Does it Pay to Participate?[*]

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ABSTRACT

This paper analyzes whether participation in formal and informal community activities helped household in Indonesia mitigating the impact of the 1998 economic crisis. The paper uses the 1997 and 2000 round of Indonesian Family Life Survey (IFLS) to capture the impact of economic crisis on household welfare. The empirical results do not seem to support those hypotheses. Using number of children in each household as instrumental variable to solve the reverse causality and omitted variable bias problems, coefficient for community participation is not statistically significant in explaining changes in household expenditure. The large magnitude and universal nature of the shock might explain why social capital did not help households. However, using probit estimation with the same instrument, we find that participation in community activities increased the probability of households getting government assistance.

Keywords: Social capital, household welfare, economic crisis, participatory development, Indonesia

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Introduction

Since Robert Putnam published his study of Northern and Southern Italian social networks in 1993, the academic literature on social capital has exploded across disciplines. Even in the specific field of economic development, social capital theory has become a driving ideology. As Woolcock and Pritchett (2004), have argued, relationally intensive approaches have proven effective ways of addressing adaptive and socially rooted development challenges. Participatory development practices that generate social capital have become increasingly popular, garnering support from some of the foremost development thinkers. In *Development as Freedom* Amartya Sen (1999:47) goes so far as to suggest that participation and development are not only complimentary but actually one and the same writing that "The need for popular participation is not just sanctimonious rubbish. Indeed the idea of development cannot be dissociated from it."

Yet despite the overwhelming success of some participatory development programs, and the intuitive appeal of social capital, their tremendous popularity leads to a dangerous assumption: that social capital and participation constitute some kind of silver development bullet. If the mixed success of development endeavors over the past half-century has made anything starkly clear, it is that no such silver bullets exist.

Thus while social capital and participatory development may prove essential development tools in some contexts, understanding exactly what impacts they do and do not produce is critical to using those tools effectively. In response to the need for rigorous and specific research on the impacts of social capital and participatory development, this study analyzes their effects in an extreme situation, the 1998 Asian Financial Crisis.

This study uses data from Indonesia (IFLS rounds 2 and 3), a country rich with both formal and informal participatory institutions, to asses how well participation, and the social capital that results, mitigated the economic shocks of the crisis at the household level. We use both 2SLS and IV Probit regressions to estimate the extent to which civic participation enabled households to smooth expenditure and to access assistance throughout the crisis.

This paper is outlined as followed. We start with discussing some previous relevant studies in the second section. Then we present the description of data and background context of the study in the third section. In section four, we elaborate the model and

empirical strategy, including the detail explanation of the variables. The empirical results are presented in section five. Finally, section six concludes the whole discussion.

Literature review

Previous studies have examined both the determinants and the impacts of social capital and participation using household level data in Indonesia. Two studies have specifically provided the basis for our study. The first one is a paper by Beard (2005). Beard estimates the determinants of civic participation in Indonesia using the IFLS-2, the first of the two datasets used in this study. Using logistic regressions, Beard finds the following factors to be significant positive determinants of participation: being a head of household, being a spouse of a household head, having children under 5 (for women), being employed, literacy (for women), the number of activities in the community, living on Java, living in a rural area and being in the wealthiest quarter of the population. This list includes some intuitive determinants of participation such as wealth and education level as well as some less obvious factors such as having young children.

Beard concludes that since the well-educated, the well-off, and men are the most likely to participate, participatory institutions reinforce inequalities and have a limited capacity to help the poor. Yet, this conclusion does not necessarily follow from the results. While the poor may be less likely to participate, those who do participate may still benefit from that participation and the social ties generated. If this scenario bears out, then the poor would be best served through increased access to participatory institutions rather than the elimination of those institutions.

Similar to Beard, Varadharajan (2005) tries to explain participation in rotating savings and credit associations (*arisans*) using data from the Indonesian Family Survey of 1997. She found that 51 percent of the households and 28 percent of all adults participate in at least one *arisan*. The participation rate of women is higher and the predominant type of *arisan* is at the sub-neighborhood and neighborhood level. In this context, we posit that participation in *arisan* is a type of investment in social capital. Participation in a*risan* give space to build ties to other members in the community that can provide access to information (such as job opportunities) and other resources (Begazo-Gomez, Fuchs and Perdana 2006).

