SMERU
Working Paper

Sudarno Sumarto

Asep Suryahadi

Lant Pritchett

Safety Nets and Safety Ropes: Comparing the Dynamic Benefit Incidence of Two Indonesian "JPS" Programs

February 2000

Safety Nets and Safety Ropes:
Comparing the Dynamic Benefit Incidence of Two Indonesian "JPS" Programs

Sudarno Sumarto (SMERU), Asep Suryahadi (SMERU), Lant Pritchett (World Bank)[*]

Abstract: Calculations of the benefit incidence and targeting effectiveness of "safety net" programs have typically examined only the relationship between a household's *current* expenditures and program participation. However, in programs that respond to an economic shock or intend to mitigate household risk, it is not just the current *level* of expenditures that matters, but also *changes* in expenditures. While pure "safety net" programs may intend only to benefit those whose are currently poor, programs to mitigate shocks (which we call "safety rope" programs) may intend to provide transfers to those whose incomes have *fallen*, whether or not they have fallen below an absolute poverty threshold. We examine the targeting performance of two programs created to respond to the social impacts of the crisis in Indonesia. The targeting of each program was different, both in design and in practice. We find strong evidence that one of the programs, a subsidized sale of rice, was targeted to the "permanently" poor while the targeting was only weakly related to the "shock" in consumption expenditures. The employment creation programs were much more responsive to *changes* in expenditures. A household which began in the third quintile *by level of expenditures* in 1997 but was in the worst quintile by its *fall* in expenditures between 1997 and 1998 was *four* times more likely to have participated in the employment creation program than a household starting from the same level in 1997 but experiencing the most positive shock. In contrast, a household in the middle quintile with the worst shock was only 50 percent more likely to receive subsidized rice.

I) Introduction

Imagine a number of mountain climbers scaling a sheer cliff face who, understandably, want protection from falling. One method would be to place a net at the bottom of the cliff to catch any falling climber just before they hit the ground. Another method is to provide a rope and a set of movable devices that can be attached to the cliff, so that as the climber scales the cliff they attach the rope at higher and higher levels, so that a climber falls only by the length of the rope. The "safety net" is a guarantee against a fall past an *absolute level*, while the "safety rope" is a guarantee against a fall of more than a given *distance*. For climbers very near the bottom the safety net provides reassurance, but those who have made substantial progress, will lose all of their progress only to be caught at the very bottom.

While the metaphor of the "social safety net" has become common, it actually conflates two distinct issues. One is a concern about increases in *poverty* which, as typically measured, is the extent to which people are currently below a given level of standard of living. The other is a concern for the *mitigation of risk* through "social insurance" or "social protection" to reduce households vulnerability to the wide variety of shocks they face. This mitigation is potentially important whether or not shocks push households below some absolute level. This confusion within "social safety nets" also extends to the economics and political economy of "safety net" programs. The reasons why a government, either as a normative or positive matter, might want to implement these two types of programs are completely different.[1]

---

[1] Economists would recommend poverty programs to a hypothetical benign social welfare maximizer if the social welfare function was built up from individual (household) utility functions with declining marginal utility, in which case a (costless) transfer from rich to poor is not a Pareto improvement but does raise social welfare. There is also an argument for poverty programs from an externality in altruism. In contrast, the normative case for government involvement in mitigation of risk is based on the argument that, if moral hazard and adverse selection are sufficiently large then welfare improving markets for insurance against these risks will not exist (and they will be "too small" in any case). This is potentially the case in a wide variety of insurance markets - but particularly affect the market for insurance of incomes.

In Indonesia, as the result of the "krismon" (*krisis moneter* or monetary crisis[2]), there were several new programs launched, widely known as "JPS" (*Jaring Pengaman Sosial* or social safety net). The programs were intended to help protect the traditionally poor and newly poor suffering from the crisis in four areas: (a) ensuring the availability of food at affordable prices for the poor, (b) supplementing purchasing power among poor households through employment creation, (c) preserving access of the poor to critical social services such as health and education, and (d) sustaining local economic activity through regional block grant programs and extension of small scale credit.

This note is not a comprehensive evaluation of the entire range of programs or even a comprehensive picture of the implementation of the two programs we focus on. In this paper, we only examine the dynamic targeting of two of these JPS programs, i.e. the "OPK" (*Operasi Pasar Khusus* or special market operation) ¾ a program of selling subsidized rice to targeted households ¾ and the "employment creation programs" (which were a collection of many different programs operated by different ministries).

The remainder of this note is organized as follows. Section two discusses the programs and their method of targeting. Section three briefly explains the source of the data, the "100 Village Survey," carried out by BPS and UNICEF. Section four discusses method used in evaluating the targeting effectiveness and the main empirical findings. Section five uses the results on the pattern of targeting of the two programs to examine the relative "transfer" versus "insurance" value of the patterns of pay off across shocks for households from various quintiles and highlights the issue of the positive political economy of targeting. Finally, section six provides conclusions.

---

[2] Actually it was a combination of simultaneous financial, economic, natural, and political crises.

II) *The Programs and Their Methods of Targeting*

The two key social safety net programs analyzed in this study use different targeting methods. Household eligibility for the OPK (cheap rice) program was based on the family planning agency (BKKBN) list of households by "welfare" status. In this classification, households are grouped into four levels of socio-economic status: "pre-prosperous families" ("*keluarga pra-sejahtera*" or KPS), "prosperous families levels I, II, and III" ("*keluarga sejahtera*" or KS I, KS II, and KS III) based on a range of variables (food consumption, material of the house floor, type of health care services, ownership of changes of clothing, religious practices, etc.) as assessed by local BKKBN workers (*kader*). The KS I to KS III categories are often lumped together as KS (or "prosperous families") category.

During the period covered by the data (August - December 1998) each eligible household was entitled to purchase 10 kg at Rp. 1000/kg, while the market price for medium quality rice in October - November 1998 period was around Rp. 2,500/kg.[3] The magnitude of the subsidy was therefore roughly Rp. 15,000/household/month (compared to the total household expenditures at the 20th percentile in this sample of Rp. 232,000/month).

The OPK program began in August 1998 and was brought up to roughly full scale in terms of household coverage (which included KPS and KS I) by the time of the December 1998 round of the survey.

The four major criticisms of using BKKBN list for targeting the OPK rice are that (a) it does not capture transitory shocks to income as it is based on relatively fixed assets (like having a floor not made of earth, owning changes of clothing); (b) it includes

---

[3] Presently, under the OPK program each eligible household is allowed to purchase 20 kilograms of rice per month.

non-economic criteria (e.g. family able to meet religious obligations); (c) the list is compiled by relatively low trained workers at the village level so consistency across regions is not assured; and (d) the list is susceptible to changes by local government officials.[4]

Of course in practice the targeting mechanism was not always implemented as specified in the rules. *BULOG* (the National Logistics Agency) made the amounts of rice available to villages at the *Dolog* (Logistics Depot) and *Sub-Dolog* offices based on the eligibility lists, but the actual distribution of the rice to households was carried out by local officials. Numerous field visits found that in some areas local decision-makers felt pressure from communities to change the distribution of rice from the designated "eligible" household to include other household which were deemed equally deserving, or even to extend coverage to the entire community. A commonly heard argument was that since all the community was expected to contribute to community endeavors (e.g. *gotong royong* or "self-help") that all should benefit equally from the "windfall" assistance from the central government. In many cases the rice was divided up equally among all households, so that KPS and KS I households received less rice and some was also received by households with higher living standards.[5] This diversion from one set of households to others is in addition to less frequent reports of blatant corruption in which rice was diverted from household distribution altogether by local officials and sold on the local market.

