works or revolving fund for subsidized credit.

The programs launched were designed by the central government and were intended to ensure quick disbursement, direct financing to beneficiaries, transparency, accountability, and to encourage participation of society in monitoring the implementation of the programs.[14] A brief description of each specific major program is discussed below.[15]

Food Security

The sale of subsidized rice program is the main component of the government effort to maintain food security, particularly for the poor and the newly poor because of the crisis, which may have been hindered by both falling real income and food price escalation. This program is popularly called the "OPK" program, an acronym of *Operasi*

[14] These intended characteristics were not always achieved. See Sumarto *et al.* (2002).

[15] There were some changes in the social safety net programs across fiscal years.

Pasar Khusus, which literally means 'special market operation'.[16] Under this program, each eligible household is allowed to purchase 10 kilograms of rice per month[17] at a highly subsidized price of Rp. 1,000/kg.[18] For comparison, the average market price for medium quality rice in the second half of 1998 was around Rp. 3,000/kg.[19] Originally, only households under the lowest category of official classification were eligible to participate in the program.[20] But coverage was expanded to include the second lowest category during the course of the year. The target of this program was around 7.4 million households or around 15 percent of all households in the country.

Since this program tries to ensure that the poor could afford to buy rice, which is the staple food of most Indonesians, it is probably the most critical component of the JPS programs. One impact of the crisis was a shooting up of prices, particularly those of food, which made basic necessities were practically out of reach of the poor, at least in the very short run before their nominal incomes could expand to keep pace. These provisions of cheap rice for the poor, therefore, was deemed essential in avoiding widespread hunger, which might exacerbate the already chaotic political and economic situation of the country at that time.[21]

Employment Creation

This program is popularly known as *padat karya* (which means, as an adjective, 'labor intensive') program. This actually is not a single program but a large set of activities under the category of employment creation. These programs were created as a response to the threat of burgeoning unemployment because of economic contraction which had forced many firms to either lay off workers or shutdown completely. In accordance with the urban nature of the crisis, the initial geographical targets for the first round of *padat karya* 'crash programs' in fiscal year 1997/98 were directed mainly to urban areas, but some rural areas which experienced harvest failures were also included.[22]

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[16] The program was introduced in July 1998 in Jakarta area and then expanded to all over the country.

[17] The benefit was later increased to 20 kilograms in April 1999 and then changed again to between 10 and 20 kilograms in April 2000.

[18] During the period under study, the exchange rate fluctuated around Rp. 10,000 per US dollar.

[19] See 'Recent Volatility in the Rice Market: Results of a SMERU Rapid Appraisal in Central and East Java', *SMERU Newsletter*, No. 01, November 1998.

[20] The official classification was created by the national family planning organization (BKKBN) and discussed in the next sub-section.

[21] Since the amount of subsidized rice was substantially below total consumption, in practice the program served as equivalent to an income transfer. However, since the price was fixed in nominal terms, the magnitude of the income transfer was scaled to the needs for food. In this sense the program can be seen as a combination of income transfer and food security.

[22] These 'crash programs' were launched in December 1997 and lasted until the end of the fiscal year in March 1998.

Following on these 'crash programs', in fiscal year 1998/99 there was a proliferation of *padat karya* programs, where there were 16 different programs which fell into the 'employment creation' category.[23] These programs can be classified into four types. First, some programs were a redesigning of on-going investment and infrastructure projects into more labor intensive type projects and modes of contracts. Second, other programs gave block grants to local communities (such as the *Kecamatan* Development Program (PPK), the Village Infrastructure Project (VIP), and the Regional Empowerment to Overcome the Impact of Economic Crisis (PDM-DKE) Program). These funds were directed to poorer areas, and had 'menus' for the utilization of the funds that included the possibility of public works with a labor creating effect. The third set were special labor intensive works carried out by sectoral ministries (e.g. forestry, rural-urban, and retraining of laid off workers carried out by the Manpower Ministry). In addition, there was the fourth type of program, which were 'food for work' programs, typically launched by international donors and NGOs in the drought stricken areas.

Education

At the earlier stage of the crisis there was a worry that the crisis may force parents to withdraw their children from schools as a way to cope with falling incomes and rising costs, hence triggering a large increase in school drop out rates. This rightly alarmed the government, which then led it to establish an education funding support program. The program was started in the academic year 1998/99 and the plan was to end the program in the year 2003.

This program has two components, one is scholarships for students from poor families to enable them to stay in schools, and the other is block grants to schools to help them continue operating. The scholarships provide cash of Rp. 10,000, Rp. 20,000 and Rp. 25,000 per month for primary, lower secondary, and upper secondary school students respectively. These amounts generally cover the cost of school fees and can be used for that purpose or to cover other expenses.

This program was intended to reach at most 6 percent of primary school students, 17 percent of lower secondary school students, and 10 percent of upper secondary school students nationwide, including students from religious schools. Since the program was targeted, it is expected that the coverage will be higher in some districts and lower in others. Meanwhile, 60 percent of schools were targeted to receive the block grants in each district. The schools selected are located in the poorest communities within each district.

