INTER-HOUSEHOLD ALLOCATIONS WITHIN EXTENDED HOUSEHOLDS: EVIDENCE FROM THE INDONESIA FAMILY LIFE SURVEY

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Abstract

Some longitudinal household surveys interview split-off households in addition to the original households during the follow-up surveys. For the purpose of analyzing household consumption changes between years, defining the panel households as only the panel of original households may potentially induce selectivity bias if households split non-randomly. One way to avoid this problem is to treat the original household and its split-off as a single extended household. However, this approach implicitly assumes that the extended household acts as if it is a single household. Using this approach to analyze changes in household consumption amounts to assuming income pooling within the extended household. We use the data from two waves of the Indonesia Family Life Survey to test whether households that originate from the same original household pool their income to smooth the consumption across the households. Our findings suggest that in contradiction to the null hypothesis of income pooling, the distribution of income between sub-households in extended household does affect the distribution of their consumption. We also find that the distribution of income changes between them affects the distribution of consumption changes. The results stand even after correcting for potential measurement error and endogeneity of income variables. However, the economic magnitudes of the coefficients on income changes are small, suggesting that treating the extended household as a unitary household may be justifiable when analyzing consumption changes.

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I. Introduction

Households break-up over time due to several reasons such as members migrating to other villages or cities to find jobs, adult children leaving to form new households, or marriage dissolution. Some longitudinal household surveys track individuals who have moved out of their original households and reinterview them in their new households in the follow-up surveys. Collecting information from these split-off households in addition to the original households help reduce sample attrition, a problem that is faced by all longitudinal surveys. However, defining what constitutes a household in a panel for the purpose of economic analysis then become problematic since analysis using a panel household that consists of only the original households may be biased to the extent that households break-up non-randomly. In addition, using a panel of original household is also problematic because the rules used by many of these surveys to define "original" and "split-off" households are often designed for ease in the fieldwork rather than based on some analytical underpinnings.[1] This, coupled with the concern that dropping the split-off households may non-randomly exclude particular subgroups of the sample, make the option of creating a panel of original household unappealing. On the other hand, defining a panel household by treating an original household and its split-off households as a single extended household implies that the extended household acts as if it were a single household. In developing countries where extended family systems have not eroded as much as in developed countries, this assumption may be plausible, yet it has rarely been tested.

The type of tests that can be done depends on the focus of the economic analysis. Suppose we are interested in studying the changes in household consumption over the survey waves, then treating the households as extended households may be preferable to restricting our attention to the original households because we can avoid dropping potentially important information from the split-off households. However, this approach assumes that the households within the extended households pool their resources to smooth the consumption across the sub-households. Then one way to justify this approach is to test whether we can find an evidence of income pooling within the extended households. This is exactly what this paper is set out to do.

Using data from two waves of the Indonesia Family Life Survey, IFLS2 (1997) and

[1] We discuss briefly the rule established in IFLS2 to assign "origin" and "split-off" households in section two. The same rule was used in IFLS2+ and IFLS3. See Frankenberg and Thomas (2000) for full documentation of IFLS2.

IFLS3 (2000), we want to test whether households within an extended household pool their income. The IFLS is very well suited for this test since not only does the survey interview the households and its split-off that are found in the locality of the original location, the survey also track a large fraction of the movers and re-interview their households even if the respondents have moved outside the locality of the original location (we will discuss the tracking rules in more detailed in the next section). In addition, these two waves include an important period: Indonesia was hit by a financial crisis that started in 1997 and reached its peak in mid-1998. How the crisis has affected the welfare of Indonesian households has been and still is an important and interesting subject, and we hope this paper will contribute towards understanding the dynamics of household behavior during a period of economic crisis.

The empirical strategy that we use in this paper follows that of Altonji, Hayashi, and Kotlikoff (1992). They test whether or not households in an extended family (or a dynasty) are altruistically linked. Using data from several waves of PSID and they reject the null hypothesis of dynastic altruism among families in the sample. They found that at a point in time, the distribution of consumption between parents and children is affected by the distribution of their income that changes in distribution of income affect changes in the distribution of consumption.

Our findings show some evidence against income pooling within extended-households among the IFLS households, both in 1997 and in 2000. The distribution of income matters for the distribution of consumption within an extended household even after controlling for extended-household fixed-effects. We then estimate the first-difference version of the model to control for possibility that there are household-specific fixed-effects that are correlated with income. As in the static tests, the dynamic tests return estimate of income coefficient that is statistically different from zero, even after controlling for extended-household fixed-effects. However, the magnitudes of these income coefficients are small. We then try to correct for potential measurement error and endogeneity of income, by estimating the models using instrument variables to instrument income and income changes. We found that the coefficients of changes in income are still positive and statistically significant although again the magnitudes are small.

The paper is organized as follows. The next section provides a brief background on the IFLS. The section also discusses the composition of households that constitute our sample. Section three discusses the model used in the estimation. The sample construction and the data used in the estimation are discussed in section four. Section five contains the estimation results, and we conclude the paper in section six.

2. Background

2.1 The Indonesia Family Life Survey

The IFLS is a longitudinal household and community survey that collects a large amount of information from households that include information about their consumption, income, and assets. It also collects data from each individual on fertility, education, health, as well as migration, and labor market variables. In addition the survey also collects information about the community and school and health facilities. The first wave of the sample was collected in 1993 and is representative of about 83 percent of the Indonesian population living in 13 of the 27 provinces in the country.[2] Since then there have been two other full sample follow-ups (IFLS2 in 1997, and IFLS3 in 2000) and a follow-up of a 25 percent sub-sample in 1998 (IFLS2+). This paper focuses on consumption and consumption changes between 1997 and 2000, using the data from IFLS2 and IFLS3.

2.2 Tracking Respondents in the IFLS

One of the main concerns faced by all longitudinal surveys is sample attrition. When respondents drop out from a longitudinal survey, the survey may lose its population representativeness. Moreover, if the non-random attrition is related to the factor being analyzed, using the sample will suffer from selectivity bias. At the survey design level, there are many ways to deal with the problems caused by sample attrition. One procedure is to re-weight the sample after each wave of survey to maintain the representativeness of the sample. One of the disadvantages of re-weighting the sample is that it requires a specific model for attrition. Some surveys "refresh" their sample after several waves by enrolling a new set of respondents. But perhaps one of the most important procedures is to reduce attrition from happening in the first place by following individuals and households when they move. Although tracking the movers will not prevent selection from attrition, it will help reduce it.

IFLS is one of the very few surveys conducted in developing countries that track its target respondents when they move. IFLS interviewers track certain respondents when they move from location where they were last found and even if they move to areas outside. Respondent moving from the original survey location is one of the main causes of sample attrition in other household surveys. For the longitudinal surveys that are conducted in developed countries such as the Panel Study of Income Dynamics (PSID) and the Health and Retirement Survey (HRS) in the US, or the British Household Panel Surveys (BHPS) in the United Kingdom, finding and re-interviewing the movers do not pose such a big problem since transportation and telecommunication infrastructures are already well-developed.[3] Moreover, many of these surveys do not require face-to-face interview with the respondents.[4] Still, many surveys do not track their respondents when they move; the PSID, HRS, and BHPS are exceptions. In developing countries, the cost for finding and re-interviewing the movers often deemed to be prohibitive and the movers are often dropped from the sample. IFLS is indeed one of the very few exceptions.