In order to investigate this distinction, this study analyzes the effects of participation on all of those who participate. We refer our study to a paper by Wetterberg (2005). Wetterberg analyzes a smaller Indonesian dataset with this question in mind. In a 2005 World Bank study, Wetterberg investigates how different types of social ties affected welfare across the 1998 financial crisis (using data from 1996 and 2000). She uses OLS and logistic regressions to estimate the effect of these ties on 2000 real expenditure and the likelihood of receiving aid respectively. Controlling for gender of household head, education of household head, whether the household works in agriculture, and their original welfare level, she finds some significant effects of social ties on both 2000 expenditure and the likelihood of receiving community and government help.[1]

While Wetterberg's study uses some demographic controls, it does not address all of the problems of Omitted Variable Bias (OVB) and reverse causality inherent in regressing welfare on participation. In addition to wealth, gender and education, unobservable factors such as social skills, creativity, entrepreneurialism, and industriousness likely affect both the extent of someone's ties/participation as well as their welfare or likelihood of accessing aid. Likewise someone may participate more because they have improved their welfare rather than the other way around. As a result, we have chosen to conduct a similar study to Wetterberg's but use Instrumental Variables in 2SLS and IV Probit regressions to get unbiased estimates of participation.

Data and context

Data

The data comes from the Indonesian Family Life Survey (IFLS). IFLS is a comprehensive longitudinal household survey which started in 1993. There are three waves of IFLS: IFLS-1 (1993), IFLS-2 (1997) and IFLS-3 (2000). IFLS was conducted in

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[1] Using a static model she finds participation in mandatory organization in 1996 to have a positive effect on welfare. Accounting for the change in ties she finds both 1996 informal organizational ties and an increase in these ties to have a positive effect on 2000 welfare. She also finds that informal organizational and network ties had a positive effect on getting community help while mandatory organizational ties had a negative effect. Finally, network ties had a negative effect on getting government help while mandatory organizational ties had a positive effect.

13 of the 27 Indonesian provinces that existed before 2001.[2] Around 83 percent of Indonesian population lives in the 13 provinces. The IFLS sampling was stratified at the province level, and clustered within these strata individuals (Frankenberg and Thomas 2004).

The first wave of IFLS includes around 7,200 households and 22,000 individuals. In the latter waves (IFLS-2 and IFLS-3), the sample size has been expanded to more than 10,000 households and around 39,000.[3] The re-interview rate of IFLS is considerably high. On average, 95 percent of the sample was re-interviewed in the following wave. In total, 91 percent of respondents from the first wave completed all three waves.

The 1998 economic crisis

After more than a decade of high economic growth, Indonesia fell into a big economic crisis in the late 1990s. The Indonesian economic crisis that began in late 1997 started when Rupiah, the Indonesian currency, was hit by a contagious regional crisis. In several weeks, the currency crisis led to accelerating inflation. Because of increasing production costs, domestic real sector collapsed, translated in GDP shock. The crisis reached its peak in 1998. General price index increased by 80 percent, and real GDP dropped to -13 percent. The crisis continued in 1999 with a lesser magnitude. The economy started to recover from the crisis in 2000, albeit in a slow pace.

The economic crisis had had serious social implications. The collapse in domestic real sector was accompanied by massive job losses. This led to a sharp rise in open unemployment and underemployment, or nominal wage cut for workers who remained being employed. Combined with skyrocketing prices, real wages experienced a sharp decline. As a result, there was a significant increase in the number of people living below the poverty line and a marked deterioration in income distribution (Perdana and Maxwell 2004).

The household-level adjustments resulting from the crisis took the form of changing patterns of household income and expenditure. The sharp reduction in real income forced people to consume their savings or sell their assets to cope with increasing

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[2] After 2001, some provinces were split so the number of provinces becomes 32 in 2005. Two of the IFLS provinces have also experienced the split: Banten split from West Java, and Bangka-Belitung from South Sumatra.

[3] An extra wave was conducted in 1998 with a small set of samples – 25 percent of that in 1997 – were re-interviewed to capture the immediate impact of the economic crisis. This wave is sometimes called the IFLS-2+.

levels of expenditure. On the expenditure side, the doubling of prices, especially for food items, forced people to reduce their spending on secondary and tertiary needs in favor of basic necessities.

The timing of the second and third waves of IFLS enables us to capture the pre and post-crisis situation. The second wave was completed in 1997, just before the beginning of the 1998 economic crisis. The third wave captures the situation in 2000, after the peak of the crisis had passed. In Table 1 we can see that wealthier people experienced a greater shock from the crisis and, as of 2000, had recovered more slowly than the poorer quintiles of the population.

Model and estimation strategy

Dependent variables

There are two groups of dependent variables we would like to test. The first is changes in annual total household expenditure from 1997 to 2000. The second dependent variable is whether the household receives any crisis-related assistance in 2000.