[23] In the fiscal year 1999/2000, however, *padat karya* programs were cut back to only two programs: the 'Public Work Sector *Padat Karya* Program' and the 'Special Initiative for Unemployed Women Program'.

Health

There was a concern early in the crisis that falling real income and increasing costs of medical services due to the crisis might force poor and new poor households to abandon modern medical services, even when there were family members who fell sick and urgently need medical treatments. This would make the general society's health conditions deteriorate, reversing improvements in this area accumulated during the past decades.

To anticipate this, the government established social safety net programs in the health sector, known as JPS-BK (JPS *Bidang Kesehatan* or 'Health Sector Social Safety Net') programs. Through these programs it was hoped that the poor would not be forced to stop using modern medical services because they could not afford them anymore. Various activity programs which were specifically established to achieve this health objective were providing subsidies for medicines and imported medical equipment, operational support funds for community health centers, free medical and family planning services, and supplemental food for pregnant women and children under three years old.

Community Empowerment

PDM-DKE, which literally means 'regional empowerment to overcome the impact of economic crisis', is a program which provides funds to communities at the village level. The communities were given full authority to use the funds at their own discretion. The amount of money distributed ranged from around Rp. 10 million for relatively well off villages to around Rp. 1 billion for the poorest villages.

Officially, the purpose of this program is threefold. First, to improve purchasing power of the poor through employment creation and business opportunities. Second, to revolve the economic wheels of the people through the development of socio-economic infrastructure to restart the production and distribution systems. Third, to preserve the environment. In practice, almost all communities, through their own consensus, used the funds for either physical infrastructure development and maintenance with its employment creating effects or revolving funds through subsidized credit schemes.

In this section, we have briefly described the major programs of the Indonesian crisis social safety net programs which help protect the traditionally poor (chronic poor) as well as the newly poor (transient poor) due to the crisis. In practice, however, there were numerous problems in targeting the beneficiaries of these programs. The employment programs, for example, did not hold rigorously to a minimum wage, and in many cases the programs would raise wages (or shorten the hours worked for the same wage) to attract workers in order to spend money. In some regions, the wage rate was set at higher rate than the prevailing local wage rate, inducing some people already working to switch or add jobs. Also, some spot field investigations uncovered evidence of "ghost workers," who were present on the records as being paid for the day but not present on the site. Furthermore, in each program there were variety of deviations from the original design and the actual targeting with respect to household expenditures and

poverty status, whether chronic or transient poor. Hence, the actual targeting is a matter for empirical inquiry. There is strong evidence to suggest that the subsidized sale of rice to targeted households based on an administrative list compiled to identify poor households was not closely related to the "shock" in expenditures that households experienced. On the other hand, employment creation (*padat karya*) programs that used weak self-selection mechanisms were better targeted to both expenditure levels and shocks. [24]

[24] See Sumarto *et al*. (2003).

III. DATA

Data Source

The data used in this study is derived from the '100 Village Survey'. This survey was sponsored by UNICEF and carried out by Statistics Indonesia (BPS). It collected data from 12,000 households in each round. As suggested by its name, the survey covered 100 villages, all of which are located in 10 districts spread across 8 provinces throughout the country.[25] Each village was divided into three enumeration areas. Forty households were chosen randomly from each enumeration area as a sample, so that the total sample number in each village is 120 households.

The '100 Village Survey' was originally meant to identify village level variables which were closely correlated with characteristics of the poor, so that it could be used as a tool to test whether the much larger National Socio-Economic Survey (SUSENAS) was appropriate as a basis for calculating the poverty rate in the country. The survey was first implemented in May 1994 and then repeated in May 1997.

The economic crisis struck Indonesia starting in mid 1997. During the first year of the crisis there was a lack of data on the social impact of the crisis. In order to overcome this, four rounds of the '100 Village Survey' were implemented in a course of 14 months, respectively in August 1998, December 1999, May 1999, and October 1999.[26] It was intended that the sample households would remain the same for all four rounds of the survey, however some replacements were made due to various reasons which were unavoidable. In the end, there were 10,640 households which were visited in all the four rounds of the survey and make a complete panel data.

The survey areas were chosen in 1994 before the crisis, based on a purposive sampling approach which intended to include a range of villages that were 'representative' of various parts of the rural economy. Since the areas were chosen before the crisis, there is no reason to suspect that these samples were influenced by the crisis. While the '100 Village Survey' sample was relatively large, it was not designed as a statistical representation of the country overall. Furthermore, the intention of this survey was to focus on rural and relatively poor areas, therefore it is not representative of all social strata within the country. Therefore, the conclusions from this study are only applied to this sample.

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[25] In 1999, Indonesia had 26 provinces, which were further divided into 341 districts.

[26] A study on the social impact of the crisis in Indonesia was done by Skoufias *et al.* (2000) based on the results of the May 1997 and August 1998 rounds.