To determine whether a respondent has to be tracked when he/she moves, IFLS employs a set of tracking rules.[5] In brief, the rules are as follow. Each individual listed in the household is assigned a status determining whether the individual has to be tracked or not. Any individual who has a tracking status will be tracked so long as he/she is in one of the 13 IFLS provinces and he/she can be found.[6,7] These individuals are the "target" respondents that get tracked if they had moved from the location where they were last interviewed. In the split-off households where these respondents are found, his/her spouse and his/her biological children were interviewed as well.

The tracking rules were implemented by gathering much contact information in the previous wave, which was used together with current contacts to locate individuals. These

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[2] See Frankenberg and Karoly (1995) for full documentation of IFLS1.
[3] The main cause for attrition in longitudinal surveys in developed countries is respondents' refusal. Some studies in survey non-response literature have tried to model survey response explicitly. For example, Hill and Willis (2001) developed a model of survey response decision process using data from the HRS and conclude: (1) length of interview does not affect refusal for the next wave, (2) assigning same interviewer reduce refusal rate.
[4] Phone-based interviews account for the majority of interviews in PSID since 1973, and HRS since 1992. The BHPS administer questionnaires and self-completion surveys.
[5] See Frankenberg and Thomas (2000) for full documentation of IFLS2.
[6] In IFLS2 and IFLS2+, the tracking status is given to: (1) all of the individuals who were interviewed in 1993, (2) all members of 1993 households who were born before 1967 (including those who were not interviewed in 1993). See Frankenberg and Thomas (2000) for detail.
[7] In IFLS3, additional tracking rules were employed. In addition to rules (1) and (2) above, the following individuals were also given tracking status: (3) all children born after 1993 to the parents who were 1993 households members, and (4) a random sample of other 1993 household member who were born after 1967. See Strauss, et al (2002) for detail.

tracking procedure in IFLS explains why the survey has a very low attrition rate, even compared to surveys conducted in developed countries.[8] At the baseline in 1993, 7,224 households were interviewed. This number represents 93 percent of the total original target sample of 7,330 households. IFLS2, which was conducted in 1997 have a recontact rate of 93.4 percent (see Table 2.1) as 6,752 original households as well as 877 split-off households were recontacted.

The IFLS3 that was conducted in 2000 managed to recontact 94.7 percent of the target households which consists of all of the original 1993 households plus households that split-off in 1997 and 1998. Some of the households that were not found in 1997 (IFLS2) and 1998 (IFLS2+) were found and reinterviewed in 2000. In addition, 2,645 new 2000 split-off households were contacted in 2000. The recontact rates of the IFLS are higher than many of the surveys in developed countries. Compared to the surveys done in developing countries, the recontact rates are among the highest, if not the highest. [9]

In addition to reducing sample attrition, tracking the respondents proves to have important scientific value. Thomas et al (2001), investigate the attrition and the follow-up in the IFLS, using IFLS1, IFLS2, and IFLS2+. Using household-level as well as community-level variables of the households in 1997, they estimate a multinomial logit model with the following outcomes: households that did not move from the baseline survey, households that move locally, as well as households that move to areas outside the original locality. They find that local movers are very similar to the households that stay at the baseline locations. Households that move considerably far from the original location are very similar in many observable characteristics to those not interviewed in the follow-up survey. This suggests that tracking these long-distance movers may provide valuable information about households that are not fount. They argue that the information contents of these movers are high and that tracking them is a very worthwhile investment.

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[8] Thomas, et al (2001) provides a comparison of attrition rate between IFLS and other longitudinal surveys. The PSID interviewed 78 percent of the target households at the baseline survey in 1968. The recontact rate in the following year was 88.1 percent, and the year after 86 percent. The HRS, interviewed 81.6 percent of the target households at the baseline, and by the second follow-up survey, the cumulative recontact rate was 83.7 percent.

[9] Thomas, et al (2001) also discusses the recontact rates of some of the longitudinal household surveys conducted in developing countries. The Cebu Longitudinal Health Survey interviewed around 3,600 women between 1983-1984 in one province of the Philippines. In this two-year window, 17 percent respondents were lost because of out-migration. By the second follow-up survey in 1991-92, only around 67 percent of the original respondents were interviewed. The World Bank’s Living Standard Measurement Survey in Peru collected information from 1,280 dwellings in Lima in 1985-86. The follow-up survey in 1990 collect information from respondents living in the same dwelling; less than 55 percent of the households in the first round were interviewed.

2.3 Household Structure

We now investigate the structure and the characteristics of the households that comprise our sample. We want to know who the split-offs are and how their households are different from the old households. This is important because it may tell us whether or not our test of income pooling within an extended household is plausible. We are also interested in knowing how big the fraction of the extended households actually represents inter-generational (i.e., parent-child relationships) linkages. Since the model is derived from a household model where a parent is altruistic towards his child, it is this inter-generational relationship that we are mostly interested in. Another concern is that a lot of the households that split might did so as a result of divorce, or marital separation.[10] In this case, altruism linkage between households may not be plausible.

We define an extended household as the set of households that originate from the same 1993 households. We can identify these households by looking at the household identification number in the data set. [11] A *target household* is a household that was interviewed in any prior wave of the survey. So target households in 2000 include original 1993 household s, 1997 split-off households, and 1998 split-off households. *A split-off household* consists of an individual or group of individuals who moved out from the target household to form a new household since the prior wave's interview and were tracked in the subsequent survey.

Table 2.2 shows the number of households and extended household interviewed in IFLS1, IFLS2 and IFLS3. The number of households that were interviewed in 1993 is 7,224. In the follow-up surveys in 1997, a total number of 7,619 households were re-interviewed. This number includes both 1993 origin households as well as the households that split-off by 1997. The number of origin households interviewed in 1997 was actually 6,742 (93.3 percent of 1993 households). The other 877 households were split-off households spawned from 791 original households. In 2000, the number of households interviewed was 10,435, which came from 6,774 extended households (93.8 percent of 1993 households). Out of the 10,435 households

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[10] In our analysis, family formation and dissolution are assumed to be exogenous. For a literature review on models that treat family formation and dissolution as results of individuals' decision making, see, for example Weiss (1997) and Bergstorm (1996). Foster and Rosenzweig (2001) formulate and estimate a structural model of household division to look at how household size and intra-household allocation interact with exogenous income growth affect which households divide, division of assets among households, amount of household public goods consumed and evolution of incomes of the new configurations of households.

interviewed, 7,790 were target households and 2,645 were new 2000 split-off households.