Household expenditure

The 2000 household expenditure is adjusted for the inflation that occurred over those two years, so that we are measuring the change in consistent 1997 Rupiah. There are two notes regarding the dependent variable. First, we are using household, not individual, as the unit of analysis. Technically, this is because the data on individual expenditure is not available. But beyond this pragmatic reason, the strong communality in Indonesia makes it more relevant to view households as the main unit of decision making. In the Indonesian context, people share their resources within family, and in the absence of formal safety net, family and kinship provide informal protection for members. Furthermore, we are interested in testing the expenditure response to social ties whose externalities vest at the household level. Any advantage from social capital gained by one member will be translated into higher welfare of all household members.

Looking at changes in expenditure on the individual level captures intra-household dynamics conflating the effects of participation and social capital.

A second note is the choice of total expenditure, not income, as the measure of welfare. The reason is, as in many developing countries, income may not be measured well. But even if it is well-measured, it is not a good measure of household welfare. Based on the permanent income hypothesis, household will try to maintain a certain level of expenditure, even when they experience income shock, by consuming out of their assets or borrowing. For that reason, expenditure is a better measure of welfare, especially in terms of idiosyncratic economic crisis.

We are aware of the weaknesses of using expenditure. Changes in household expenditure may be due to changes in household size, because of birth, death, households splitting off or merging. To solve the problem, we include the variable changes in household size as one of the controls.

Receiving assistance

The crisis-related assistance might be in terms of cash or in-kind transfer, or subsidized basic goods[4] through the special market operation programs.[5] We differentiate the source of assistance as government, NGO or local community. Here we only record households as receiving any help or not, ignoring the fact that some households may receive assistance several times while other may only receive it once. Table 2 summarizes the proportion of household who received any help from different sources in 2000.

Independent variables: acts of participation

Given the proliferation of participatory development based on social capital reasoning, and the wealth of participatory institutions in Indonesia, we focus on acts of participation as our key independent variables. While we cannot posit a one-to-one relationship between acts of participation and social capital generated, we assume some positive correlation between the two.

There are two types of participation we analyze: participation in formal and informal activities. Formal activities are those that have clear organization or hierarchy like village government, village council (LKMD), neighborhood association (RT/RW), cooperatives or women's association (PKK). Some activities like neighborhood security

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[4] *Sembako = sembilan bahan pokok* or nine basic household needs.
[5] OPK = *Operasi Pasar Khusus*. Due to a price hike in basic goods government and NGO programs created a separate market for highly subsidized essential including staple foods, cooking oil and soap.

watch (Siskamling), voluntary labor *(gotong-royong)* or collective garbage disposal do not have clear organization but usually involves some kind leadership of administration, so they are also considered as formal activities. Also included in formal activities are government organized community health and immunization program (Posyandu).

As the proxy for informal participation, we use the information on *arisan. Arisan* is a common type of social gathering in Indonesia. It is originally a rolling credit scheme.[6] Our interest in *arisan* is not in how it distributes money, but rather on how it brings people together regularly, developing and strengthening their social capital and networks.

We measure both types of participation by summing individual membership or acts of participation in each household. We do not measure time or intensity of participation. We construct three different variables; one for participation in the formal activities, one for the informal ones, and one for all activities. Admittedly these variables have several weaknesses. They ignore the differences between old and new ties. They also ignore the size and intensity of the networks from participation. Actually, this information, particularly the number of *arisan* members, frequency of participation and time spent for participating is available in the IFLS. However, we have some doubts about the accuracy of answers, which would create serious measurement errors. Therefore, we decided not to use these additional variables and stick to the total number of participation.

Linear model estimation

The underlying hypothesis for our estimation is:

Hypothesis 1: the social ties generated through participation provide informal insurance or risk management. Thus we expected people with high social capital to experience lower expenditure shocks.

To test the above hypothesis, we estimate:

(1)   *Δ household expenditure = f (measures of social capital in 1997, other controls)*

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[6] A number of people – neighbors, big family, office colleagues and so on – pool a certain amount of money every meeting. Then they decide by a lottery who wins the pooled money. The next time they meet, usually once every month, they do the same thing. The winner in previous meeting must participate in subsequent meetings, but he or she will not eligible for the money. They continue the rotation until everyone in the group have ever taken the lottery, before start from the beginning.

The dependent variable is measured in log differentials, so it should be interpreted as percent changes of household expenditure between 1997 and 2000. There are some controls introduced in the estimation. In order to estimate the effects of social capital, we controlled for physical and human capital with the variables natural log of household asset in 1997 and dummies for female-headed households and education levels respectively. In order to make the changes in expenditure levels comparable across households, we also controlled for urban-rural areas and provincial fixed effects.