The Poverty Lines

To get a consistent picture of household welfare during the four rounds that the survey was conducted, it was necessary to estimate poverty lines which would be comparable across regions as well as throughout time. These poverty lines, however, cannot be directly estimated from the '100 Village Survey' data because it only contains information on the values of household consumption, and not the quantities and prices of the household consumption items.[27] Hence, the poverty line estimates have to be obtained based on information from other sources.

This poverty line estimation procedure is illustrated in Table A1 in the Appendix. The second column of the table shows the provincial poverty rates in February 1999, which were obtained from Pradhan *et al.* (2001). These poverty rates were calculated based on a single national food poverty basket and, hence, represent welfare levels comparable across regions. The poverty lines used by Pradhan *et al.* (2001), however, cannot be applied directly in this study because they were calculated using the SUSENAS Consumption Module data, while the 100 Village Survey questionnaire is based on the SUSENAS Core questionnaire.[28] Hence, in the third column, the provincial poverty lines which correspond to the poverty rates in the second column have been estimated using the February 1999 SUSENAS Core data.

Using deflators based on the re-weighted provincial consumer price index (CPI), the fourth to seventh columns in Table A1 calculate the provincial poverty lines for each period during the four rounds of the survey. The proportion of food in the CPI basket is only 40 percent. This is much lower than the actual consumption and certainly understates the importance of food for the poor. Hence, in the deflators used in this study the food share of consumption is adjusted to reflect the food share of the poverty line, which is 80 percent.[29]

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[27] In Indonesia, the official poverty line is constructed based on a food basket which produces 2,100 calories per capita per day plus a non-food basket which is deemed essential. This requires information on the quantities consumed. The price information, meanwhile, is required to put values to the poverty basket calculated.

[28] SUSENAS is the 'National Socio-Economic Survey', a nationally representative household survey, covering all areas of the country. A part of 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. This part of SUSENAS is known as the SUSENAS Core. Another part of SUSENAS is conducted every three years, specifically collecting information on very detailed quantities and values of consumption from around 65,000 households. This is the SUSENAS Consumption Module.

[29] See Suryahadi *et al.* (2000).

IV. HOUSEHOLD PROGRAM PARTICIPATION AND WELFARE DYNAMICS

During the survey period from August 1998 to October 1999, some macroeconomic indicators give some signs of stabilization in the economy, in particular if they are contrasted with economic deterioration that occurred between mid 1997 to mid 1998. The exchange rate still showed relatively large fluctuations, but there was a clear tendency for the rupiah to appreciate during this period. Similarly, domestic prices stabilized as indicated by the relatively stable Consumer Price Index (CPI). However, this was yet to result in the return of economic growth. The growth in real Gross Domestic Product (GDP) during the third quarter of 1998 right through until the third quarter of 1999 remained near zero. The first part of this section tracks down participation of the households in the sample in various social safety net programs from one survey round to another. Meanwhile, the second part reviews how the economic conditions of the households changed during the period.

The Dynamic of Program Participation

The last three rounds of the 100 Village Survey recorded household participation in various social safety net programs. The December 1998 round recorded participation in the program starting in September 1998. The May 1999 round recorded participation starting in January 1999, and the October 1999 round recorded participation starting in July 1999. This has provided an opportunity to assess the dynamic of participation in the social safety net programs.

Table 2 shows household participation in six major social safety net programs by quintiles of per capita consumption in the previous round. For example, the December 1998 data use quintiles of per capita consumption in August 1998. The quintiles of per capita consumption are calculated within each district and coverage is calculated based on eligible households (for example, coverage for the scholarship program is calculated based on households with a child enrolled in school). Lagged instead of current quintiles of per capita consumption are used because current household consumption may be affected by participation in the programs.

The table shows that compared to other programs, the subsidized rice program has the highest participation figures. In December 1998, more than 40 percent of households were participating in this program. By May 1999 the figures had increased to 56 percent and they remained at this level up until October 1999. The other programs, meanwhile, had much lower participation figures and certainly none of these other programs ever reached a figure of over 17 percent.

The table also shows that most of the programs tend to target certain groups, where household participation in the program declines with higher quintile of per capita consumption. However, coverage at the higher quintiles was still quite considerable. This indicates that all of the programs suffered from substantial “leakage”, i.e. a

significant proportion of program benefits were reaped by some non-intended beneficiaries.