The rule used to assign which households are original and which are split-off households turns out to be somewhat arbitrary. At the first point of field contact with any 1993 household member, the household where the individual was found was assigned to be the original household.[12] This "first-contact" rule has the advantage of ensuring at least some information of all target household member was gathered, and it also minimizes the risk of losing information of whereabout of other 1993 household member.[13] However, the rule also results in a great deal of arbitrariness in the following sense. It can be the case that the split-off household retains more of the household characteristics of the target household from the previous survey than the household that is defined in the current survey year as the target household. It is not clear how one can define whether a household is still the "same" household in different survey year. Table 2.3 may help illustrate this point. The table shows the relationship of the respondents to the head of household in the 2000 target households and whether or not the respondents were new members of the household. Note that there are 330 household heads who are new household members (note that they may or may not be respondents from earlier surveys, "new" refers to his/her membership in the household during the current survey). These cases may include instances where a respondent joined the household by marrying the head of the household and then became head of the household. They may also include instances where a child returned to her parents' household to assume the responsibility of the household. Such examples increase our concern that we may not be observing the "same" households after all. Then the question we face we want to restrict our analysis on only the panel of the original households is: are we choosing the 'correct' households?

While analysis using only the panel of the original households may suffer from the fact that those households may not be the "same" households, a potentially more serious problem come from the fact that split-off households may have very different characteristics than the target households. Table 2.4 shows the descriptive statistics of some of the economic and demographic variables of the 2000 target and 2000 new split-off households. Total real income

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[11] Households that share the first five digits of the 9-digit household identification number belong to the same extended households. The extended household ID is the first five digits of the household ID.

[12] See Frankenberg and Thomas (2000).

[13] Similar rule is also employed in other surveys. In PSID, for example, a main family is defined as a family that was interviewed in the prior wage. When there is divorce or separation, the "main family" status can be assigned to either the family of either spouse, depending of who was found first.

and real expenditure of the main households are higher than those of split-off households. Household size of the split-off households tends to be smaller. Per capita expenditure, which is very common measure of welfare, is higher for the split-off households than the target households. The same is true for per capita income. The proportions of adult member aged 15-59 years are very similar in each group, however the proportion of elderly is higher in the main households. On average, the heads of the split-off households are younger, better educated. The maximum years of education is also higher in the split-off households. The proportion of split-off household residing in urban areas is higher. In short, the split-off households have different characteristics from the target households, suggesting that households break-up non-randomly. Analysis excluding the split-off households will suffer from selection bias.

How many of the split-off households are really formed by children leaving their parents' household? Table 2.5 shows the number of extended households with multiple sub-households, parent-child extended households, parent-son extended households, and parent-daughter extended households. We define *parent-child extended household* as an extended household in which there are at least one parent-child relationship between individuals in different sub-households. By this definition it is possible that a sub-household can have someone identified as "parent" and "child. In fact in some cases, one individual is both a parent and a child. Using the similar approach we define our sample of parent-son household and parent-daughter household. A *parent-son* (*daughter*) *extended household* is an extended household in which there are at least one parent-son (daughter) relationship between individuals in different sub-households. By this definition a parent-son extended household can also be a parent-daughter extended household. We describe in more detail how we construct these samples in section 4.

In 1997, there are 791 extended households with multiple sub-household of which 653 were parent-child extended households (82 percent). There are 287 extended households with parent-son relationships and 388 extended households with parent-daughter relationships. By 2000, we have 2,610 extended households with multiple sub-households. Around 83 percent of them (2,176 extended households) are parent-child extended households, 48 percent have parent-son relationships, and around 52 percent have parent-daughter relationships.

If a household split into two as a result of marriage dissolution, one may question whether it is still plausible to think that the households have any altruistic linkage. For divorce cases where no children are present, altruistic behavior between the households may indeed seem to be unrealistic. On the other hand, with the presence of children, the divorced parents may still pool resources in order to improve their children's welfare. If this is the case, we may still observe some pooling of resources although it might not necessarily be motivated by altruism. [14]

Table 2.6 shows the current marital status of the head of households in 2000 in the target households and the new split-off households. Only about 2 percent of head of the households in the split-off households were either divorced or separated. The percentages among the target households were similar (2.9 percent). The low percentage of the heads of split-off households that were divorced or separated help to support our case that marital break-ups do not seem to play a major role in the spawning of new split-off households in our data set. However, it is important to note that the table only shows the *current* marital status of the respondents at the time of the survey. Therefore it does not tell us whether or not the household split *because* of a change in marital status. Also, split-off households headed by divorced people may be related to origin households, for example if the origin household is the parents' household.

The discussion about the household structure above can be concluded as follows. Split-off households account for a large fraction of households in the sample and they are indeed different from the original households. We also see that there is some degree of arbitrariness in defining which households are "original" and which are "split-off". These observations suggest that analyzing panel of only the original households may not be appropriate and looking at panel of extended households seem to be preferable. Moreover, we see that inter-generational relationships account for most of the relationships between the original and the split-off households. The data is suggestive about the fact that marital dissolutions are not an important factor in the sample. All of these work in the favor of treating the extended households as a unitary household. It seems plausible to hypothesize about altruism linkage within extended households in our data set.

3 Model and Empirical Specification

3.1 Model

[14] In reality, parents with no custodial rights over the children often make inadequate transfers to the ones with custody. To explain this, Weiss and Willis (1985) modeled children as collective consumption goods within marriage, and they argued that altruism within marriage serves to overcome the "free-rider" problem of the provision of public goods. They showed that, after a divorce, the non-custodial parent may lose control over the allocation decisions of the custodial parent and therefore chooses to make inadequate payment or even to stop

In the past years there have been numerous empirical studies that look at family altruism. For example, Foster and Rosenzweig (2001) incorporate altruism into a model of risk sharing under imperfect commitment to study the inter-household transfers in rural India and Pakistan. Altonji, et al (1997) looks at inter-generational transfers and tests whether inter vivos transfers from parents to child are motivated by altruism. In another study, Hayashi, et al (1996) tests whether there is complete risk-sharing between and within American families. They reject both inter- and intra-family full risk-sharing. Other studies that examine distribution of resources within extended families look at data on transfers explicitly. An example is the study by McGarry and Schoeni (1995) looking at how transfers are distributed within extended families. Using data from the Health and Retirement Survey they found that parents give more to their less well off children and elderly parents.

In this paper we do not look at transfers directly. We follow the approach used by Altonji, et al (1992). Borrowing from the literatures on testing the dynastic nature of households and the closely related intra-household allocation literature, they look at parent-children dynasties in the PSID to test the hypothesis of extended family altruism. They investigate whether or not the distribution of consumption between parent and children households is affected by the distribution of their income. They argued that if parents and children were altruistically linked, then the distribution of consumption would be independent of the distribution of income

The model is similar to that of intra-household allocations where parent's utility depends not only of his/her consumption but also from his/her child's consumption. [15] Parent and child behave as if their consumption is based on a unitary budget constraint. In the context of extended household, we can think of the model in terms of household of the head of the extended household (e.g., household of the parents) and other sub-households in the extended household (e.g., households of their children) operating on a unitary, extended-household budget constraint.

The parent's utility maximization problem is given by:

$$U_p = \theta_p U(C_p) + \theta_k U(C_k) \qquad (1)$$

$$s.t \qquad C_k + C_p = R_k + R_p \qquad (2)$$

where C is consumption, R is resources, and p, k stands for parent and child respectively. The

making payment at all. This suggests that we need to pay attention to the pervasiveness of divorces and marital separation among the households in the sample.