The other JPS "program" we examine was not a single program but a large set of activities under the name of *padat karya* (which means, as an adjective, "labor intensive"). 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

---

[4] A fifth criticism that is particularly important in Jakarta (and some other major cities) is that the list may only include those with a valid identification card (KTP) for that location. Since these KTPs are difficult to obtain, a large fraction of the poor would be excluded by this criteria.
[5] See Suryahadi *et al* (1999).

or shutdown completely. In accordance with the urban nature of the crisis, the initial geographical targets for the first round of these "crash" programs in fiscal year 1997/98 were directed to urban areas plus some rural areas which experienced harvest failures.

Following on these "crash" programs in FY 1998/99, there was a proliferation of *padat karya* programs and there were more than a dozen different programs which fell into the "employment creation" category. These 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 Project, Village Infrastructure Project, and 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. A third set were special labor intensive works carried out by sectoral ministries (e.g. retraining of laid off workers carried out by the manpower ministry). A fourth type of program were "food for work" programs, typically launched by international donors and NGOs in the drought stricken areas.

Unlike the OPK, the collection of *padat karya* programs were quite diverse and although specific programs were targeted to areas (e.g. drought), the lack of coordination meant there was little or no systematic geographic targeting of the set of programs overall. Within programs there were a variety of disagreements about desired characteristics of intended participants but typically the beneficiaries were not chosen according to any fixed administrative criteria. Hence, to the extent there was targeting, it was primarily through self-selection. Only those who were willing to work should have been able to receive the benefit. This self-selection mechanism has the advantage

over administrative criteria of allowing individuals to choose to participate or not and creates the possibility of being more flexible to unobserved household shocks than administrative criteria.

In practice, however, there were several problems with the targeting. First, the programs were not rigorously held to a minimum wage, and in many cases the programs would raise wages (or would shorten daily hours worked for the same wage) to attract workers. In some regions, the wage rate was set at higher rate than the prevailing local wage rate, thus inducing those already working to switch or add jobs. Second, at least in some anecdotal evidence, workers were not actually held to working. 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. Third, reports from the field also indicated other shortcomings in selection of beneficiaries, such as favoritism in giving jobs to the close family and friends of local officials.

So, as a crude summary, as of December 1998 the design was that the OPK eligibility was based on an administrative criteria of the BKKBN list, which was (more or less) fixed by the *kaders'* list of households created in January 1998, while the participation in any of the *padat karya* programs was based on self-selection. In practice, both programs had a variety of deviations from this design and the actual targeting with respect to households expenditures and poverty status. Hence, the actual targeting is a matter for empirical inquiry.

III) Data: The 100 Village Survey

The 100 Village Survey (*Survei Seratus Desa* or SSD) was sponsored by UNICEF and carried out by BPS. The SSD collected data from 12,000 households, covering 100 "villages" (*desa*), located in 10 districts (*kabupaten*), spread across 8 provinces. The SSD surveyed 120 households in each of the 100 villages in each round of the survey.[6] This study utilizes the data from three rounds: May 1997, August 1998, and December 1998.

The SSD sample, while quite large, was not designed to be statistically representative of the country and is geographically quite concentrated, located in only 10 of the country's over 300 districts. The survey areas were chosen in 1994, before the crisis, based on a purposive sampling approach to capture various types 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 the sampling was influenced by the crisis. On the other hand, this survey was meant to focus on rural and relatively poor areas, so we know in advance it is not representative of the entire country in *levels*.[7] How representative it is of the *changes* due to the recent shock is impossible to know.[8] Until this data can be matched with analysis of the new national data on JPS from SUSENAS 1999, it is impossible to say how "representative" the impact of the crisis in the areas might be. However, there is little reason to believe these two JPS programs differed substantially or systematically in these areas from other parts of the country.

---

[6] See Suryahadi and Sumarto (1999) for more details.

[7] The households sampled are not even representative in *levels* of the population within the 10 districts of the sample. In this sample there are 49 percent "pre-prosperous" households, while the same districts have only 26 percent "pre-prosperous" households.

[8] Although evidence presented in an earlier paper suggests reasonably close correspondence of estimates of changes in national poverty rates. See Suryahadi and Sumarto (1999).

The December 1998 round of SSD has a module on respondent's awareness and participation in various JPS programs. The households were asked if they had "participated" in these programs in the period since August 31st 1998, so the recall period is roughly three months. The exact questions of this module in Bahasa Indonesia together with their English translation are presented in the appendix A. There are two unfortunate aspects of the data. First, the questions do not allow precise identification of the specific programs as it does not allow us to determine in which of the many *padat karya* programs a household may have participated. Also, the SSD questionnaire inquires only about the receipt of *Sembako* ("basic necessities") and does not identify specifically about the OPK program and there are other sources of *sembako*, such as private charities (e.g. religious activities, NGOs). So, while OPK accounts for the vast majority of *sembako* and hence we believe the data reflects primarily the OPK program, we can not be more precise. The second limitation is that there is no indication of the extent of participation or magnitude of benefits, there is no indication of the number of days of *padat karya* labor or wages paid nor of the amount of rice received (which varied widely depending on the distribution rule in the local community).

Data on JPS participation from the December 1998 round were combined with expenditure data for the same households from the May 1997 and August 1998 rounds. JPS participation in the period of September to December 1998 can be related to the level of expenditures in May 1997 and August 1998 and the changes between those two periods. Since we use August 1998 expenditures, the benefits from the programs are not included in the total expenditures used in computing the changes in expenditures.

Although the number of sample size in each round is fixed at 12,000 households, due to sample replacements there are only 6,200 households that can be identified as the same "households" interviewed in all the three rounds. The process of household

matching itself was quite problematic due to the lack of unique identification code across rounds, so that the matching (within each sampling cluster) had to rely on the names of household heads, controlled by demographic variables.

To make the level of expenditures in August 1998 comparable with May 1997, a deflator was recalculated from the consumer price index (CPI) data between the two periods. The CPI weight on food prices is less than 40 percent, which underestimates the importance of food expenditures hence, based on the consumption data in the May 1997 round, the price deflator used has a weight on food inflation of 68 percent.[9]

---

[9] More discussion on the appropriate deflators for Indonesia during the crisis can be found in Suryahadi and Sumarto (1999).

IV) *Methods of Analysis and Results*

Since our approach extends the standard static benefit incidence to dynamics using information on expenditure changes, we start with the basic procedure of calculating quintiles of expenditures in May 1997 and August 1998 and then add the quintiles of the *change* in expenditures. The changes are calculated such that a negative number implies a fall in incomes so the smallest quintile, i.e. the "worst shock," are those households whose expenditures fell the most between the two surveys.

We then calculate the proportion of households who report "participating" in either the *sembako* or the *padat karya* in period up to December 1998. The existence of the panel data allows us to track participation in the JPS programs in two ways. The "transition matrix" examines participation according to the quintiles the households' expenditures in 1997 and in 1998. The second examines program participation by the "households" expenditures in 1997 and the shock experienced by the household.

A) *Targeting and Household Expenditure "Shock"*

The results of participation in the two programs by quintiles are discussed specifically in appendix B. Table 1 summarizes the information from appendix B, showing the two programs side by side. All participation rates shown are relative to the "worst" cells, i.e. QI97-QIShock. This table shows the "targeting slopes" in both dimensions — by expenditures in 1997 and the change in expenditures.

| Table 1: Summary comparison of targeting between *sembako* and *padat karya* by levels of expenditures in 1997 and changes in expenditures from 1997 to 1998						
			Quintiles by "shock": change in expenditures from 1997 to 1998			Ratio of QV to QI
			I (Worst Affected)	III	V (Positive Shock)	
Quintiles by expenditures in 1997	I (Poorest)	Sembako	1.00	0.98	1.12	1.12
		Padat Karya	1.00	0.38	0.38	0.38
	III	Sembako	0.75	0.79	0.48	0.64
		Padat Karya	0.40	0.16	0.11	0.28
	V (Richest)	Sembako	0.40	0.30	0.30	0.75
		Padat Karya	0.19	0.07	0.04	0.21
Source: Derived from appendix tables B.1, B.3, B.4, and B.5						

Padat karya is far and away more targeted or "steeper" with respect to the shock for all groups of initial income. The final column in the lower half of the table shows the ratio of the program participation rate for QVShock (increase in expenditures) to QIShock (worst shock) for each of the groups. So while for the poor (QI97) the ratio is 1.12 for *sembako* (those *least* affected actually got more), for *padat karya* the ratio is .38. For the richest group (QV97) those that has the best shock were almost certain not to participate in *padat karya* with a rate of only 1.7 percent, only 4 percent of that of the worst (QI97-QIShock) cell, while for the *sembako* the participation rate for the "best" group -- the rich in 1997 with a favorable shock -- is still 30 percent of that for the worst group.