Table 2. Household Participation in Various Social Safety Net Programs by Quintiles of Lag Per Capita Consumption (%)

Programs	Quintiles of Initial Per Capita Consumption					Total
	Q1	Q2	Q3	Q4	Q5	
Subsidized Rice:						
Sep 98 – Dec 98	47.93	43.24	43.09	39.66	29.78	40.73
Jan 99 – May 99	66.29	59.75	57.73	53.61	44.94	56.45
Jun 99 – Oct 99	66.74	58.29	57.52	54.83	43.25	56.11
Scholarships:						
Sep 98 – Dec 98	8.51	10.74	8.67	8.85	6.90	8.73
Jan 99 – May 99	13.76	11.80	10.97	9.16	7.25	10.58
Jun 99 – Oct 99	9.75	7.65	7.08	5.25	4.14	6.77
Medical Services:						
Sep 98 – Dec 98	3.80	5.43	5.47	5.63	5.77	5.22
Jan 99 – May 99	15.49	11.34	10.05	11.68	7.66	11.23
Jun 99 – Oct 99	18.20	15.07	15.28	13.99	13.15	15.13
Nutrition:						
Sep 98 – Dec 98	5.54	7.31	7.09	7.46	7.24	6.94
Jan 99 – May 99	16.20	14.60	16.28	19.18	15.28	16.30
Jun 99 – Oct 99	20.74	16.82	14.74	12.74	14.63	15.91
Employment Creation:						
Sep 98 – Dec 98	17.69	11.70	10.31	9.83	7.67	11.43
Jan 99 – May 99	14.96	12.59	13.46	12.95	8.51	12.49
Jun 99 – Oct 99	5.75	3.90	4.07	2.87	3.34	3.98
Subsidized Credit:						
Sep 98 – Dec 98	5.08	5.21	3.08	2.48	2.70	3.71
Jan 99 – May 99	4.22	6.11	5.46	4.72	4.46	5.00
Jun 99 – Oct 99	4.51	4.72	3.71	4.09	3.06	4.02

Welfare Dynamics of the Sample Household[30]

In line with the macroeconomic stabilization during the period, there were indications that the economic situations of households in the sample had improved. However, there were also apparent fluctuations in welfare indicators during the period. Table 3 shows the changes in real per capita income, real per capita consumption, and the headcount poverty rate of the sample in the four rounds that the survey was conducted.

Table 3. Income, Consumption, and Poverty of Sample Households

	Aug '98	Dec '98	May '99	Oct '99
Real per capita income:				
- Mean (Rp/month)	100,457	118,846	117,581	127,421
- Change over the previous period (%)	—	18.3	-1.1	8.4
Real per capita consumption:				
- Mean (Rp/month)	85,003	88,074	89,463	93,082
- Change over the previous period (%)	—	3.6	1.2	4.0
Poverty:				
- Headcount index (%)	43.0	36.2	36.5	31.0
- Percentage point change over the previous period	—	-6.8	0.3	-5.5

Table 3 shows that there was a clear pattern suggesting that most of the improvements took place during the period between August and December 1998, where real per capita income increased by 18.3 percent, real per capita consumption grew by 3.6 percent, and headcount index of poverty fell by 6.8 percentage points. On the other hand, between December 1998 and May 1999, there was a stagnation in the economic conditions of the sample. None of the three indicators changed significantly during this period. However, there were some signs that improvement in the economic conditions of the sample has improved again during the period between May and October 1999. During this period, real per capita income grew by 8.4 percent, real per capita consumption increased by 4.0 percent, and the headcount index on poverty fell by 5.5 percentage points.

[30] This sub-section is summarized from Suryahadi *et al.* (2003).

The changes in households' real income and consumption were reflected in the changes in their poverty status. Table 4 shows the pattern of changes in household poverty status across survey rounds. The table indicates that the largest single group of individuals in the sample is those who were never poor during the whole 14 months period, i.e. 42 percent. On the other hand, those who were always poor throughout the whole period make up only 18 percent of the total sample. Remaining 40 percent of the sample experienced mixed fortunes, with time when they were not poor and other times when they were poor. Throughout the four periods that they were interviewed, 16 percent of them were found to be poor once, 12 percent were poor twice, and 12 percent were poor three times.

Table 4. The Patterns of Changes in Sample Households' Poverty Status

Pattern	Poverty Status				Frequency (%)
	Aug '98	Dec '98	May '99	Oct '99	
Always poor	Poor	Poor	Poor	Poor	17.5
Three times poor (12.0%)	Poor	Poor	Poor	Non-poor	4.6
	Poor	Poor	Non-poor	Poor	2.0
	Poor	Non-poor	Poor	Poor	2.9
	Non-poor	Poor	Poor	Poor	2.5
Twice poor (12.4%)	Poor	Poor	Non-poor	Non-poor	3.7
	Poor	Non-poor	Poor	Non-poor	3.0
	Poor	Non-poor	Non-poor	Poor	1.4
	Non-poor	Poor	Poor	Non-poor	1.7
	Non-poor	Poor	Non-poor	Poor	1.0
	Non-poor	Non-poor	Poor	Poor	1.6
Once poor (15.9%)	Poor	Non-poor	Non-poor	Non-poor	7.9
	Non-poor	Poor	Non-poor	Non-poor	3.2
	Non-poor	Non-poor	Poor	Non-poor	2.7
	Non-poor	Non-poor	Non-poor	Poor	2.1
Never poor	Non-poor	Non-poor	Non-poor	Non-poor	42.2

Table 5 provides a summary of the changes in the poverty status of households in the sample. This table calculates the proportion of households which experienced a change in their poverty status when compared to their status in a previous period — that is they either fell into poverty or moved out of poverty. The table indicates that there was a negative correlation between the two opposing poverty movements. As can be seen from the table, when the proportion of households which fell into poverty increased throughout a period then the proportion of households which moved out of poverty in the same period decreased and vice versa.