Finally, we add changes in household size due to birth, death or migration as one of the controls. Changes in household size will obviously affect total household expenditure without affecting the members' welfare.[7]

Probit estimation

We are using the probit model to test a second hypothesis:

Hypothesis 2: participation/membership in community organization increases the probability of getting any forms of help/aid from either the community or government.

The related estimation is:

(2)   *Getting any assistance in 2000 = f (measures of social capital in 1997, other controls)*

We will run three different estimations, each for getting assistance from the government, NGO and local community. The independent variables are binary variables with value of one corresponding to households that received any assistance within the past 12 months, and zero if otherwise. Additional control variables are the same as in the linear model.

Instrumental variable regression

In both models, we use instrumental variables to address the problems of reverse causality and omitted variable bias described above. Looking at the distributions of people who participate (Figure 1) we can see that wealthier people are more likely to participate.

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[7] Some households reported big changes in their size. This is due to families being split-up (members get married and forming new households), as well as merged (some households in urban areas or other crisis-hit regions moved in to their relatives in different places, and merged into one household). To avoid bias, we omitted some observations who reported changes in more than five household members.

This creates a problem of reverse causality in that people may participate more because their welfare is increasing rather than the other way around.

Intuitively we also expect that several factors would be correlated with both welfare (expenditure) and participation including sociality, entrepreneurialism and popularity. These factors would be impossible to measure in a dataset and thus are not in the IFLS. Thus we introduce two instrumental variables to get unbiased estimates of participation.

The instruments

To find an appropriate instrument, a factor that would predict participation but would not be a determinant of changes in household expenditure (other than through participation), we referred back to the determinants of participation identified in the Beard paper. Beard found that having a child under 5 predicted a significant increase in a woman's participation. The rationale she offered for this was that women needed more assistance in terms of child care and health care when they had young children and thus they participated more. Intuitively we expected that the number of children under 5 would not be correlated with changes in expenditure specifically or with welfare in general. The first stage of our 2SLS regression (presented in the following section) confirmed this expectation.

While Beard did not find that having children between age 6 and 10 predicts participation, our first stage least squared regression (again presented in the following section) demonstrated a significant negative correlation. Hypotheses about this relationship include that many of the social services accessed through participatory organizations in Indonesia focus on children under five, thus decreasing the motivation of mothers of 6-10 year olds to participate. Additionally, at age 6 children in Indonesia are required to start school which provides the child care and possibly other social services that mothers may have previously sought elsewhere. Finally, mothers may pursue more extensive employment once their children are in school limiting the time they have available to participate.

The summary statistics of all independent variables and instrument are presented in Table 3.

Empirical results

Testing hypothesis 1: effects of participation on changes in expenditure

Ordinary Least Squares

As discussed in the previous sections of this paper we suspect that the OLS results will suffer from reverse causality and OVB problems that will undermine the internal validity of our estimates. Nevertheless we present the OLS estimates on the predicted effect of participation on changes in household expenditures and consumption smoothing as a reference case.

In Table 4, we can see that an increase in participation (both formal and informal) is associated with a decrease in household expenditures that ranges from 1-3 percent. We expect this result given the endogeneity between welfare and participation. We know that the wealthier quintiles of society were more likely to participate and we also know that they were the most adversely affected by this crisis. Thus we would expect to find a negative correlation between participation and change in expenditure when we do not control for reverse causality and OVB. Hence we decided to reproduce these estimates introducing these time our two instrumental variables and see whether these results will verify our assumptions.

Two-Stage Least Squares (2SLS)

The first stage of the 2SLS regressions (Table 5) confirms the validity of our instruments. They proved to be statistically significant determinant of participation (formal, informal and total) at the 1 percent level. Also, the F-statistics were well over the threshold of 10. We also found that the correlation between the instruments and the dependent variable were minimal and not statistically significant.

The second stage of the 2SLS regressions (Table 5) confirms our hypotheses concerning the existence and the direction of the bias. Once we correct for reverse causality and OVB by introducing IV's we observe that the coefficients of interest decrease in absolute values. They become either less negative or slightly positive which in turn verifies our previous hypotheses about the direction of the bias in the OLS regressions.