We summarize this tabular information graphically in two ways. The panels of figure 1 show the comparison across the different magnitudes of shock for different quintiles of initial expenditures in 1997. Figure 1a shows the likelihood of receiving *sembako* or participating in *padat karya* for those who were poor in 1997 (QI97).The participation rate is normalized to 1 for the "worst" cell (QI97,QIhock) for both

programs so that the graph compares just targeting (relative participation rates) and not average program participation. For this quintile, the difference in the two programs is striking, as the least affected group (whose expenditures *rose* over the period*)* was more likely to receive *sembako* than the worst affected group while participation in *padat karya* of those households from QI97 fell uniformly as households were less hard hit by a shock.

Figure 1a: Probability of Poor Households in 1997 Receiving Sembako and Participating in Padat Karya, by quintile of Shock
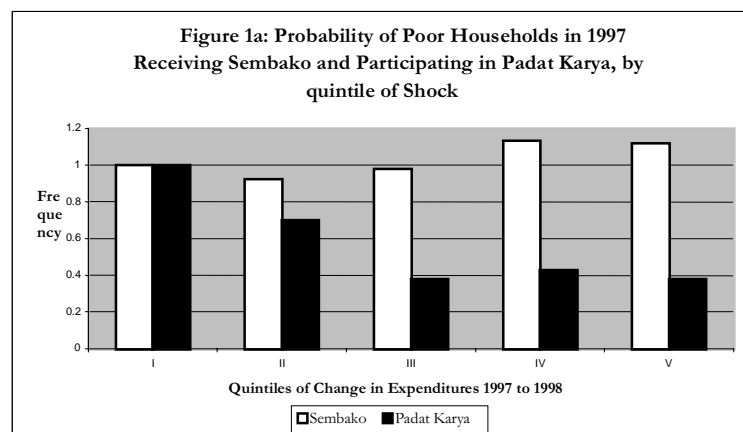
Figures 1b and 1c show the same comparison for those who were in the middle (QIII97) and top (QV97) groups. Since participation rates are still relative to the worst group (QI97-QIShock) these graphs show two features. First, participation is higher for *sembako* for every group, suggesting that this is less sharply targeted by initial income. Second, for both expenditure groups the drop is sharper by the extent of the shock — so *padat karya* participation is also much more targeted by the extent of the shock that households experienced than is receipt of *sembako.*

Figure 1b: Probability of Middle Quintile Households in 1997 Receiving Sembako and Participating in Padat Karya, by quintile of Shock.

Figure 1c: Probability of Non-Poor Households in 1997 Receiving Sembako and Participating in Padat Karya, By Quintile of Shock.
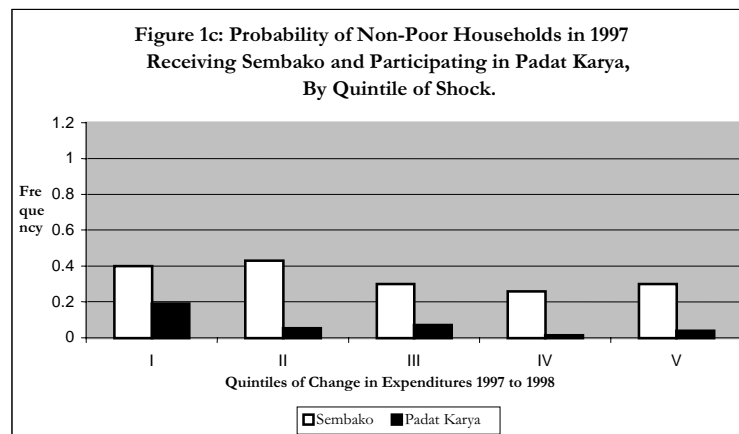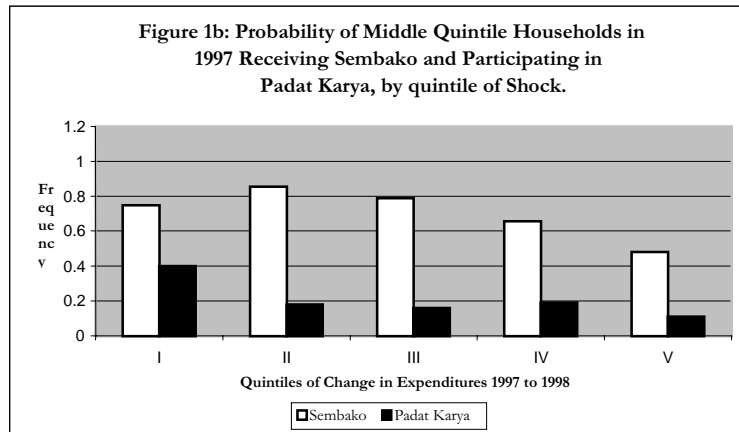
Figures 2a and 2b show the same information in a three-dimensional bar chart for each program. If this graph looks confusing — skip it. If it looks cool, here is how to read it. The slope coming towards the reader (from back to front along each column) is the degree of targeting with respect to 1997 levels of expenditure for those households which subsequently had a equivalent (quintile of) shock. The slope across the graph (left to right along rows) is the targeting with respect to shock for households beginning at the same level. The overall targeting by levels and shock is the slope from back left corner (which is cell QI97-QIShock and is normalized to 1 in both graphs) to

the front right corner.   It is obvious that the *padat karya* were much more targeted in both dimensions than *sembako*.

Figure 2a: Probability of Households Receiving Sembako in Cells by Initial (May 1997) Expenditures and Shock to Expenditures May 1997 to August 1998