Table 5. Poverty Movements of Sample Households (%)

Period	Fall into poverty	Move out of poverty	Total change in status	Net change in poverty	Poverty rate
August 1998	-	-	-	-	43.0
December 1998	9.0	14.3	23.3	-6.8	36.2
May 1999	10.7	9.5	20.2	0.3	36.5
October 1999	6.7	11.6	18.3	-5.5	31.0

Table 5 also shows that the total number of households which experienced a change in poverty status was always substantial. Throughout each period, between 18 and 23 percent of households either fell from their status as non-poor to poor, or escaped their status as poor to be classified as non-poor. The total proportion of households which experienced a change in their poverty status is much larger than what is implied by the changes in the poverty rate. The poverty rate constitutes the difference between the proportion of households which fall into poverty and those which move out of poverty. For example, between December 1998 and May 1999 the poverty rate only changed very slightly from 36.2 to 36.5 percent, implying a relatively stable poverty rate. When in fact 20 percent of households either fell into poverty or moved out of poverty during this period.

V. THE IMPACT OF HOUSEHOLD PARTICIPATION IN THE SOCIAL SAFETY NET PROGRAMS

The programs were aimed to help the poor and the newly poor in coping with the negative impact of the crisis. When the crisis struck, a large number of people were adversely affected, to the point that informal social protection became largely ineffective. The poor and the newly poor were thus in a situation whereby they were unable to cope with the effects of the crisis and outside help was required. This section evaluates the performance of the social safety net programs on the dynamic of household welfare and vulnerability to poverty. Household welfare here is narrowly measured by per capita consumption, while vulnerability to poverty is measured by the probability of a household to be poor.

The Impact on Consumption

Table 6 presents the results from examining of the impact of household participation in the social safety net programs on household consumption.[31] In these estimations, the change in log real per capita consumption is regressed on the change in log real per capita income (net of social safety net income)[32], village cluster of mean change in log real per capita income (net of social safety net income), and household participation in the social safety net programs, controlled by household participation in various social organizations[33] and household characteristics.[34] The variables of interest, household participation in the social safety net programs, are treated as endogenous variables as anticipated changes in consumption may affect household decision whether to participate in the social safety net programs or not. Hence, these variables are

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[31] The limitation of the data is that there is no indication of the extent of participation or magnitude of benefits received by beneficiaries. Hence, the analyses in this study are limited to comparing beneficiaries and non-beneficiaries of the social safety net programs.

[32] Household participation in the social safety net programs may affect household income. Hence, in this and further analyses, the variable of change in household income is calculated net of the change in income due to household participation in the social safety net programs. This is estimated by first regressing the changes in log of real income on household participation in the social safety net programs. Then the residuals of this regression can be interpreted as the changes in log of real income net of changes in log real income due to household participation in the social safety net programs. The results of the regression are presented in Table A2 in the Appendix.

[33] The first three of the seven social organizations included in the estimations — housewives, neighborhood, and youth organizations — are government created social organizations, while the remaining four are truly social organizations.

[34] The household characteristics included in the estimations are age of household head, household size, gender of household head, marital status of household head, education level of household head (unfinished primary as the base category), sector of household main income (agriculture as the base category), employment status of household head (unemployed as the base category), and household's assets ownership.

instrumented by their respective total number of households which participated in each social safety net program within each village.

Table 6. The Impact of Participation in the Social Safety Net Programs on Household Consumption
(Dependent variable: Change in log real per capita consumption)

Independent variable	A	B
Constant	0.0039 (0.261)	-0.0237 (-1.605)
Change in log real per capita income (net of social safety net income)	0.2931** (97.868)	0.2778** (88.709)
Village cluster of mean change in log real per capita income (net of social safety net income)	-	0.1500** (16.295)
Participation in social safety net programs:		
- Subsidized rice	0.0251** (4.007)	0.0440** (6.932)
- Scholarship	0.0977** (3.031)	0.0989** (3.080)
- Medical services	0.0416** (3.007)	0.0373** (2.704)
- Nutrition	-0.0144 (-0.384)	0.0148 (0.398)
- Employment Creation	0.0394** (3.768)	0.0414** (3.974)
- Subsidized Credit	0.0263 (1.153)	0.0140 (0.614)
Lag of participation in social organizations:		
- PKK (housewives organization)	0.0057 (1.033)	0.0026 (0.485)
- Dasa Wisma (neighborhood organization)	-0.0058 (-0.957)	-0.0020 (-0.336)
- Karang Taruna (youth organization)	0.0127* (1.971)	0.0113 (1.749)
- Kematian (burial services organization)	0.0013 (0.345)	0.0004 (0.095)
- Olah Raga (sports organization)	-0.0156** (-2.997)	-0.0131** (-2.517)
- Keagamaan (religious organization)	0.0139** (3.617)	0.0133** (3.475)
- Arisan (community rotating saving group)	-0.0129** (-2.942)	-0.0115** (-2.635)