Of particular interest in this regression is the fact that the coefficients are not statistically significant at any conventional level. These results contradict our hypothesis that participation would increase households' capacity to mitigate crisis. One possible explanation is that because this shock was 1) universal, in that it affected everyone to some extent and 2) most heavily felt by the wealthier (potential donor) members of society, social capital did not mitigate the experience of individual households. This is intuitive in that, in order for trust or social ties to facilitate consumption smoothing, someone has to be capable of giving or lending resources to others in need. This is not to suggest that social capital is unimportant for development in general. It rather stresses the limitations of its applicability as a consumption smoothing and shock mitigating mechanisms.

2SLS estimation comparing Java and non-Java

To test whether the capacity of participation to mitigate shock was varied based on the severity of the shock, we ran the above regression controlling for whether or not people lived on Java. By far the wealthiest and most modern island in Indonesia, Java experienced the shock more acutely than other provinces. Thus we questioned whether participation played a differential role in consumption smoothing based on the local severity of the shock.

The OLS regression shows that there are no significant differences between changes in expenditure in Java and non-Java predicted by formal and total participation. The Java dummy and interaction terms are not statistically significant. For informal participation, both the dummy and interaction term are marginally significant. The OLS coefficient for Java dummy is negative, suggesting that Java households experienced differentially slower increases in expenditure than non-Java households. Meanwhile, the marginal impact of *arisan* is greater in Java, reflected by positive coefficient for the interaction term.

Introducing number of children as instruments for participation changes the OLS results, but does not make them statistically significant. The 2SLS coefficients for Java dummies change from negative to positive. The interaction term coefficients become more negative for formal and total participation, and switched from positive to negative for *arisan,* but again were far from significant.

The results from Table 6 show that there are no significant difference in the marginal impact of participation between Java and non-Java. The impact of participation on consumption smoothing did not vary based on the severity of the crisis. A possible explanation for this outcome include that even where the crisis was the weakest, it was still severe enough to compromise collective survival mechanisms.

Testing hypothesis 2: the effect of participation on receiving assistance

Ordinary Probit estimation

To test our second hypothesis, we use a series of Probit regressions to test whether an increase in each form of participation is associated with an increased probability of receiving aid from various sources (be they government, NGO or local). Although we expect OVB and reverse causality, we present in Table 7 the results of ordinary probit regressions with various sorts of aid as the dependent variable and participation (formal and informal) as the our independent variables of interest.

These results indicate that formal participation is positively associated with a statistically significant increase in the probability of receiving government help whereas informal participation is associated with a predicted increase in the probability of receiving aid from NGO's (significant at the 5 percent level). Finally none of these independent variables is associated with a statistically significant increase in predicted probability of receiving local aid. The results seem pretty much intuitive since we have expected to observe these patterns of formal participation being linked with formal aid and informal participation being associated with informal NGO help.[8]

Probit estimation with instrument

However, because the ordinary probit results suffer from OVB and reverse causality, we want to test our hypothesis using the same instrumental variables that were previously introduced to predict participation. There may be concern about the validity of the instruments in this case due to a correlation between the receipt of aid and the age of children. You could hypothesize that if aid is targeted to young children then perhaps the instrument could be correlated with the dependent variable. However, our instrument is

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[8] What is also an interesting finding is the fact that living in a household headed by a female is associated with a statistically significant (at the 5 percent level) increase in the predicted probability of receiving local aid. We attribute this finding to the fact that female-headed households are in general poorer than the male-headed households, so they will be more likely to be the target of government programs or assistance.

the number of children of a certain age in 1997 and our dependent variable is assistance received in 2000. The correlations between our instruments and the dependent variable were small in magnitude (.02 and .005) and in when we regressed the instrument and controls on the dependent variable (see Table 8) we found no significant correlations.

The instrumented Probit regression results presented in Table 9. As an important note, since our data for local and NGO help were not complete for some provinces, to be consistent with previous specifications that controlled for province level fixed effects we only present the results with government aid as the dependent variable. Also we have to note that the IV Probit regressions are weighted but not clustered or stratified.

From those results we observe that the patterns previously observed continue to hold with one exception: now informal participation is associated with a predicted increase in the probability of receiving government aid as well (significant at the 1 percent level). This implies that participation (and social capital) does play a role in increasing the probability of a household receiving aid. This is a significant finding that, although participation may not enable people to assist each other in smoothing consumption, it will enable them to access some of the more formal assistance available.

Concluding Remarks

The findings presented in this paper not only depict the impacts of participation and social capital in Indonesia, but also reinforces the importance of rigorously testing predictions regarding their effects in general. By using instrumental variables where past studies have not, we found that participation actually had a limited capacity to mitigate overall changes in household expenditure during the economic crisis. On the other hand, participation in formal and informal institutions did increase household access to assistance.