Figure 2b: Probability of Households Participating in Padat Karya by May 1997 Expenditures and Shock to Expenditures May 1997 to August 1998
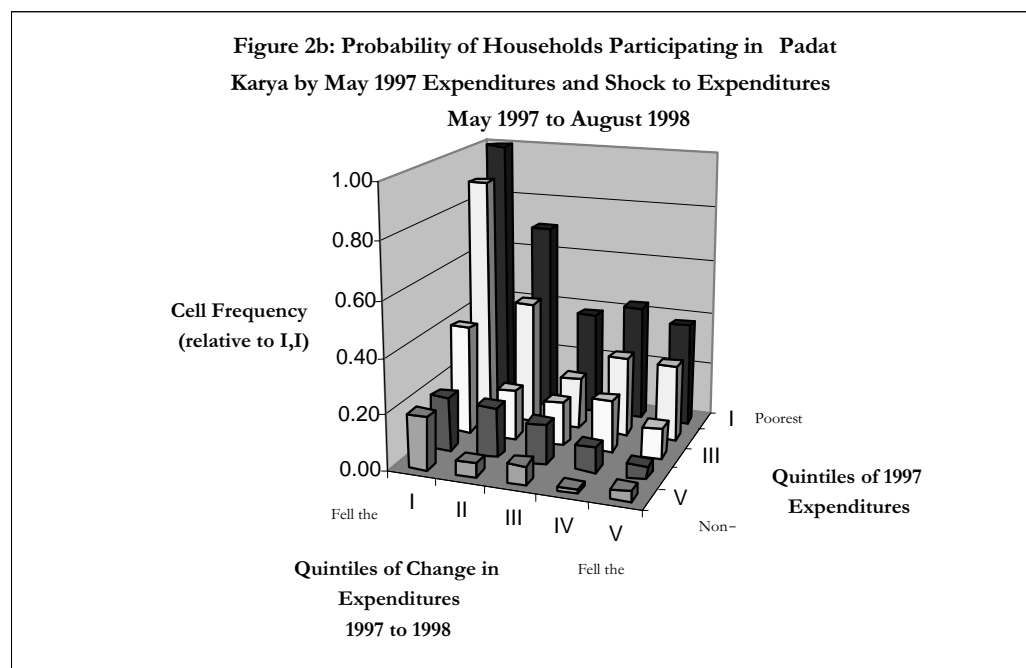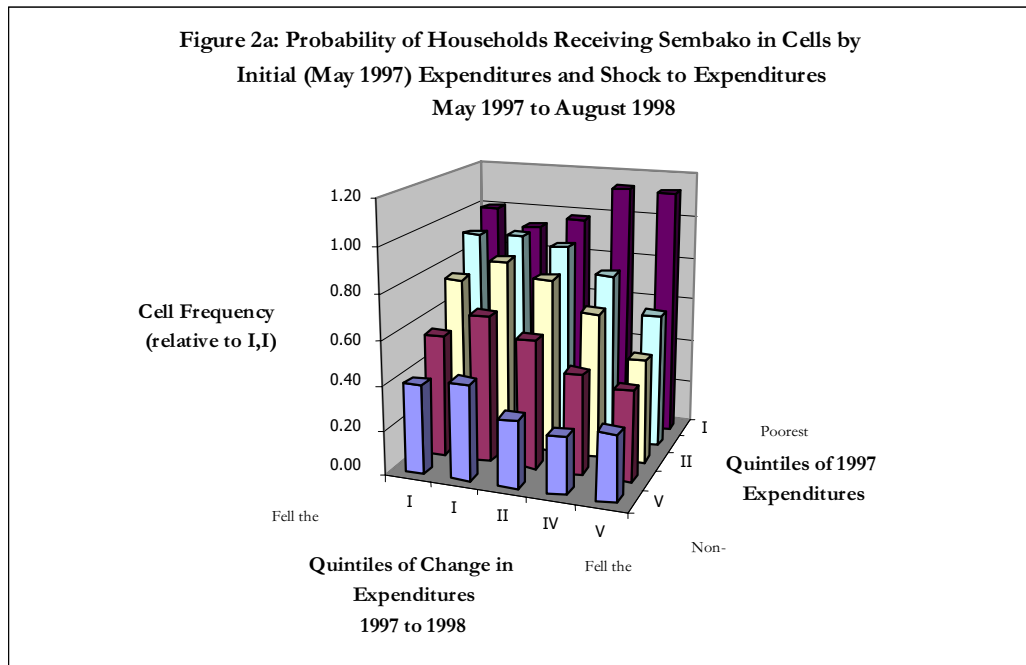
B) Targeting and Budget Allocations

From the government point of view, it is important to assess the efficiency of a program by evaluating which groups actually receive most of the budget. The first step in this is to estimate how much of a given budget which is received by beneficiaries is received by various groups. However, we have no information on how large the benefits were from either program as we neither know the amount of rice received nor the number of days worked. Therefore in this sub-section we estimate an elaborate *hypothetical*. We ask *if* a total amount of benefits were to be distributed according the targeting *pattern* of *sembako* versus according to the targeting pattern of *padat karya*, what is the expected amount that would be received by each group and how much of the budget would go to individuals in the various groups by initial income and shock.

Suppose there were a budget to be costlessly distributed to the 6,200 individuals in the sample that was adequate to provide each household 10,000 Rupiah per month[10]. We compare three possible allocations. First, a uniform allocation so that every household receives exactly the same amount irrespective of initial income and shock. Second, distributed according to the targeting pattern of *sembako,* assuming every household who "participates" receives exactly the same amount. Third, distributed according to the targeting pattern of *padat karya* again with the assumption of equal distribution.

We need to stress that all of these calculations are *hypothetical* because in fact the costs of delivering a dollar's worth of benefits via a *padat karya* program is much, much higher than through a simple in-kind income transfer program like OPK, but the *padat karya* program also delivers other, non-transfer, benefits from the labor performed. So

---

[10] This more or less arbitrary figure is chosen because if the total development budget for safety nets in FY 99/2000 of 5.6 trillion Rupiah were distributed to each of the country's 45 million households equally this would provide 10,370 Rupiah per household per month.

there are at least three elements to a choice between an *actual* employment creation scheme and an *actual* subsidized rice scheme. First, there are other costs to labor creation, so only a fraction of the benefits accrue to labor. Second, the gross benefit to workers is not the net benefit, which must account for foregone wages. Third, the *padat karya* may actually create useful investments that deliver benefits to poor and non-poor. Our concern here is just on the targeting pattern, so we just focus on the *pattern* of beneficiaries across the two programs not the programs themselves.

Table 2 shows the expected amount that would be received by a person in each group in these hypothetical schemes. This expected amount is the amount to be received per household, conditional on household participation (which is the total budget for the program divided by the total number of participants) times the number of recipients in each cell divided by the total number in that cell (which is the likelihood of participation). For the uniform transfer, this is easy: the total is Rp. 62 million, there are 6,200 households, so the per recipient amount is Rp. 10,000 and all households in each cell participate, so the expected amount is Rp. 10,000. For the *sembako* pattern of targeting (note again this is not the actual *sembako* program but a *hypothetical* scheme which follows the participation data), the number of participants is 2,440 of 6,200 so the transfer per recipient would be Rp. 62 million * (6,200/2,440) = Rp. 25,410, which is assumed equal for all participants. Then take the QI97-QIShock cell, 63 of the 112 households in this cell participated, so the expected value for households in that cell is the amount times the chance of participating, which is Rp. 25,410 * (63/112) = Rp. 14,293. Since for *padat karya* the overall participation is lower, the amount per recipient

is higher at Rp. 81,579, while the participation in the first cell is 53 of 112 so the expected value for QI97,QIShock is Rp. 38,604. [11]

From a policy point of view, if one is imagining normative recommendations to a benign social planner who is maximizing a social welfare function with inequality aversion, then the *padat karya* pattern of benefits would be preferred because it both reaches the poor more effectively and has the added "insurance" benefit of reaching those with a bad shock to income. Table 3 examines the proportion of the budget that goes to the various groups, which is a product of the targeting and the distribution across groups. In the *padat karya* pattern, 29 percent of the budget goes to those with the worst shock and 38 percent of the budget goes to those in the bottom quintile and 60 percent goes to those either in the poorest or worst shocked quintiles. In *sembako* pattern of targeting, only 17 percent goes to the worst shocked, while 30 percent goes to those in the bottom quintile.

---

[11] An equivalent procedure for comparing the programs would have been to scale up *padat karya* participation to the *sembako* level on average, producing equivalent expected values across this table.

Table 2: Expected value received by households in various groups, according to quintile of expenditures in 1997 and shock for a hypothetical program following either uniform distribution of the *sembako* or *padat karya* pattern of targeting.