Table 6. Continued

Independent variable	A	B
Household characteristics:		
- Age of household head	0.0002 (1.158)	0.0002 (1.503)
- Household size	-0.0100** (-8.308)	-0.0102** (-8.571)
- Female headed household	-0.0016 (-0.167)	-0.0021 (-0.217)
- Married household head	-0.0041 (-0.499)	-0.0060 (-0.732)
Education level of household head:		
- Primary educated household head	0.0039 (0.849)	0.0056 (1.232)
- Lower secondary educated household head	0.0131 (1.767)	0.0165* (2.238)
- Upper secondary educated household head	0.0110 (1.398)	0.0164* (2.088)
- Tertiary educated household head	-0.0013 (-0.092)	0.0082 (0.597)
Sector of household main income:		
- Industry	-0.0106 (-1.435)	-0.0125 (-1.708)
- Trade	-0.0141* (-2.392)	-0.0165** (-2.804)
- Services	-0.0024 (-0.429)	-0.0038 (-0.688)
- Others	-0.0040 (-0.371)	-0.0066 (-0.613)
Employment status of household head:		
- Self-employed	0.0118 (1.775)	0.0135* (2.046)
- Wage employee	-0.0024 (-0.313)	-0.0024 (-0.309)
- Family worker	-0.0064 (-0.375)	0.0001 (0.006)

Table 6. Continued

Independent variable	A	B
Assets ownership:		
- Radio/tape recorder	0.0189** (4.923)	0.0189** (4.939)
- Television	-0.0053 (-1.211)	-0.0047 (-1.090)
- Refrigerator	-0.0012 (-0.150)	0.0017 (0.218)
- Telephone	0.0109** (2.887)	0.0117** (3.129)
- Dish antenna	-0.0089 (-1.008)	-0.0086 (-0.976)
- Bicycle	0.0029 (0.749)	0.0043 (1.098)
- Motorbike	0.0084 (1.540)	0.0082 (1.500)
- Car	0.0088 (0.943)	0.0086 (0.928)
- Land	0.0010 (0.228)	0.0022 (0.535)
Survey round dummies	Yes	Yes
R-squared	0.2390	0.2443
Number of observations	31,770	31,770

Notes: Numbers in parentheses are t-values.
** = significant at 1 percent level.
* = significant at 5 percent level.

Two different estimations were performed and the results are provided respectively in columns A and B of Table 6. In column A, the variable of village cluster of mean change in log real per capita income is excluded in the estimation, while in column B this variable is included. The estimation in column B is done in order to take into account Townsend's findings (1994), that changes in the consumption level of a rural household are largely determined by what happens to everybody else in the village, indicating that a household's consumption is insured by the community where it lives.

The estimation results in column A indicate that the consumption elasticity to income is around 0.29 and significant at a level of one percent, implying that a 10 percent change in income results in about three percent change in consumption. The value of this elasticity in column B is only very slightly lower at around 0.28 and also significant at one percent level. Under the full insurance hypothesis, the value of this elasticity is zero, indicating that consumption is independent of income because households can insure consumption from income shocks. On the other hand, under

the no insurance hypothesis, the value of this elasticity is one, indicating that all shocks to income are fully transferred to consumption. The estimated values of this elasticity, which are between zero and one, reject both hypotheses and indicates a partial insurance of consumption. Households can partially insure their consumption levels from shocks to their incomes.

Meanwhile, the coefficient of the variable representing village cluster of mean change in log real per capita income in column B is 0.15 and also statistically significant at one percent level.[35] This means that communities do provide some insurance to a household's consumption level. However, the effect of a household's own change in income is still much greater than the community effect. This is different from Townsend's findings (1994), who finds that the community effect eliminates the effect of change in a household's own income.

The coefficients of household participation in the social safety net programs in general are positive and statistically significant, except for the nutrition and subsidized credit programs. This means that participation in the social safety net programs helps households increase their consumption level. The magnitudes of the coefficients range from around 0.04 for the subsidized rice, medical services, and employment creation programs to around 0.1 for the scholarship program. This implies that a household which participated in a social safety net program had a per capita consumption level which is around 4 to 10 percent higher compared to a similar household which did not participate in the program. Participation in the nutrition and subsidized credit program, however, did not significantly affect household consumption.

Participation in the three government created social organizations — housewives, neighborhood, and youth organizations — as well as burial service organizations had no significant effect on household consumption. However, the coefficients of participation in sports organizations and community rotating savings groups were both negative and significant, while the coefficients of participation in religious organization were positive and significant.