[15] For review on the subject of intra-household allocations, see for example, Haddad, et al (1997), Strauss, et al (2000), and Thomas (1990, 1993, 1994).

parameter θ_p and θ_k is the weight attached by the parent to his utility and on the utility of his child. The parent can transfer some resources T to the child so that $C_k = R_k + T$ and $C_p = R_p - T$. If the child takes T as given, then the parent will maximize his utility over his own consumption and transfer. The ability to make transfer is the key in this model; it is what results in a unified budget constraint. This is a typical model that can be found in intra-household allocation literature (e.g., Thomas 1990)

The first order condition of the maximization problem above is $\theta_p U'(C_p) = \theta_k U'(C_k) = \lambda$, the marginal utility of income. Suppose now that the utility function is of the form $U(C) = C^{1-\gamma}/(1-\gamma)$, then, from the first order conditions we can obtain: $\log C_p = -(1/\gamma)\log\lambda + (1/\gamma)\log\theta_p$ for the parent and $\log C_k = -(1/\gamma)\log\lambda + (1/\gamma)\log\theta_k$ for the child. We can add an index i to denote an extended family and error terms to have the statistical representations of these demand functions as:

$$\log C_{ip} = -(1/\gamma_i)\log\lambda_i + (1/\gamma_i)\log\theta_p + u_{ip} \qquad (3)$$

$$\log C_{ik} = -(1/\gamma_i)\log\lambda_i + (1/\gamma_i)\log\theta_k + u_{ik} \qquad (4)$$

The parameter λ_i can be interpreted as the extended family fixed-effects. Since λ is the marginal utility of income, this model assumes that in an altruistic extended family, the marginal utility of income is common among the extended family members. Note that members' own resources, R_k and R_p do not enter either of the consumption function. Rather, it is the extended family unified resources R that enters the consumption equations through λ, the marginal utility of income.

We can now see how the test works: if extended family has altruistic linkage, the marginal utilities of income of the members are the same. In the empirical specification the marginal utility of income is represented by extended family fixed effect. If we control for these fixed effect, then the parent's income should not affect his consumption and child's income should not affect her consumption. We can now write our empirical specification.

3.2 Empirical specification of the static model

The empirical specification of the static model can be written as:

$$C_{ikt} = \boldsymbol{\beta}'\mathbf{x}_{ikt} + \psi Y_{ikt} + \alpha_{it} + u_{ikt} \qquad (5)$$

$$k = 0,1,\dots,n_i \quad i=1,2,\dots,N$$

where C_{ikt} *is* logarithm of consumption at time t of household k, which is a member of extended household *i*, $\mathbf{x}_{ikt}$ represents observable characteristics of household *i* and other variables that belong to household weights θ_p and θ_k, and Y_{ikt} is households (log) income. The altruistic linkage between households in an extended households is the common marginal utility of income (λ in the model), and is represented by the extended households fixed effect, α_{it} (thus α_{it} represents log λ_t). The interpretation of the fixed effect coefficient α_{it} in this context is that it represents the common marginal utility of income of the households within the extended household, rather than the unobserved common characteristics of the households.

Let us first assume that the error terms u_{ikt} is uncorrelated with $\mathbf{x}_{ikt}$ and Y_{ikt}. Under the null hypothesis of the extended household altruism, the coefficient on Y_{ikt} should be zero. That is, after controlling for own household characteristics *and* the extended household fixed effect, household own income should not affect its consumption.

Note, however that the assumption that the error terms u_{ikt} is uncorrelated with $\mathbf{x}_{ikt}$ and Y_{ikt} may not hold. Observable household characteristics $\mathbf{x}_{ikt}$ may not fully capture the factors that belong to θ_p and θ_k, and these omitted variables will end up in the error terms u_{ikt}. Extended household fixed effect estimation only sweeps away parts of the unobservables that are common across all sub-households, while parts that are household-specific and vary across the sub-households will remain. One way to deal with the problem is to find instrumental variables for income and use 2SLS estimation. In addition, 2SLS estimation could also help us deal with problem of measurement error in our income variable.

If we fail to accept the null that the coefficient on Y_{ikt} is zero, it is still interesting to see whether household consumption is affected by income of other household in the extended household. For example, one could directly estimate the following equation:

$$C_{ikt} = \beta'\mathbf{x}_{ikt} + \psi\, Y_{ikt} + \gamma \,\Sigma\, Y_{ijt} + u_{ikt}, \qquad j \neq k \qquad (6)$$

where $\Sigma\, Y_{ijt}$ is the sum of logarithm of income of other households in the extended household. Under the null hypothesis that households within an extended household do not pool their income at all, the coefficient on the other households' income variable, γ, is zero. Again, here we also need to worry whether the error terms are correlated with Y_{ikt} or $\Sigma\, Y_{ijt.}$

3.3 Dynamic Specification

We now turn to the dynamic specification. Consider a two-period version of the model given by equation (1)- (4). Instead of one-period utility functions, we have two-period expected utility functions given by:

$$V_p = C_{pt}^{1-\gamma} / (1-\gamma) + \beta E_t C_{pt+1}^{1-\gamma} / (1-\gamma) \qquad (7)$$

$$V_k = C_{kt}^{1-\gamma} / (1-\gamma) + \beta E_t C_{lt+1}^{1-\gamma} / (1-\gamma) \qquad (8)$$

where V_p and V_k are expected utilities of parent household and child household, respectively. When parent household and child household pool their income risk, the maximization program that is faced by the extended household is that of maximizing the sum of weighted utilities $\theta_p V_p$+ $(1 - \theta_p) V_p$, where θ_p is the weight put on the parent's (expected) utility, by choice of consumptions C_{pt} and C_{kt}. This is subject to the resource constraints for each time t,

$$C_{pt} + C_{kt} \le Y_{pt} + Y_{kt}, \qquad (9)$$

The first order condition for time s is therefore:

$$\theta_p \,.\ C_{ps}^{-\gamma} / (1-\gamma) \ = \ (1-\theta_p) \,.\ C_{ks}^{-\gamma} / (1-\gamma) \ = \ \lambda_s \qquad (10)$$

where λ_s is once again the Lagrange multiplier on the resource constraints at time *s.* [16] *Taking* logs and solving for C_{ps} and C_{ks}, we have the consumption equations for time s:

$$\log C_{ps} = -(1/\gamma) \log \lambda_s + (1/\gamma) \log \theta_p \qquad (11)$$

$$\log C_{ks} = -(1/\gamma) \log \lambda_s + (1/\gamma) \log (1-\theta_p) \qquad (12)$$

Differencing over time, we have:

$$\log C_{p+1} - \log C_p = -(1/\gamma)(\log \lambda_{t+1} - \log \lambda_t) \qquad (13)$$

$$\log C_{k+1} - \log C_k = -(1/\gamma)(\log \lambda_{t+1} - \log \lambda_t) \qquad (14)$$

The equations are a first-differenced version of the static extended household fixed-effects model described earlier. We add error terms to the equations to obtain the statistical representation:

$$\Delta C_{ikt} = \beta' \Delta \mathbf{x}_{ikt} + \psi \Delta Y_{ikt} + \Delta \alpha_{it} + \Delta u_{ikt} \qquad (15)$$

where $\Delta C_{ikt} = C_{ikt} - C_{ikt-1}$, $\Delta \mathbf{x}_{ikt} = \mathbf{x}_{ikt} - \mathbf{x}_{ikt-1}$, $\Delta Y_{ikt} = Y_{ikt} - Y_{ikt-1}$, $\Delta \alpha_{it} = \alpha_{it} - \alpha_{it-1}$ and $\Delta u_{ikt} = u_{ikt} - u_{ikt-1}$.