While the universality of the crisis, and its differential impact on the wealthy, rendered participation and social ties ineffective at smoothing consumption, participatory institutions did have a different positive impact. This distinction holds important policy ramifications for addressing severe economic shocks. It suggests that mitigating shocks requires external assistance, as community networks will be unable to provide adequate aid, credit and capital. At the same time it also suggests that establishing and working through participatory institutions will improve delivery of that external assistance to those

who need it. While social capital and participation remain exciting development tools, maximizing their benefits and legitimacy requires a clear understanding of when they work, how and why. ▪

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**Table 1. Mean household expenditure by quintile, 1997-2000
(in 1997 constant price)**

	Mean 1997 (Std. error)	Mean 2000 (Std. error)	Change
All	4,382,383 (132,681)	4,378,366 (121,355)	0.00
1st quintile (poorest)	935,828 (15,336)	964,729 (15,240)	0.03
2nd quintile	2,048,386 (9,919)	2,065,349 (9,222)	0.01
3rd quintile	3,224,231 (13,233)	3,169,835 (10,962)	-0.02
4th quintile	5,207,362 (26,569)	4,957,056 (24,085)	-0.05
5th quintile (richest)	13,200,000 (344,125)	12,700,000 (324,874)	-0.04

Source: IFLS data set, authors' own calculation

**Table 2. Proportion of households who reported to receive any assistance
in 2000**

Source of assistance	Proportion of household receiving assistance
Government	.146
NGO	.006
Local community	.126

Source: IFLS data set, authors' own calculation

Table 3. Summary statistics of independent variables and instruments

Household Characteristics	Mean	Std. error
Household Size 1997	5.10	0.05
Household Size 2000	5.49	0.06
Own house in 1997	0.87	
# of children below 5 in 1997	0.51	0.01
# of children 5-10 years old in 1997	0.52	0.02
# of members by education:		
No schooling	1.13	0.04
Elementary	2.36	0.04
Junior Secondary	0.72	0.02
Senior Secondary	0.63	0.03
University/academy	0.15	0.01
Head of Household Characteristics		
Age of household head in 1997	49.00	0.26
Female	0.18	
Education:		
No schooling	0.21	
Elementary	0.55	
Junior Secondary	0.10	
Senior Secondary	0.11	
University/academy	0.03	
Participation in 1997		
HH with any participation	0.81	
# of participation	3.64	0.08
HH with any arisan	0.51	
# of arisan	2.03	0.05
HH Asset in 1997 (Rp)		
All	20,400,000	1,214,358
1st quintile (poorest)	584,983	45,352
2nd quintile	2,961,323	28,398
3rd quintile	7,236,433	61,773
4th quintile	17,000,000	150,604
5th quintile (richest)	92,600,000	5,323,294

Source: IFLS data set, authors' own calculation

16

Table 4. OLS Regression results

Dependent variable: Changes in log HH expenditure	OLS (1)	OLS (2)	OLS (3)	OLS (4)
Formal participation in 1997	-.0123** (.00516)	-.-	-.0084 (.00530)	-.-
Informal participation *(arisan)* in 1997	-.-	-.0290*** (.00774)	-.0242*** (.00783)	-.-
Total participation in 1997	-.-	-.-	-.-	-.0128*** (.00393)
Log of assets in 1997	-.0219*** (.00766)	-.0201*** (.00777)	-.0200*** (.00776)	-.0208*** (.00771)
Female head dummy	.0641* (.03637)	.0747** (.03482)	.0656* (.03619)	.0620* (.03605)
Urban dummy	-.06183** (.02782)	-.0521* (.02778)	-.05464** (.02780)	-.0584** (.02780)
Change in HH size	.0990*** (.00763)	.0988*** (.00761)	.0987*** (.00760)	.0988** (.00761)
Education and other controls?	Yes	Yes	Yes	Yes
Province dummies?	Yes	Yes	Yes	Yes
Constant	1.1997*** (.30225)	1.1546*** (.30928)	1.164*** (.30443)	1.181*** (.30181)
N	7811	7811	7811	7811
N (weighted)	6271.57	6271.57	6271.57	6271.57
F-statistics	16.00***	16.68***	15.84***	16.17***
R-squared	0.0802	0.0810	0.0815	0.0811

Note: weighted, stratified and clustered regression. Figures in parentheses are robust standard errors.
*** Significant at 1%. ** Significant at 5%. * Significant at 10%.