The Impact on Poverty

To examine the impact of participation in the social safety net programs on the probability of a household to be in poverty, a probit model is estimated. In this model, a household's poverty status is defined as a function of the same variables in column B of Table 6. In addition, the lag of household's poverty status is added as another controlling household characteristic.

[35] This suggests that the model in column B is more appropriate to be used for the basis of analysis.

Table 7. Probability of a Household to be Poor
(Dependent variable: Dummy of being poor)

Independent variable	Coefficient
Lag of log real per capita consumption	-0.4701** (-39.74)
Change in log real per capita income (net of social safety net income)	-0.2073** (-40.69)
Village cluster of mean change in log real per capita income (net of social safety net income)	-0.0530** (-3.83)
Participation in social safety net programs:	
- Subsidized rice	-0.0382** (-4.02)
- Scholarship	-0.0228 (-0.53)
- Medical services	-0.0089 (-0.44)
- Nutrition	-0.0166 (-0.33)
- Employment Creation	-0.0051 (-0.34)
- Subsidized Credit	0.2356** (5.45)
Lag of participation in social organizations:	
- PKK (housewives organization)	-0.0070 (-0.83)
- Dasa Wisma (neighborhood organization)	0.0047 (0.51)
- Karang Taruna (youth organization)	-0.0027 (-0.28)
- Kematian (burial services organization)	-0.0010 (-0.18)
- Olah Raga (sports organization)	-0.0215** (-2.75)
- Keagamaan (religious organization)	-0.0047 (-0.85)
- Arisan (community rotating saving groups)	-0.0060 (-0.93)

Table 7. Continued

Independent variable	Coefficient
Household characteristics:	
- Age of household head	-0.0016** (-7.32)
- Household size	0.0581** (31.24)
- Female headed household	0.0495** (3.04)
- Married household head	0.0330** (2.57)
- Household was poor in previous period	0.0798** (10.12)
Education level of household head:	
- Primary educated household head	-0.0309** (-4.73)
- Lower secondary educated household head	-0.0565** (-5.59)
- Upper secondary educated household head	-0.0584** (-5.13)
- Tertiary educated household head	-0.1189** (-5.44)
Sector of household main income:	
- Industry	-0.0200 (-1.89)
- Trade	-0.0224** (-2.50)
- Services	-0.0335** (-4.23)
- Others	0.0440* (2.41)
Employment status of household head:	
- Self-employed	-0.0441** (-4.41)
- Wage employee	-0.0170 (-1.55)
- Family worker	-0.0154 (-0.64)

Table 7. Continued

Independent variable	Coefficient
Assets ownership:	
- Radio/tape recorder	-0.0421** (-7.71)
- Television	-0.0449** (-7.15)
- Refrigerator	-0.0628** (-4.01)
- Telephone	-0.0780** (-14.54)
- Dish antenna	-0.0333 (-1.83)
- Bicycle	-0.0700** (-12.53)
- Motorbike	-0.0463** (-5.34)
- Car	-0.0365* (-2.17)
- Land	0.0389** (6.04)
Survey round dummies	Yes
Pseudo R-squared	0.4565
Number of observations	31,770

Notes: Numbers in parentheses are z-values.
** = significant at 1 percent level.
* = significant at 5 percent level.

Like changes in consumption, the probability of a household to be in poverty may affect its participation in the social safety net programs. Hence, in the empirical estimation of this model, the social safety net participation variables are also instrumented by the total number of households which participated in each social safety net program in each village. The results of estimation are presented in Table 7. The coefficients presented in the table are expressed in terms of the probability of a household falling into poverty.[36]

[36] The command used is DIVPROB in STATA, developed by Joe Harkness.

The estimation results indicate that the level of consumption in the previous period and the change in income are important determinants of the probability of a household to be in poverty in the current period. Meanwhile, the coefficient of village cluster of mean change in log real per capita income is not significant, although the sign is negative.

All of the variables of participation in the social safety net programs, except for the subsidized credit program, have a negative effect on the probability of a household to be poor in current period. However, only the coefficient of the subsidized rice program is statistically significant. A household which participated in this program has a three percent lower probability to be currently in poverty than a household with similar characteristics but did not participate in this program.

On the other hand, participation in the subsidized credit program has a positive and statistically significant coefficient. This means that a household which participated in this program has a higher probability to be poor than a similar household which did not participate in this program. This perhaps has much to do with the nature of the program itself. The benefit recipients of this programs were supposed to use the credit funds for productive purposes. In order to do this, it is quite possible that the recipients set aside some of their wealth to supplement the credit funds they received for the investments. As in the very short-term these investments were yet to yield returns, they have higher probability to become poor than those who did not receive the benefits of this program.

This, of course, is expected to be temporary. The best case scenario is that in the longer term the investments will yield positive returns and propel the beneficiaries of this program out of poverty permanently. Whether this scenario materialized or not is another question. However, what these results show is that a scheme such as subsidized credit is not suitable as a social safety net program, where a quick impact on preventing people from falling into poverty is required. If the best case scenario indeed works, such a scheme may be more appropriate for long-term poverty reduction program.