Note that equation (7) is just a first-differenced version of the empirical specification given by equation (6). We saw that in the static specification, the extended-household fixed effect α_i represent the log of marginal utility of income that is common across all sub-households in an extended household. Here, $\Delta\alpha_{it}$ represents the difference in the log of marginal utility of income across periods. Since $\Delta\alpha_{it}$ is independent of k, then it will be the same across all sub-households.

Household-specific factors belonging to the household weights θ_p and θ_k but that are not fully captured by $\Delta\mathbf{x}_{ikt}$, are swept away by the first-differencing, provided they are time-invariant. This means that the test allows for the possibility that the extended households have different – but time-invariant - preferences over the sub-households. Consider the case where the extended households consist of a parents' household, the son's household, and the daughter's household. Suppose that the parents prefer to invest more in human capital of the sons' household. Then the static version of this model at time t, would be:

$$C_{ikt} = \beta'\mathbf{x}_{ikt} + \psi\, Y_{ikt} + \alpha_{it} + \delta_{ik} + u_{ikt} \qquad (16)$$

$$k = 0,1,\ldots,n_i \quad i=1,2,\ldots,N$$

where δ_{ik} represents the household-specific time-invariant constant. In other words, δ_{ik} can be seen as a part of the extended household fixed-effects that differ between the son's and the daughter's household that may be correlated with the son's and daughter's income. Preferences towards the son's household imply that δ_{ik} is larger for his household than that for his sister's. Everything else the same, the son's household will have higher consumption and earnings. If the household-specific fixed effect is time-invariant, the first-differencing will sweep it away, and this is what we see in equation (15).

The assumption that θ_p and θ_k are time-invariant may not be true. In fact, it is in contrast with assumptions in collective household models (e.g. Chiappori 1988). In the collective household models, the sharing rule that governs how much each member can spend the remaining income after the household allocates its resources on household public goods, is endogenous. Prices, total household income, and other time-varying factors such as assets of each individual determine the sharing rule. On the contrary, in the example above that the extended household has an unequal but time-invariant sharing rule, which is in favor toward the son's household.

If θ_p and θ_k include time-varying household specific factors, first differencing will not get

[16] In some ways, this is similar to the dynamic maximization problem discussed in the work of Townsend (1994) on the risk and insurance in village India. The difference there is that the weighted sum of utilities is over all individuals and over all households in the village, resulting in common Lagrange multipliers across all individuals.

rid of these factors, even with extended household fixed effect, and we may have factors that determine θ_p and θ_k that are correlated with $\Delta\ \boldsymbol{Y_{ikt}}$. To allow for this possibility and also to correct for potential measurement error in income, we also employ 2SLS for the dynamic tests.

4 Data and Sample construction

4.1 Sample construction

Since our tests involve estimating extended households fixed effect we need to restrict our sample to the extended households that have more than one member households. The identification comes from these extended households. In addition we also create a sample of extended households consisting only of parent-child households, parent-son households, as well as parent-daughter households. Below we define these samples and describe how we generate them.[17]

We start with household roster in IFLS1 (1993). From this roster, we can identify parent-child relationship within each household. In the following survey (1997), if the household split, and provided that the 1993 members were found, we can observe these individuals, the households they were in, the households their parents/children were in, as well as the extended households they belong to. Therefore we can link the 1997 households of the individuals with the 1997 households where their parents/children are in, and we can identify the linkage between these households as a parent-child linkage. In 1997 (and also in 1998), there were new entrants to the survey; new household members whose household memberships and relationships with other members will also be followed and identified. By 2000, we find more split-off households, spawned not only by individuals who were members of 1993 roster but also by individuals who were new members in 1997 (or 1998). Using similar procedure, we identify parent-child as well as parent-son, and parent-daughter linkages among the individuals in the different households within the extended households.

Since we define parent-child extended household as an extended household in which there are at least one parent-child relationship between individuals in different sub-households, it

[17] At this point, it is appropriate to note the problem that we can never observe a "complete" extended household in our sample. For example, we may observe the extended household consisting of a parent's household and a married son's household in our sample, but it is unlikely that the household of son's parent-in-law is also interviewed in the survey. Pooling of resources may occur within the larger extended household that include the parent-in-law's household. While we acknowledge this problem, we do not attempt to solve it in this paper.

is possible that in some cases, a sub-household have members identified as a parent and another member as a son/daughter. In some cases, an individual can be a parent and a child (for example, the individual may have a parent residing in another household and a son in yet another household in the extended households).

For the first-difference version of the test, we need households that appeared in both survey years. The number of households that were interviewed in 1997 and re-interviewed in 2000 is 7,107. By definition, the new 2000 split-off households did not exist in 1997. Since including the split-off household is essential to our test, we try to match each of the new split-off household to the household where the split-off member was in during the 1997 interview. We first match the split-off to the 1997 household of origin for the panel individual who was tracked. If we cannot make a match, we then try to match to the 1997 household of origin of the spouse of the tracked member. If we still cannot find a match we try to match the child of the tracked member, and so on. For the cases that we are able to match, we use the 1997 household variables as the 1997 household variables for the split-off households.

After restricting our sample to those households in multiple member extended households and also parent-child, parent-son, parent-daughter extended households, and restricting further by households that can be matched with 1997 households, we end up with samples that are shown on table 4.1. The samples used to test the static version of the model are shown in column (2) and (5) for 1997 and 2000, respectively.[18] For the dynamic test, we use sample shown in column (5), and match the households with 1997 households as described above.

4.2 Data

Monthly household consumption was calculated using all consumption expenditures including durable goods. The household composition variables used as explanatory variables are household size, proportion of children age 0-5, 6-14, adult 15-59 (male, female), 60 or above (male, female), age of the head of household. We also use a dummy variable whether a household is a male-headed household, and whether the household is a farm household. For the education of the household we use the maximum years of education of adults in the household. We also use dummy variables for province and urban residence. Community median wages for male and female were calculated from earnings and hours worked of those who earned labor income. We use community median prices of sugar and oil since these were the two prices of which data were available for the majority of the households both in 1997 and 2000. The prices were prices that household paid at for purchases in the past week.[19]

Monthly household income was calculated using labor earnings of individuals in the household, earnings from self-employment, net sales of farm and non-farm assets, rental income from household assets, gross sales of individual assets, and other non-labor income excluding transfers. We need to exclude transfer income since what we want to test is whether the extended household's resources matter to household consumption after controlling for household income, without explicitly accounting for transfers. All monetary values are in December 2000 prices. The descriptive statistics for each of the sample are shown in Table 4.2-4.5.