	Average across shock	Quintiles of shock (change in natural log expenditures)				
		I	II	II	IV	V
Average across all quintiles of 1997 expenditures						
Uniform	10,000	10,000	10,000	10,000	10,000	10,000
Sembako	10,000	8,607	10,430	10,410	10,410	10,143
Padat Karya	10,000	14,474	10,263	7,237	9,211	8,816
Quintile I of 1997 expenditures						
Uniform	10,000	10,000	10,000	10,000	10,000	10,000
Sembako	15,184	14,293	13,200	13,934	16,163	16,018
Padat Karya	18,816	38,604	27,016	14,662	16,522	14,614
Quintile II of 1997 expenditures						
Uniform	10,000	10,000	10,000	10,000	10,000	10,000
Sembako	11,496	13,073	13,218	12,705	11,068	8,709
Padat Karya	13,882	34,287	17,560	7,251	11,011	10,666
Quintile III of 1997 expenditures						
Uniform	10,000	10,000	10,000	10,000	10,000	10,000
Sembako	10,184	10,776	12,212	11,302	9,367	6,798
Padat Karya	7,632	15,376	6,956	6,092	7,358	4,294
Quintile IV of 1997 expenditures						
Uniform	10,000	10,000	10,000	10,000	10,000	10,000
Sembako	7,910	7,913	9,489	8,311	6,519	5,829
Padat Karya	5,592	7,622	7,050	5,520	3,417	1,920
Quintile V of 1997 expenditures						
Uniform	10,000	10,000	10,000	10,000	10,000	10,000
Sembako	5,225	5,730	6,149	4,259	3,678	4,307
Padat Karya	4,079	7,358	2,032	2,734	537	1,383

Notes: Author's calculations based on appendix tables B.4, B.5, and B.6

	Average across shock	Quintiles by shock (change in per capita expenditures)				
		I	II	II	IV	V
Average across all quintiles of 1997 expenditures						
Uniform		20.0	20.0	20.0	20.0	20.0
Sembako		17.2	20.9	20.8	20.8	20.3
Padat Karya		28.9	20.5	14.5	18.4	17.6
Quintile I of 1997 expenditures						
Uniform	20.0	1.8	2.5	3.5	5.1	7.1
Sembako	30.4	2.6	3.3	4.9	8.2	11.4
Padat Karya	37.6	7.0	6.7	5.1	8.4	10.4
Quintile II of 1997 expenditures						
Uniform	20.0	2.2	3.6	4.4	5.3	4.6
Sembako	23.0	2.9	4.8	5.5	5.8	4.0
Padat Karya	27.8	7.6	6.3	3.2	5.8	4.9
Quintile III of 1997 expenditures						
Uniform	20.0	3.1	4.2	5.0	4.1	3.7
Sembako	20.4	3.3	5.1	5.6	3.9	2.5
Padat Karya	15.3	4.7	2.9	3.0	3.0	1.6
Quintile IV of 1997 expenditures						
Uniform	20.0	4.7	5.2	4.3	3.1	2.7
Sembako	15.8	3.7	5.0	3.6	2.0	1.6
Padat Karya	11.2	3.6	3.7	2.4	1.1	0.5
Quintile V of 1997 expenditures						
Uniform	20.0	8.2	4.5	2.9	2.5	1.9
Sembako	10.5	4.7	2.8	1.2	0.9	0.8
Padat Karya	8.2	6.1	0.9	0.8	0.1	0.3

Table 3: Proportion of budget delivered to beneficiaries under various targeting patterns.

Notes: Author's calculations based on appendix tables A.1-A.4 and B.1

V) JPS Programs as Transfer and an Insurance

Insurance is a contingent contract, one that pays off different amounts depending on the realization of an outcome and transfer income from good times to bad times. If an insured house does not burn down fire insurance pays is zero, while if the house does burn down the payout is (some fraction of) the value of the house. The transfers from a JPS program can either be contingent on a level, or on a shock, or both. How do the patterns of payouts of the programs stack up as a "safety rope" or insurance against a negative shock? Table 2 shows the trade-offs from a potential recipient point of view. While the likelihood of receiving *sembako* is higher for every group, this also means that the total amount must be spread over a larger group, so the more nearly equal the distribution across the population the less the amount available per person, so there is less difference between rich and poor and good and bad changes to expenditures. In contrast, *padat karya* pays out more in bad states than good states.[12]

Suppose we were in some Rawlsian condition of ignorance and we did not know which cell of the matrix (e.g. either our expenditure levels or shock) we would be in, which program would we prefer? If we are completely risk neutral, we don't care which program as, by construction of the hypothetical schemes, the expected value for all programs is Rp. 10,000 for each. But if we do not know our initial expenditure level and we are sufficiently risk averse, we would prefer the *padat karya* pattern to the uniform transfer to the *sembako* pattern. This is because while the expected value is the same for each program, if we have the worst possible outcome (QI-Shock), we will receive Rp. 14,474 (in expected value) under the *padat karya* pattern, while only Rp. 10,000 under the

---

[12] Another key hypothetical feature is that we ignore risk aversion within cells of the matrix and assume each person receives the expected value, whereas in fact even within cells in reality people receive different amounts, from nothing at all to the program maximum.

uniform transfer, and only Rp. 8,607 under the *sembako* pattern (see table 2). With other shocks, however, we receive less from the *padat karya* than from other programs.

Now suppose that we *do* know which quintile of expenditures we will start in but do not know what our shock will be like, then which pattern of payoffs do we prefer? Now there are two effects, a level of expenditures effect and a risk effect. If we are poor (QI), then with even low levels of risk aversion, we prefer *padat karya* pattern of payoffs because we get more on average and we get more when we have a negative shock, so the program has both superior transfer and insurance functions. If we are in quintile IV of expenditures, then (in the absence of altruism) we prefer the uniform over the *sembako* over the *padat karya* pattern of pay-outs because we receive more in every state with uniform transfer than *sembako*, and in *sembako* than *padat karya*, as the latter two redistribute from rich to poor and the compensating transfer from good to bad states does not overcome this.

The middle group (QIII) is interesting as the *padat karya* pay-outs in the worst shock state is much higher than *sembako* but the average pay-out over all outcomes is much lower (Rp. 7,632 versus Rp. 10,184 from table 2). If we are very risk averse (and hence have a very large desire to reallocate resources from good to bad states), we might prefer *padat karya* pattern even though the pay-outs in the good states are so low because it does a better job as insurance ¾ moving pay-outs from good states to bad states.

To illustrate these points, let us adopt a very simple quantification using a utility function which represents constant relative risk aversion (CRRA):

$$U(y) = \frac{y^{1-\theta}}{1-\theta}, \qquad \text{for } \theta > 0, \theta \neq 1$$
$$= \ln(y), \qquad \text{for } \theta = 1$$

where U is utility, *y* is expenditures, and q is the coefficient of relative risk aversion. In this simple utility function, people have diminishing marginal utility of expenditures and so prefer less risk, but their attitude towards risk does not depend on the level of expenditures.

Using this utility function, preferences over uniform, *sembako*, and *padat karya* transfer pay-offs as insurance schemes are evaluated in table 4 for various values of the risk aversion parameter q. This is reported both from the point of view of maximizing the utility function as social welfare function (SWF) as well as for the third quintile of expenditure (the results for all quintiles are in table B.7).

Table 4: Preferences over targeting patterns of transfers by degree of risk aversion for payouts in table 3 using a CRRA utility function of parameter θ.					
Risk Aversion (θ)	Maximizing Social Welfare Function	Middle Quintile (Median Voter)			
		Sembako vs. Uniform	*Padat Karya vs* Uniform	*Sembako vs.* Padat Karya	Preferred By QIII
0 (risk neutral)	Indifferent	*Sembako*	Uniform	*Sembako*	*Sembako*
1 (ln utility)	*Padat Karya*	*Sembako*	Uniform	*Sembako*	*Sembako*
2	*Padat Karya*	*Sembako*	Uniform	*Sembako*	*Sembako*
3	*Padat Karya*	*Sembako*	*Padat Karya*	*Sembako*	*Sembako*
4	*Padat Karya*	*Sembako*	*Padat Karya*	*Padat Karya*	*Padat Karya*
Notes: Based on the expected values received in table 3 using a CRRA utility function, see table B.7 in the appendix B for details. The value of the risk aversion parameter at which the QIII switch from preferring uniform to *padat karya* pay-outs is 2.37 and the switching value for *padat karya* over *sembako* is 3.5.					