Table 5. Testing the instruments: 1st-stage linear regression results

Ordinary Least Square	Dependent variables		
	Formal participation in 1997	Informal participation in 1997	Total participation in 1997
# of children below the age of 5	.4692***	.0841***	.5535***
	(.06110)	(.02740)	(.07619)
# of children aged 6-10	-.3610***	-.0389	-.4000***
	(.06445)	(.03000)	(.08246)
N	7979	7979	7979
N (weighted)	6271.57	6271.57	6271.57
F-statistics	**38.85***	**27.52***	**41.21***
R-squared	0.2696	0.2852	0.3256

Note: weighted, stratified and clustered regression. Controls are female head of household dummy, log of household assets, urban, education, change in household size and province dummies. Figures in parentheses are robust standard errors. *** Significant at 1%. ** Significant at 5%. * Significant at 10%.

Table 6. 2SLS Regression results

Dependent variable: Changes in log HH expenditure	IV (1)	IV (2)	IV (3)
Formal participation in 1997	-.0085 (.02797)	-.-	-.-
Informal participation *(arisan)* in 1997	-.-	-.0182 (.18927)	-.-
Total participation in 1997	-.-	-.-	-.0067 (.02427)
Log of assets in 1997	-.0220*** (.00761)	-.0210 (.01665)	-.0215*** (.00798)
Female head dummy	.0686 (.04788)	.07618** (.03961)	.0698 (.04657)
Urban dummy	-.0603** (.02823)	-.0541 (.05876)	-.0582** (.02764)
Change in HH size	.0992*** (.00764)	.0991 *** (.00831)	.0991*** (.00766)
Education and other controls?	Yes	Yes	Yes
Province dummies?	Yes	Yes	Yes
Constant	1.240*** (.30978)	1.210*** (.43018)	1.229*** (.31241)
N	7811	7811	7811
N (weighted)	6271.57	6271.57	6271.57
F-statistics	15.57***	15.79***	15.64***
R-squared	0.0804	0.0809	0.0809

Note: weighted, stratified and clustered regression. Figures in parentheses are robust standard errors.
*** Significant at level 1%. ** Significant at level 5%. * Significant at level 10%.*

Table 7. Differential impact of participation, Java vs. non-Java

Dependent variable: changes in log HH expenditure, 97-00	OLS (1)	IV (2)	OLS (3)	IV (4)	OLS (5)	IV (6)
Formal participation	-.0049 (.00836)	.0499 (.62386)	-.-	-.-	-.-	-.-
Informal participation	-.-	-.-	-.0532*** (.01946)	-.1560 (4.6902)	-.-	-.-
Total participation	-.-	-.-	-.-	-.-	-.0104 (.00729)	.0344 (.49977)
Dummy for Java	-.0039 (.04888)	.2068 (1.9723)	-.0719* (.04402)	.1318 (2.754)	-.0242 (.05177)	.2065 (1.9706)
Java * formal participation	-.0145 (.01037)	-.0928 (.76137)	-.-	-.-	-.-	-.-
Java * informal participation	-.-	-.-	.0377* (.02152)	-.0750 (4.539)	-.-	-.-
Java * total participation	-.-	-.-	-.-	-.-	-.0037 (.00850)	-.0690 (.59663)
Constant	.9364*** (.24726)	.7800 (1.5094)	.9542*** (.26012)	.5836 (.97320)	.9354 (.24988)	.7569 (1.4732)
N	7808	7808	7808	7808	7808	7808
N (weighted)	6270.22	6270.22	6270.22	6270.22	6270.22	6270.22
F-statistics	19.35***	18.20***	19.53***	18.09	19.52***	18.45
R-squared	0.0457	-.-	0.0443	-.-	0.0456	0.0332

Note: weighted, stratified and clustered regression. Figures in parentheses are robust standard errors. Controls are female head of household dummy, log of household assets, urban, education, change in household size and province dummies. Figures in parentheses are robust standard errors.
*** Significant at level 1%. ** Significant at level 5%. * Significant at level 10%.