Meanwhile, all of the variables of participation in social organizations, except for participation in the neighborhood organization, have negative coefficients but most are statistically insignificant. The only significant coefficient is for participation in sport organization. This implies that there is a tendency for households which participated in social organizations, in particular those which participated in sport organizations, to have lower probability to be poor.

The other coefficients resulted from the estimation indicate that household characteristics significantly affect the probability of a household to be poor. Furthermore, most of the coefficients have the expected signs. Asset ownership variables have statistically significant coefficients and most of them have negative signs, except for land ownership. This implies that in general owning assets reduces the probability of a household to be poor.

VI. CONCLUDING REMARKS

Early in 1998 the government of Indonesia established several social safety net programs to help the poor and the newly poor cope with the impact of the crisis. These programs covered a range of objectives, including food security, employment creation, education, and access to health care. This article has evaluated the impact of these programs on household welfare and poverty, utilizing a panel data set of 10,640 households which were visited four times in a 14 month period.

The subsidized rice program has the highest participation rate among households in the sample. By December 1998, more than 40 percent of households were participating in this program, and by May 1999 the participation rate had reached 56 percent, remaining at this level until October 1999. The other programs, meanwhile, had much lower participation rate, none reaching 17 percent. Our findings indicate that, in most of the programs, the rate of household participation declines when higher quintiles of per capita consumption are considered. Nevertheless participation at higher quintiles is still quite considerable, indicating that the programs suffered from substantial "leakage", i.e. there was a significant proportion of program benefits which were reaped by some non-poor beneficiaries.

The impact on consumption from household participation in the social safety net programs was generally found to be positive and statistically significant, with the exception of the nutrition and subsidized credit programs. This implies that participation in the social safety net programs was broadly conducive to households securing a higher consumption level. Our results sugges that participation in a social safety net program was consistent with a 4 to 10 percent higher per capita consumption level compared to a household with similar characteristics but which did not participate in the program.

We also found that household participation in the social safety net programs tends to reduce the probability of a household to be poor. However, this poverty reducing effect is statistically significantly only for participation in the subsidized rice program. A household participating in this program had a four percent lower probability to be poor compared to a household with similar characteristics which did not participate in this program. On the other hand, a household which participated in the subsidized credit program has a higher probability to be poor than a household which did not participate in this program.

The significant impact of the subsidized rice program in reducing the probability of its beneficiaries becoming poor demonstrates that these types of programs can have direct effects on household welfare. It suggests that these programs can be an effective instrument to protect household welfare in a crisis situation, by protecting their staple food intake from the adverse impact of the crisis . Under normal conditions, however, this program is only effective in helping the chronic poor, the people who have no or very little earning power. For them, everyday is a crisis as they are never sure whether

they will be able to find sufficient food. Under normal conditions, the non-chronic poor may be better supported through instruments that increase their earning capacity.

The findings for the credit program indicate that such a program is not effective in a crisis situation. Even if effective control and monitoring of the use of the credit money can be ensured, this program does not address the immediate needs of those directly affected by a crisis. For them, meeting immediate consumption needs has greater urgency than generating a sustainable level of income in the medium term. This also implies that credit programs are not effective in helping those in chronic poverty, even in normal conditions, and that focusing this type of program on the poor with greater earning capacity instead of the chronic poor will have greater returns.

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APPENDICES

Table A1. The Poverty Lines

Province	February '99		Poverty Line for the Sample (Rp/month)[C]			
	Poverty Rate (%)[A]	Poverty Line[B]	Aug '98	Dec '98	May '99	Oct '99
Riau	9.21	73,515	64,741	68,977	72,002	68,372
Lampung	36.80	74,425	63,018	66,155	71,003	63,874
West Java	26.60	82,025	73,924	78,312	78,987	73,586
Central Java	32.78	72,508	62,517	67,655	69,083	62,517
Bali	13.62	86,357	72,686	79,688	84,690	74,687
East Nusa Tenggara	61.18	73,402	56,386	68,064	75,738	73,736
East Kalimantan	21.67	85,717	76,273	79,905	81,358	76,273
Southeast Sulawesi	36.61	71,218	59,212	67,944	72,310	66,580

Notes:
A is from Pradhan *et al.* (2001).
B is estimated using Core SUSENAS based on A.
C is deflated from B using re-weighted consumer price index (CPI).

Table A2. The Impact of Household Participation in the Social Safety Net Programs on Changes in Real Income
(Dependent variable: Change in log real income)

Social Safety Net Programs	Coefficient	t-value
- Subsidized rice	0.0695**	13.518
- Scholarship	0.0305*	1.981
- Medical services	0.0231*	2.002
- Nutrition	-0.0571**	-3.110
- Employment Creation	0.0460**	3.996
- Subsidized Credit	0.0337*	2.033
R-squared	0.0111	
Number of observations	31,770	

Notes: ** = significant at 1 percent level.
* = significant at 5 percent level.