This table shows three points. First, with zero risk aversion, a social planner would be indifferent because all three schemes give equal expected utilities (because,

by construction, the hypothetical expected money payouts are equal). However, at all positive values of risk aversion parameter, a social planner would prefer the *padat karya* pattern to that of *sembako* and the *sembako* pattern to a uniform transfer. This is because with declining marginal utility of expenditures the *padat karya* pattern is preferred both because gives more to those who are poorer initially and to those who suffer negative shocks than *sembako*. *Sembako* is less targeted in both dimensions, but is still preferred to a uniform transfer.

Second, the choice between the social planner and QIII is a politically interesting comparison. As shown in table B.7 in appendix B, for all values of q, the two poorest quintiles (QI and QII) always prefer the *padat karya* pattern to the *sembako* pattern and the *sembako* pattern to the uniform transfer. On the other hand, the two richest quintiles (QV and QIV) always get their highest expected utilities from the uniform transfer. This implies that in a simple one person one vote decision, QIII would be the median voter and their choice would be decisive.

Third, the choice of the median voter depends on the level of risk aversion with the pattern of bivariate preference over the three targeting patterns change as the degree of risk aversion changes:

➢ *At low levels of risk aversion (θ<2.37):* At low degrees of risk aversion, the median voter would choose *sembako* as their preferred scheme, over both the uniform transfer and over the *padat karya* pattern. QIII voters would also choose uniform over *padat karya*, which is the worst outcome for the poor (QI). Hence the social planner should never propose a vote between *padat karya* and the uniform transfer, as this would produce a less preferred outcome that a strategic voting agenda of proposing a vote between *sembako* (which is the second best alternative from a SWF view) and a uniform, a race *sembako* would win.

➢ *At moderate levels of risk aversion (2.37<θ<3.5)*: At higher levels of risk aversion QIII prefers the *padat karya* pattern over the uniform transfer. Hence in a two way contest the *padat karya* pattern would win over a completely untargeted program. However, the *sembako* program continues to be preferred to the *padat karya* as, even though there is less "insurance" element, the average transfer to QIII is still enough that expected utility is higher.

➢ *At high levels of risk aversion (θ>3.5)*: At very high levels of risk aversion QIII now prefers *padat karya* pattern over both a uniform transfer and over *sembako*. As the "insurance" value of a given transfer rises with the degree of risk aversion at these levels of risk aversion the QIII person demands a sufficient level of insurance to overcome the lower average pay-offs to QIII relative to the poor and prefer the program as would be chosen by the social planner maximizing the SWF.

These examples of patterns of payouts points up a highly complex set of political economy. While the social planner consistently prefers the "most targeted" program (represented by the padat karya pattern of pay outs), in a direct vote it would lose to either a uniform transfer or to a "less targeted" program at low to moderate levels of risk aversion among middle expenditure voters. The political support of the middle group is only forthcoming with either substantial "leakage" (*sembako*) or when their demand for insurance is quite high.

VI) Conclusions

The findings of this study point out the implications of the different methods of targeting pursued by two of major "JPS" programs. We find strong evidence that one of the programs, a subsidized sale of rice, while it was targeted to the "permanently" poor but was not closely related to the "shock" in expenditures that households experienced. On the other hand, "padat karya" programs were targeted to both levels and shocks to expenditures. Using these patterns of payoffs we illustrate the trade-offs both from a policy and positive political economy point of view of different types of programs. The key policy issue is the flexibility of the targeting criteria to respond to change in household fortunes as events unfold. Without this flexibility, even a well targeted program based on established data has very little safety rope value for the bulk of the population.

These patterns of targeting are of course just one piece of the puzzle. In addition, administrative complexity, ability to protect program implementation from fraud and waste, and the costs of targeting, all must be considered. We do not address these issues here. When all of these are considered we believe that the analysis would show the costs per dollar of benefits delivered to any poor recipient are actually much higher for an employment scheme than OPK in the current Indonesian context. Therefore, even though it may have better pattern of targeting, *padat karya* is probably worse in other dimensions. From a practical point of view, some mix of the programs is likely to be the appropriate choice.

References

Suryahadi, Asep and Sudarno Sumarto (1999), *Update on the Impact of the Indonesian Crisis on Consumption Expenditures and Poverty Incidence: Results from the December 1998 Round of 100 Village Survey*, SMERU Working Paper, August, Social Monitoring & Early Response Unit, Jakarta.

Suryahadi, Asep, Yusuf Suharso, and Sudarno Sumarto (1999), *Coverage and Targeting in the Indonesian Social Safety Net Programs: Evidence from 100 Village Survey*, SMERU Working Paper, August, Social Monitoring & Early Response Unit, Jakarta.

Appendix A

The Questions on JPS Programs in 100 Village Survey Questionnaire:

Pengetahuan dan keikutsertaan rumah tangga dalam program Jaring Pengaman Sosial (JPS)
Household's awareness and participation in Social Safety Net programs (JPS)

[Isikan kode 1 bila ya, kode 0 bila tidak]
[Fill in 1 for yes, 0 for no]

	Tahu program JPS	Pernah menerima bantuan (mengikuti kegiatan) setelah 31 Agustus 1998
	Aware of JPS program	*Receive support (participate) after 31 August 1998*
a. Pendidikan *a. Education*	☐	☐
b. Sembako/penjualan sembako murah *b. Basic necessities/subsidized basic necessities*	☐	☐
c. Pengobatan cuma-cuma *c. Free medical services*	☐	☐
d. Pemeriksaan kehamilan/melahirkan *d. Pregnancy check up/labor*	☐	☐
e. PMT ibu hamil *e. Supplemental food for pregnant women*	☐	☐

f. PMT bayi (6-24 bulan)   ☐   ☐

f. Supplemental food for babies (6-24 months)

g. Kredit/IDT   ☐   ☐

g. Subsidized credits/least developed village program

h. Padat karya   ☐   ☐

h. Labor intensive job creation program

Appendix B

Targeting and the Transition Matrix

Table B.1 shows the results of the transition matrix approach for *sembako*. The top row shows the result of the static benefit incidence calculation. Of those in the bottom quintile in 1998 (QI98), 52.7 percent received *sembako*, while this was 42.3 percent for the middle (third) quintile, and only 20.7 percent for the richest quintile. This suggests substantial, but far from perfect targeting. The first column shows how well the program was targeted if we judged it solely by the households expenditures in May 1997. The program is actually slightly more sharply targeted on May 1997 expenditures than on August 1998 expenditures, with participation falling from 59.8 percent for QI97 to only 20.6 percent for QV97.

But the classification of households by either quintiles in 1997 or quintiles in 1998 does not utilize the panel nature of the data that allows us to track the households over time. The "transition matrix" shows which households moved quintiles, for example, from QI in 1997 to QIII in 1998 (and hence rose in relative ranking) or which households fell in ranking from QIII in 1997 to QI in 1998. The numbers of households in each cell presented in table B.2. The cells of the table B.1 record participation in the programs by each of the 25 possible combinations of quintiles. So of the 335 households who were in QIII in each period, 44.5 percent received *sembako*; of the 152 households who were in QIII in 1997 but fell into Q I in 1998, only 42.1 percent received *sembako*; while of the 191 households from QIII in 1997 who rose into the top quintile (QV) in 1998, only 24.6 percent received *sembako*.

Since the transition matrix contains a wealth of information, in order to summarize the data and to make the results comparable across the two programs, we have summarized that information in three ways.
- The second number in each cell under the participation rate (in **bold** text) is the ratio of participation of that cell of the transition matrix relative to those who were in the poorest quintile in both periods. So, proceeding down the diagonal of those were in the same quintile in each period, QII97-QII98 participation was 90 percent that of QI97-QI98, while QIII97-QIII98 was 76 percent, and down to QV97-QV98 where participation was only 27 percent that of the QI97-QI98 households.
- The third number in each cell (in *italics*) is the ratio of participation in that cell to the total participation of the same quintile in 1998. Average participation of QII98 was 47.9 percent, but of those in the second quintile in 1998 who came from the first quintile in 1997 (QI97-QII98) 63.1 percent received *sembako*, so the ratio is 1.32. Meanwhile, of those with the same (measured) expenditures in 1998 in the second quintile, but whom were in the fifth quintile in 1997 (QV97-QII98) only 27 percent received *sembako*, so the ratio with QII98 average is .56.
- The last entry in each cell is similar, as it is the ratio of the cell participation to the average for that quintile in 1997 expenditures. So households in QIII97 had average participation of 40.1 ranging from 46.9 (ratio = 1.17) for QIII97-QII98 to only .61 (= 24.6/40.1) for QIII97-QV98.