4.3 Instrumenting Income Variable

Income variables are notoriously hard to measure without error. For our empirical estimations, we worry that the income variables that we use for our estimations may be measured with errors in the sense of classical errors-in-variables. If they are, then our estimates of income coefficients may be biased towards zero. Failure to take into account possible measurement error will result in underestimating the coefficient on income, which we expect to be positive.

Our concern seems to be well-substantiated when we compare the value of monthly household expenditure with the value of monthly household income in our data set shown in Table 2.3. For the 2000 main households, the mean value of household income is roughly 70 percent of household expenditure, and for the split-off households the corresponding number is about 65 percent. The numbers seem to indicate there may be some underreporting of income.

To correct for this potential problem, we use some instrumental variables that are predictive of income but could be excluded from the consumption regressions. The first set of IVs that we used consists of the log of value of land, farm productive assets, and non-farm productive assets (all in real values). Farm productive assets include, plants, house or building

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[18] For the static test using 2000 households, we also use a larger sample, namely by not only restricting that extended households have multiple sub-households. The results are similar .We report the results with matched 1997 households so that comparison with our dynamic results can be made.

[19] Price of rice would have been better since rice plays a very important role in food consumption and therefore in determining levels of expenditure (See Strauss, et al 2002). Unfortunately, the questions on rice prices were only asked in 2000.

used for farm business, livestock/poultry/fish pond, vehicles, tractor, heavy farm equipment, and other assets used in the farm business. Non-farm productive assets include building, vehicles, and other equipment used in the non-farm business. By using these variables as identifying IVs, we claim that these assets are predictive of income but they are not correlated with the error term in the consumption regressions.

In addition, in some of the specifications we tried to use community infrastructure variables that we thought were predictive of household income but can be excluded from the consumption regressions. In order to obtain these variables, we use data from the Village Potential Statistics (the PODES) collected by the Central Bureau of Statistics. The PODES contains a rich set of information of village characteristics in Indonesia. We can link most of the villages in the IFLS with the villages in PODES. We tried to use several variables such percent of irrigated land, percent of household with electricity, and percent of household with telephone. These variables may indicate the availability of infrastructure at the village level that may be correlated with household income but not with consumption. We also tried to use population density, existence of manufacturing industry, existence of bank in the villages as measures of the level of development of market economy in the villages. However, none of the IVs that we obtain from the PODES contribute significantly to explaining variation in household income in the first stage regressions.

For the dynamic tests, we use lagged value of land owned as well as lagged value of productive assets. Using changes in productive assets to instrument changes in income may potentially induce some endogeneity into the model. Changes in income may affect investment in productive assets which in turns may be correlated with consumption changes .To avoid this problem we use 1997 farm and non-farm productive assets of the households in 1997. We are arguing that these lagged values of assets are not correlated with the error terms in the first-differenced consumption equation.

In addition to the 1997 lagged value of land owned, we include the change in log value of land. Our claim is that the potential problem of endogeneity resulting from using the change in land value is substantially less than if we were to use changes in value of other productive assets. The data shows that between 1997 and 2000 there were very few incidence of land sales, only 1.5 percent out of all land ownerships. The total value of those sales was only about 0.5 percent out of total values of land owned. The change in land value might be the result of investment in land such as improvement in irrigation system. However, during the three-year period there was no large irrigation project that was being carried out, at least none that we are aware of. The variation of real land values owned between the periods is likely driven by the change in prices that occur between 1997 and 2000.

In other specifications we add interaction of changes in the median wage of male and female with the 1997 maximum years of education. We argue that the changes in wages between the period may affect household differently depending on the level of education of the households. We also tried to add interactions of price changes with 1997 values of productive assets. The use of the latter set of IVs turns out not to be fruitful since they do not pass the overidentification tests.

5. Empirical Results

5.1 Static Specificationss

We begin by estimating the static model with and without extended household fixed effect for 1997 and 2000. We begin by estimating the static model with and without extended-household fixed-effects for all households in 1997 and 2000. For each sample, we estimate the consumption regressions with and without the extended households fixed effect. First, we estimate the models without instrumental variables. Next, we estimate the models using 2SLS.

Table 5.1 summarizes the result of our static tests. The table reports only the coefficient on log of household income from the various specifications. Regression results showing coefficients on the other covariates are reported in Table 5.2-5.7.

The first panel of Table 5.1 shows the result from estimating equation (5) using the sample of 1997 household. The second panel shows the result for the 2000 households. While the results are similar qualitatively, we want to focus our attention to 2000 households split-off households consists a much larger fraction of households in 2000 than in1997.[20]

The first thing to note is that estimations without using any instrumental variables result in very low coefficients on income although they are statistically significant. It ranges from

[20] The estimates of the coefficients on household income under 2SLS using the sample of parent-daughter extended households for 1997 stood out as much greater those of other samples; 1.509 (standard error 0.494) and 1.205 (0.646) without and with fixed effect, respectively. However, the identifying IVs fail the overidentification tests miserably; we reject the null hypothesis that the equation is properly specified and the instruments are valid instruments (*p*-values is 0.000 in each case). The same is also true for the sample of parent-son extended households in 1997, although the estimates are not as high as those for parent-daughter extended households.

0.015 (parent-daughter extended households, with fixed effect) to 0.026 (parent-son extended households, without fixed effect). It is clear however that the coefficients on income are small in magnitude; they translate into income elasticity of consumption of .015 to 0.026. This goes in line with our suspicion that our income variables suffer from measurement error.

Looking closely at the regression results in Table 5.2, we see that most of the explanatory variables appear to be statistically significant when we estimate the consumption equation without extended household fixed effect. If we look at column (1), we see that the coefficient on income for the sample of household in multi-member extended households is 0.022 and it is statistically significant at 1% level. Having fixed effect in the estimation does not seem to change this coefficient by any significant magnitude. Note however that some of the community-level variable became statistically insignificant after using the fixed effect. Large fraction of the households reside in the same community as the other households in their extended households, so the extended household fixed-effects sweep away some of the community level variables. Similar results are obtained using the other samples: parent-child extended households (column 3 and 4 in Table 5.2), as well as parent-son, parent-daughter extended households (Table 5.3).

We then move to our 2SLS estimation of the static models. The summary of the results is presented in Table 5.1. The second stage regressions for the 2000 households are reported in Table 5.4 (for sample of all extended households and parent-child extended households) and Table 5.6 (for sample of parent-son and parent-child extended households).[21] The corresponding first stage regressions are reported in Table 5.5 and 5.7, respectively.

The first thing to note is that the coefficients on household income in the 2SLS estimations are greater than in the OLS estimations by as much as ten-fold. Again, focusing on 2000 extended households we see that the coefficient on household income under 2SLS is 0.216 (with standard error 0.031). This represents a jump of almost ten times the OLS estimate of 0.022. [22] Controlling for fixed effect, the coefficient drops to 0.135 (with standard error 0.028) – lower than without controlling for fixed effect- but much higher than in the specification without instrumental variables (0.021). Our IVs pass the overidentification tests for this sample.