Table 8. Probit regression results

Probit regression	Gov't (1)	Gov't (2)	NGO (3)	NGO (4)	Community (5)	Community (6)
	Dependent variables: receiving any assistance from?					
Formal participation	.0498*** (.01928)	-.-	.0161 (.02126)	-.-	.0342 (.02758)	-.-
Informal participation	-.-	.0153 (.03316)	-.-	.0768** (.03551)	-.-	.0554 (.04435)
Log of assets	-.0792*** (.02846)	-.0771*** (.02813)	-.1073*** (.03432)	-.1147*** (.03424)	-.0937*** (.029700)	-.0938*** (.03004)
Female head dummy	.0394 (.13451)	-.0140 (.12399)	.1259 (.11539)	.1209 (.11825)	.2906** (.13001)	.2646** (.11723)
Urban dummy	.1475 (.10972)	.1360 (.10968)	.6884*** (.19542)	.6698*** (.19699)	.0757 (.17785)	.0659 (.1806)
Change in HH size	.0554* (.032976)	.0531* (.03273)	.03082 (.03361)	.0322 (.03330)	.01152 (.04146)	.0132 (.04163)
Education and other controls?	Yes	Yes	Yes	Yes	Yes	Yes
Provincial dummies	Yes	Yes	Yes	Yes	Yes	Yes
Constant	-.99828 (.64783)	-.9548 (.64974)	-5.2949 (.5390)	-5.036	-5.585	-2.317*** (.75937)
N	7979	7979	7291	7291	7589	7589
N (weighted)	6271.57	6271.57	6271.57	6271.57	6271.57	6271.57
F-statistics	4.00***	3.87***	127.53***	107.46***	151.58***	2.85***

Note: weighted, stratified and clustered regression. Figures in parentheses are robust standard errors.
*** *Significant at level 1%. ** Significant at level 5%. * Significant at level 10%.*

Table 9. Probit Regression with instrument results

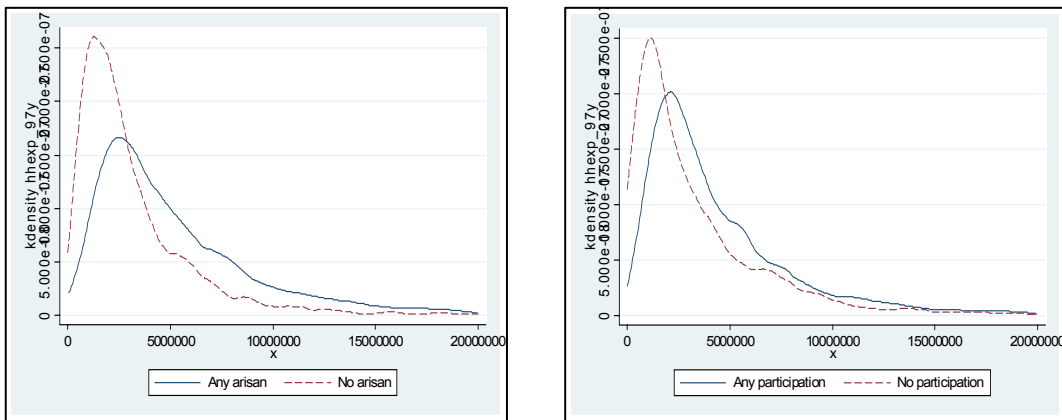| Dependent variable: receiving any assistance from the government	**Probit** (1)	**Probit** (2)	**Probit** (3)
Formal participation in 1997	.2420** (.11064)	-.-	
Informal participation *(arisan)* in 1997	-.-	.7117*** (.12656)	
Total participation in 1997			.1579* (.09401)
Log of assets	-.0834*** (.02501)	-.1005*** (.01888)	-.0947*** (.02603)
Female head dummy	.2620 (.1785)	.0806 (.07238)	.1818 (.17692)
Urban dummy	.1619* (.09502)	-.1185 (.09542)	.1130 (.10495)
Change in HH size	.0540* (.03158)	.0398* (.02275)	.0559* (.03218)
Education and other controls?	Yes	Yes	Yes
Provincial dummies	Yes	Yes	Yes
Constant	-.9196 (.59344)	.5497 (.5533)	-.6895 (.63877)
N	7979	7979	7979
N (weighted)	6271.57	6271.57	6271.57
F-statistics	-.-	-.-	-.-
Wald chi(1) test	2.08	4.86	1.40
Wald χ-square	152.66	630.40	121.74

Note: weighted regression. Figures in parentheses are robust standard errors.
*** Significant at level 1%. ** Significant at level 5%. * Significant at level 10%.

Table 9. Testing the endogeneity of instruments in probit estimation

Dependent variable: 1 = receiving any government assistance in 2000; 0 = otherwise	Probit
# of children below the age of 5	.1157
	(.07039)
# of children aged 6-10	-.0137
	(.07481)
N	7976
N (weighted)	6270.22
F-statistics	3.62***

*Note: weighted, stratified and clustered regression. Controls are female head of household dummy, log of household assets, urban, education, change in household size and province dummies. Figures in parentheses are robust standard errors. *** Significant at 1%. ** Significant at 5%. * Significant at 10%.*

Figure 1. Household expenditure distribution by participation

Source: IFLS data set, authors' own calculation