The same method is applied to the padat karya programs and the results are presented in table B.3.

Even clearer than the transition matrices are the classification of households by their "pre-crisis" level of expenditure and the "shock." Tables B.4 and B.5 repeat the analysis in tables B.1 and B.3 respectively with quintiles of expenditures in 1997 as one axis and the other axis is by quintiles of change in (natural log) expenditures between 1997 and 1998.[13]

Comparing tables B.4 and B.5 shows the real differences in the program as regards to the "safety net" versus "safety rope" aspects. Take the households who, before the crisis, were in the middle of the expenditure distribution, QIII97, and then examine how the shock to those household's expenditures affected their participation in the two JPS programs. The average receipt for *sembako* for those households in QIII97 was 40.1 percent. Those with the worst shock were only slightly more likely to receive *sembako*, with participation rate of 42.4 (ratio of 1.06). Interestingly, those beginning in QIII97 with a slightly less severe shock (QIIShock and QIIIShock) actually were actually *more* likely than those with the worst shock to receive *sembako*, with participation ratios relative to the average for the quintile of 1.20 and 1.11 respectively. Even those with the best shock (whose measured expenditures actually increased) were only modestly less likely to receive *sembako* than were the worst affected households, so that the ratio of worst to least shock participation was only 1.58, i.e. the worst affected were only 58 percent more likely to receive *sembako* than the least affected group.

In contrast, in the *padat karya*, those who began in the middle group in 1997 (QIII97) were less likely on average to participate than were the poorest QI97, as 23.1 percent of QI97 participated versus only 9.4 percent of QIII97. This is sharper targeting based on 1997 than OPK, where the similar ratio is .7. What is even more striking is the extent to which a shock to expenditures affects the likelihood of *padat karya* participation, as those who began in the middle but suffered the worst quintile of shock (QIII97-QIShock) had a participation rate of 18.9 percent (almost as high as the QI97 average for poor households (QI97) of 23.1). In contrast, those from the middle who experienced the best change in expenditures (QIII97-QVShock) had a participation rate of only 5.3 percent. This implies that the worst hit were over 300 percent more likely to participate in *padat karya* than the least hit.

---

[13] The numbers of households in each cell are presented in table B.6 in appendix B.

Tables B.1 - B.7

Table B.1: Households in "100 villages" data who received "Sembako" in the three months prior to December 1998, by quintile of per capita household expenditures in August 1998, May 1997, and transition matrix between 1997 & 1998			August 1998 Expenditure Quintiles				
			I	II	III	IV	V
		Totals 1998	52.7 1.0	47.9 0.9	42.3 0.8	33.1 0.6	20.7 0.4
		Totals 1997					
May 1997 Expenditure Quintiles	I (Poorest)	59.8 1.0	58.6 **1.00** *1.11* 0.98	63.1 **1.08** *1.32* 1.06	68.6 **1.17** *1.62* 1.15	44.9 **0.77** *1.36* 0.75	40.6 **0.69** *1.96* 0.68
	II	45.2 0.8	50.50 **0.86** *0.96* 1.12	52.70 **0.90** *1.10* 1.17	42.60 **0.73** *1.01* 0.94	35.90 **0.61** *1.08* 0.79	28.70 **0.49** *1.39* 0.63
	III	40.1 0.7	42.10 **0.72** *0.80* 1.05	46.90 **0.80** *0.98* 1.17	44.50 **0.76** *1.05* 1.11	37.80 **0.65** *1.14* 0.94	24.60 **0.42** *1.19* 0.61
	IV	31.1 0.5	39.50 **0.67** *0.75* 1.27	27.80 **0.47** *0.58* 0.89	36.00 **0.61** *0.85* 1.16	33.00 **0.56** *1.00* 1.06	23.70 **0.40** *1.14* 0.76
	V (Richest)	20.6 0.3	37.04 **0.63** *0.70* 1.80	27.00 **0.46** *0.56* 1.31	24.06 **0.41** *0.57* 1.17	24.30 **0.41** *0.73* 1.18	15.80 **0.27** *0.76* 0.77

Notes:
Bold: Ratio of households participating in that cell that of QI 1998/QI 1997 (e.g. bottom rightmost cell 15.8/58.6=.27)
Italics: Ratio of households participating in that cell to average for that quintile in 1998 (e.g. bottom rightmost cell 15.8/20.7=.76)
Plain text: Ratio of households participating in that cell to average for that quintile in 1997 (e.g. bottom rightmost cell 15.8/20.6=.77)

			August 1998 Expenditure Quintiles				
			I	II	III	IV	V
		Totals 1998	1240	1240	1240	1240	1240
		Totals 1997					
May 1997 Expenditure Quintiles	I	1240	666	317	156	69	32
	II	1240	309	351	284	195	101
	III	1240	152	271	335	291	191
	IV	1240	86	201	286	376	291
	V	1240	27	100	179	309	625

Table B.2: Number of households in "100 villages" data by quintile of per capita household expenditures in August 1998, May 1997, and transition matrix between 1997 and 1998.

			August 1998 Expenditure Quintiles				

Table B.3: Households in "100 villages" data who participated in "Employment programs" in the months prior to December 1998, by quintile of per capita household expenditures in August 1998, May 1997, and transition matrix.

			August 1998 Expenditure Quintiles				
			I	II	III	IV	V
		Totals 1998	28.1 1.0	12.3 0.4	10 0.4	7.2 0.3	3.7 0.1
		Totals 1997					
May 1997 Expenditure Quintiles	I (Poorest)	23.1 1.0	29.7 **1.00** *1.06* 1.29	16.7 **0.56** *1.36* 0.72	14.1 **0.47** *1.41* 0.61	13.0 **0.44** *1.81* 0.56	12.5 **0.42** *3.38* 0.54
	II	17 0.7	32.00 **1.08** *1.14* 1.88	11.40 **0.38** *0.93* 0.67	13.03 **0.44** *1.30* 0.77	11.28 **0.38** *1.57* 0.66	12.87 **0.43** *3.48* 0.76
	III	9.4 0.4	19.74 **0.66** *0.70* 2.10	9.96 **0.34** *0.81* 1.06	8.10 **0.27** *0.81* 0.86	8.60 **0.29** *1.19* 0.91	3.60 **0.12** *0.97* 0.38
	IV	6.9 0.3	13.95 **0.47** *0.50* 2.02	7.96 **0.27** *0.65* 1.15	8.70 **0.29** *0.87* 1.26	5.90 **0.20** *0.82* 0.86	3.40 **0.11** *0.92* 0.49
	V (Richest)	5 0.2	33.30 **1.12** *1.19* 6.66	17.00 **0.57** *1.38* 3.40	7.26 **0.24** *0.73* 1.45	3.60 **0.12** *0.50* 0.72	1.90 **0.06** *0.51* 0.38

Notes:

Bold: Ratio of households participating in that cell to that households who were in Quintile I 1998 and quintile I 1997 (e.g. bottom rightmost cell 1.9/29.7=.06)

Italics: Ratio of households participating in that cell to average for that quintile in 1998 (e.g. bottom rightmost cell 1.9/3.7=.51)

Plain text: Ratio of households participating in that cell to average for that quintile in 1997 (e.g. bottom rightmost cell 1.9/5=.38)

Table B.4: Households in "100 villages" data who received "Sembako" in the three months prior to December 1998, by quintile of per capita household expenditures in May 1997 and quintile of per capita household expenditures changes between May 1997 and August 1998.