Since the model is derived from a model of parental altruism, we are interested in whether using the sample of only parent-child extended households would provide us with

[21] For 1997, only the estimates of the coefficients on household income are presented in Table 5.1. The regression results are not reported but are available upon request.

different results. It turns out that the results are very similar (column 3 and 4 in Table 5.2). For the parent-child extended households the coefficient on income under 2SLS but without fixed effect is 0.218 (standard error 0.035) and after fixed effect it drops to 0.128 (standard error 0.044). Coefficient on income before fixed effect is highest using the sample of parent-son extended households; it is 0.284 (standard error 0.062), but after fixed effect it became virtually the same as from the sample of parent-daughter extended households. Except for the 2SLS estimate with fixed effect for the sample of parent-daughter extended households, our IVs pass the overidentification tests.

The results thus far seem to suggest that the household's own income matters even after controlling for the extended-household fixed-effects. Our estimations without instrumental variables show that the coefficients on income are small in magnitude and almost the same with and without the fixed effect. 2SLS estimations provide us with more reasonable estimates of the coefficients on income. Under 2SLS, controlling for extended household fixed effect does decrease the coefficients on income significantly (around 40 to 60 percent decrease for 2000 households) but the coefficients on income after accounting for fixed effect are still statistically significant.

Dynamic Specification

We next move to our first-difference model. Table 5.8 presents the summary result of the dynamic test. First we first-difference the variables and estimate the model by OLS. The coefficient on changes in log (household real income) is positive and statistically significant, although the magnitude, 0.017 is very small. When we add extended household fixed effect, the income coefficient is slightly greater (0.020), and it is still statistically significant.
As our static version, we believe 2SLS would provide a better estimate about the effects of the changes in household income on changes in consumption. The second stage regression results for all extended households and for parent-child extended households are reported in Table 5.10 and 5.12, respectively. The first stage regression results for the corresponding samples are reported in Table 5.11 and 5.13, respectively.

The F-test of our identifying instrumental variables reported in Table 5.11 and 5.13 seem to suggest that our IVs contribute considerably well in predicting changes in income. Our first

[22] Altonji et al (1992) reports income elasticities of food consumption of around 0.240-0.286 for US households.

2SLS specification use lagged land value 1997 as well as changes in land value between the 1997 and 2000. Using the sample of all extended households, coefficient on income changes is 0.132 (standard error 0.049) before fixed effect. After accounting for extended household fixed effect, the coefficient drops to 0.059 (standard error 0.033). Similar results were obtained using the sample of parent-child extended households.

When we add lagged value of productive assets as an additional instruments, the results do not change much, although now the coefficient on income changes after accounting for fixed effect are slightly higher. However our IVs did not pass the overidentification test, especially after accounting for extended household fixed effect. Using changes in median wage of male and female with 1997 the household education variable to capture different effects of wage changes on household income depending on education level of the household, the coefficient on income before accounting for fixed effect are much lower than in previous specifications. But again, our IVs perform very poorly in overidentification tests.

The results of our dynamic show that changes in distribution of resources does affect changes in distribution of consumption among households in extended households, suggesting that households may not fully pool their resources to cope with economic shock they were facing. However, the coefficients on the change of own income after controlling for extended household fixed-effects become small.

6. Conclusion

In this paper we have shown that there is evidence against income pooling in extended household. Our static and dynamic results show that household own income and income changes still affect its consumption and consumption changes even after adding the extended household fixed-effects. In terms of the magnitudes of the income (and income changes) coefficients, we have mixed results. Our static tests return estimates that range from 0.127 to 0.135 after controlling for fixed effect. These magnitudes are economically significant and suggest that we strongly reject the income-pooling hypothesis. However, our dynamic tests show that controlling for extended household fixed effect, the magnitudes of the coefficient on income change, although statistically significant, seem to be small, economically. This suggests that although the households do not in fact act as fully unitary extended households, using a panel of extended households may still be justifiable when we want to analyze household consumption or income changes. It is certainly preferable to using only panel of “original” household.

It is important to note that pooling resources is by far not the only mechanism that is available to the households to cope with the economic crisis. Frankenberg, et al (2002), using data from IFLS2 (1997) and IFLS2+ (1998) – a shorter period of observation- shows how households in Indonesia use a type of asset that was least affected by the crisis, namely gold, as a way to cope with the crisis. Yet another mechanism that may have been used by the households is to change living arrangement (i.e., moving out of households in some cases, or joining households in other); a household decision that we take as exogenous in this paper.

Rejection against extended household income pooling does not mean that extended households do not behave as a single-household in other dimension of household behavior. We can think of other application where this approach can work. For example, a study by Foster (1992) looks at the effect of household partition on child’s schooling in Bangladesh.

The analysis has also raised a perhaps even more interesting question that is likely to be worth investigating in the future. Our results suggest that extended-household does not act as a unitary household. The next obvious question is that whether inter-household allocation decisions across sub-households in an extended household are consistent with the collective (extended-) household model.

Another question concerns the determinant of household break-ups and formation. In this paper we treat these processes as exogenous, although family formation and dissolution are themselves results of economic decisions. All of these questions seem to be worth investigating in the future.

References:

Altonji, Joseph G., Fumio Hayashi, and Laurence J. Kotlikoff (1997), “Parental Altruism and Inter Vivos Transfers: Theory and Evidence”, *Journal of Political Economy* 105:6, p.1121-66.

________________ (1992), “Is the Extended Family Altruistically Linked? Direct Tests Using Micro Data”, *American Economic Review*, 82:5, p.1177-98.

Bergstorm, Theodore C. (1996), “Economics in a Family Way”, *Journal of Economic Literature,* 34:4, p.1903-34.

Chiappori, Pierre-Andre (1988), "Nash-Bargained Household Decision". *International Economic Review*, 29:4, p. 791-96.

Cochrane, John (1991), "A Simple Test of Consumption Insurance", *Journal of Political Economy*, 99, p.857-76.

Foster, Andrew, and Mark R. Rosenzweig, (2001), "Imperfect Commitment, Altruism, and the Family: Evidence from Transfer Behavior in Low-Income Rural Areas", *The Review of Economics and Statistics*, 83:3 p.389-407.

________________ (2001), "Household Division and Rural Economic Growth" *mimeo*.

Foster, Andrew (1993), "Household Partition in Rural Bangladesh", *Population Studies,* 47, p.97-114

Frankenberg, Elizabeth and Lynn Karoly. 1995. The 1993 Indonesian Family Life Survey: Overview and field report, Publication No. DRU-1195/1-NICHD/AID, RAND, Santa Monica, CA.

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

Frankenberg, Elizabeth, Duncan Thomas, and Kathleen Beegle (1999) "The Real Costs of Indonesia's Economic Crisis: Preliminary Findings from the Indonesia Family Life Surveys" *RAND DRU 2064*. Santa Monica: RAND.

McGarry, Kathleen, Robert F. Schoeni, (1995), "Transfer Behavior in the Health and Retirement Study: Measurement and Redistribution of Resources within the Family", *The Journal of Human Resources,* 30, p. S184-S226.

Haddad, L., J. Hoddinott, and H. Alderman (1997) eds. *Intrahousehold Resource Allocation in Developing Countries: Models, Methods, and Policy*, Baltimore: John Hopkins University Press.

Hayashi, Fumio, Joseph Altonji, and Laurence Kotlikoff (1996), "Risk-Sharing between and within Families" *Econometrica,* 62:2, p.261-94.