			Quintiles of changes in real expenditures from May 1997 to August 1998				
			I (Worst shock)	II	III	IV	V (Least shock)
		Totals by shock quintiles	33.9 1.0	41 1.2	40.8 1.2	40.8 1.2	39.9 1.2
		Totals 1997					
Quintiles of Expenditures May 1997	I	59.8 1.0	56.2 **1.00** *1.66* 0.94	51.9 **0.92** *1.27* 0.87	54.8 **0.98** *1.34* 0.92	63.6 **1.13** *1.56* 1.06	63.0 **1.12** *1.58* 1.05
	II	45.2 0.8	51.40 **0.91** *1.52* 1.14	52.00 **0.93** *1.27* 1.15	50.00 **0.89** *1.23* 1.11	43.60 **0.78** *1.07* 0.96	34.30 **0.61** *0.86* 0.76
	III	40.1 0.7	42.40 **0.75** *1.25* 1.06	48.10 **0.86** *1.17* 1.20	44.50 **0.79** *1.09* 1.11	36.90 **0.66** *0.90* 0.92	26.70 **0.48** *0.67* 0.67
	IV	31.1 0.5	31.10 **0.55** *0.92* 1.00	37.30 **0.66** *0.91* 1.20	32.70 **0.58** *0.80* 1.05	25.65 **0.46** *0.63* 0.82	22.90 **0.41** *0.57* 0.74
	V	20.6 0.3	22.50 **0.40** *0.66* 1.09	24.20 **0.43** *0.59* 1.17	16.80 **0.30** *0.41* 0.82	14.50 **0.26** *0.36* 0.70	16.90 **0.30** *0.42* 0.82

Notes:

Bold: Ratio of households participating in that cell to that households who were in Quintile I 1997 and quintile I of shock from 1997 to 1998 (e.g. bottom rightmost cell 16.9/56.2=.30)

Italics: Ratio of households participating in that cell to average for that quintile in 1998 (e.g. bottom rightmost cell 16.9/39.9=.42)

Plain text: Ratio of households participating in that cell to average for that quintile in 1997 (e.g. bottom rightmost cell 16.9/20.6=.82)

Table B.5: Households in "100 villages" data who participated in "Employment programs" in the months prior to December 1998, by quintile of per capita household expenditures in May 1997 and quintile of per capita household expenditures changes between May 1997 and August 1998.						
			Quintiles of changes in real expenditures from May 1997 to August 1998				
			I (Worst shock)	II	III	IV	V (Least Shock)
		Totals by shock quintiles	17.7 1.0	12.6 0.7	8.9 0.5	11.3 0.6	10.8 0.6
		Totals in 1997					
Quintiles of Expenditures May 1997	I (Poorest)	23.1 1.0	47.3 **1.00** *2.67* 2.05	33.1 **0.70** *2.63* 1.43	18.0 **0.38** *2.02* 0.78	20.2 **0.43** *1.79* 0.87	17.9 **0.38** *1.66* 0.77
	II	17 0.7	42.30 **0.89** *2.39* 2.49	21.50 **0.45** *1.71* 1.26	8.90 **0.19** *1.00* 0.52	13.50 **0.29** *1.19* 0.79	13.10 **0.28** *1.21* 0.77
	III	9.4 0.4	18.90 **0.40** *1.07* 2.01	8.50 **0.18** *0.67* 0.90	7.50 **0.16** *0.84* 0.80	9.00 **0.19** *0.80* 0.96	5.30 **0.11** *0.49* 0.56
	IV	6.9 0.3	9.30 **0.20** *0.53* 1.35	8.60 **0.18** *0.68* 1.25	6.80 **0.14** *0.76* 0.99	4.20 **0.09** *0.37* 0.61	2.30 **0.05** *0.21* 0.33
	V (Richest)	5 0.2	9.00 **0.19** *0.51* 1.80	2.50 **0.05** *0.20* 0.50	3.30 **0.07** *0.37* 0.66	0.66 **0.01** *0.06* 0.13	1.70 **0.04** *0.16* 0.34

Notes:
Bold: Ratio of households participating in that cell to that households who were in Quintile I 1998 and quintile I 1997 (e.g. bottom rightmost cell 1.7/47.3 = .04)
Italics: Ratio of households participating in that cell to average for that quintile in 1998 (e.g. bottom rightmost cell 1.7/17.9 = .16)
Plain text: Ratio of households participating in that cell to average for that quintile in 1997 (e.g. bottom rightmost cell 1.7/5 = .34)

Table B.6: Number of households in "100 villages" data by quintile of per capita household expenditures in May 1997 and quintile of per capita household expenditures changes between May 1997 and August 1998.

			Quintiles of changes in real expenditures from May 1997 to August 1998				
			I	II	III	IV	V
		Totals by shock quintiles	1240	1240	1240	1240	1240
		Totals 1997					
May 1997 Expenditure Quintiles	I	1240	112	154	217	316	441
	II	1240	138	223	270	326	283
	III	1240	191	258	308	255	228
	IV	1240	289	324	266	191	170
	V	1240	510	281	179	152	118

Table B.7: Expected utility of uniform, sembako, and padat karya patterns of pay-out with CRRA utility function with varying degrees of aversion to risk.

θ	Insurance Scheme	Total Population	Quintiles of expenditures level in 1997				
			I	II	III	IV	V
0	Uniform	100.0	100.0	100.0	100.0	100.0	100.0
	Sembako	100.0	104.2	100.9	100.1	99.0	98.4
	Padat karya	100.0	107.2	102.5	98.7	97.9	98.0
1	Uniform	100.0	100.0	100.0	100.0	100.0	100.0
	Sembako	119.0	109.8	107.3	114.5	88.2	95.5
	Padat karya	147.4	120.8	120.3	69.1	75.9	95.1
2	Uniform	100.0	100.0	100.0	100.0	100.0	100.0
	Sembako	101.5	104.6	101.9	100.6	98.9	97.9
	Padat karya	104.1	111.7	106.0	99.7	98.0	98.1
3	Uniform	100.0	100.0	100.0	100.0	100.0	100.0
	Sembako	104.6	109.7	104.8	101.6	97.7	95.5
	Padat karya	113.9	127.3	116.0	100.9	95.9	96.3
4	Uniform	100.0	100.0	100.0	100.0	100.0	100.0
	Sembako	109.4	115.3	108.2	102.6	96.1	92.8
	Padat karya	129.0	144.5	129.0	103.5	93.9	94.7
5	Uniform	100.0	100.0	100.0	100.0	100.0	100.0
	Sembako	115.4	121.1	111.9	103.5	94.4	90.0
	Padat karya	146.5	160.3	143.0	107.4	91.9	93.1
6	Uniform	100.0	100.0	100.0	100.0	100.0	100.0
	Sembako	122.0	126.9	115.7	104.4	92.5	87.2
	Padat karya	162.7	173.0	156.1	112.1	89.7	91.6
7	Uniform	100.0	100.0	100.0	100.0	100.0	100.0
	Sembako	128.6	132.5	119.4	105.1	90.4	84.2
	Padat karya	175.5	182.3	167.2	117.2	87.6	90.1
8	Uniform	100.0	100.0	100.0	100.0	100.0	100.0
	Sembako	134.8	137.7	122.8	105.8	88.3	81.2
	Padat karya	184.5	188.6	175.9	122.3	85.3	88.5
9	Uniform	100.0	100.0	100.0	100.0	100.0	100.0
	Sembako	140.3	142.6	126.1	106.5	86.1	78.2
	Padat karya	190.4	192.8	182.4	127.2	83.0	86.8
10	Uniform	100.0	100.0	100.0	100.0	100.0	100.0
	Sembako	145.3	147.0	129.1	107.1	84.0	75.1
	Padat karya	194.1	195.4	187.3	131.8	80.7	85.1

Note: Normalized for each value of θ to expected utility of uniform transfer equals 100