Hill, Daniel, and Robert J. Willis (2001), "Reducing Panel Attrition" *The Journal of Human Resources,* 36:3 p.416-38.

Thomas, Duncan, James P. Smith, and Elizabeth Frankenberg (2001), "Lost but Not Forgotten", *Journal of Human Resources*, 36:3, p. 556-92.

Thomas, Duncan (1994), "Like Father, Like Son; Like Mother Like Daughter: Parental Resources and Child Height" *The Journal of Human Resources,* 29:4 p.951-88

______________ (1993), "The Distribution of Income and Expenditure within the Household", *Annales d'Economie et de Statistique* 29, p. 110-35.

______________ (1990), "Intra-household Resource Allocations: An Inferential Approach", Journal of Human Resources, 25:4, p. 635-64.

Strauss, John, Kathleen Beegle, Agus Dwiyanto, Yulia Herawati, Daan Pattinasarany, Elan Satriawan, Bondan Sikoki, Sukamdi, Firman Witoelar (2002), *Indonesian Living Standards Three Years after the Crisis: Evidence from the Indonesia Family Survey,* RAND, Santa Monica *mimeo*.

Strauss, John, Germano Mwabu and Kathleen Beegle (2000), "Intrahousehold Allocations: a Review of Theories and Empirical Evidence", *Journal of African Economies*, 9, p.83-143.

Townsend, Robert (1994), "Risk and Insurance in Village India", *Econometrica,* 62, p.539-92.

Weiss, Yoram (1997) "The Formation and Dissolution of Families: Why Marry? Who Marries Whom? And What Happens Upon Divorce", in M.Rosenzweig and O. Stark (eds). *Handbook of Population and Family Economics,* vol, Amsterdam: North-Holland.

Weiss, Yoram and Robert J. Willis (1985), "Children as Collective Goods and Divorce Settlements", *Journal of Labor Economics* 3:3, p. 268-92.

Table 2.1 Household recontact rates

Number of Households	IFLS1	All Members Died	IFLS2 Households Contacted	Recontact Rate (%)	IFLS3 Target Households	All Members Died	IFLS3 Households Contacted	Recontact Rates (%)
IFLS1 households	7,224	69	6,752	94.3	7,152	32	6,768	95.1
IFLS2 split-off households	-	-	877	-	877	2	817	93.4
IFLS2+ split-off households	-	-	-	-	338	0	311	92.0
IFLS3 target households	-	-	-	-	8,370	34	7,896	94.7
IFLS3 split-off households	-	-	-	-	-	-	2,645	-
Total households contacted	7,224	69	7,629			34	10,541	

Recontact rates are conditional on at least some household members living. Households that recombined into other households are included in the number of households contacted. IFLS3 target households are IFLS1 households, IFLS2 split-off households and IFLS2+ split-off households

Table 2.2 Number of households interviewed: target vs. split-off households

	1993	1997	2000
Households interviewed	7,224	7,619	10,435
Target households	7,224	6,742	7,790
Split-off households	-	877	2,645

Table 2.3 Relationship of the members of the 2000 target households to household head and membership in the 2000 target households

Relationship to household head	HH members re-interviewed	New HH members	Total
Head	7,460	330	7,790
Spouse	5,708	277	5,985
Child,S/D-in-law	13,075	2,675	15,750
Parent,F/M-in-law	812	174	986
Sibs.,B/S-in-law	378	140	518
Other relative	1,537	1,289	2,826
Non-relative	95	174	269
Total	29,065	5,059	34,124

Table 2.4 Target vs Split-off Households, IFLS3 (2000)

	2000 Target households		2000 Splitoff Households	
Number of households	7,505		2,517	
	Mean	Std. Dev	Mean	Std. Dev
HH real expenditure (Rp)	1,031,107	(1,168,745)	979,148	(1,101,291)
HH real income (Rp)	726,652	(1,169,290)	641,019	(1,120,006)
Per capita real expenditure (Rp)	261,172	(300,586)	329,163	(378,229)
Per capita real income (Rp)	179,210	(328,189)	202,137	(362,724)
Household size	4.39	(2.01)	3.62	(2.10)
Number of hh members:				
0-5 years	0.47	(0.68)	0.63	(0.72)
6-14 years	0.85	(0.99)	0.36	(0.73)
15-59 years, male	1.26	(0.96)	1.22	(0.94)
15-59 years, female	1.37	(0.89)	1.23	(0.90)
60+ years, male	0.19	(0.40)	0.07	(0.27)
60+ years, female	0.24	(0.45)	0.10	(0.31)
Male household head (=1)	0.82	(0.39)	0.85	(0.36)
Age of hh head	49.41	(14.10)	34.72	(13.94)
Maximum years of education	9.04	(4.24)	10.19	(3.93)
Farm households (=1)	0.41	(0.49)	0.24	(0.43)
Urban	0.46	(0.50)	0.54	(0.50)

* After dropping observations with missing values

Table 2.5 Number of Households and Extended Households

	1993	1997	2000
Extended households	-	6,742	6,774
Households	7,224	7,619	10,435
Extended households with multiple sub-households	-	791	2,610
Households	-	1,668	6,271
Parent-child extended households	-	653	2,176
Households	-	1,343	5,075
Parent-son extended households	-	287	1,256
Households	-	578	2,730
Parent-daughter extended households	-	388	1,361
Households	-	787	2,952

Table 2.6 Current marital status of the heads of the households, IFLS3 (2000)

	2000 "Target" Households			Split-off households		
	Male	Female	Total	Male	Female	Total
% has never married	1.5	6.5	2.4	11.3	49.4	17.4
% married	95.0	15.7	80.7	87.6	18.2	76.5
% separated	0.2	3.3	0.7	0.0	3.5	0.6
% divorced	0.5	10.0	2.2	0.3	7.3	1.4
% widow/er	2.8	64.5	13.9	0.8	21.5	4.1
Total	100.0	100.0	100.0	100.0	100.0	100.0
Number of observations	6384	1406	7790	2222	423	2645

Table 4.1 Sample Construction

	1997		2000		
	(1)	(2)	(3)	(4)	(5)
Extended households	6,742	6,382	6,774	6,698	6,175
Households	7,619	7,152	10,435	10,022	8,351
Extended households with multiple sub-households	791	703	2,610	2,450	1,723
Households	1,668	1,473	6,271	5,774	3,899
Parent-child extended households	653	562	2,176	2,070	1,510
Households	1,343	1,172	5,075	4,785	3,377
Parent-son extended households	287	240	1,256	1,172	834
Households	578	495	2,730	2,546	1,785
Parent-daughter extended households	388	339	1,361	1,275	907
Households	787	696	2,952	2,771	1,933

1) All 1997 households
2) After dropping households with missing observations
3) All 2000 households
4) After dropping households with missing observations
5) After dropping households that cannot be matched with 1997 households

Table 4.2 Descriptive Statistics: Households in extended households with multiple sub-households, IFLS3 (2000)

Number of extended households	1,723	
Number of households	3,889	
	Mean	Std. Dev
HH real expenditure (Rp)	983,498	(1,000,331)
HH real income (Rp)	672,242	(1,085,537)
Per capita real expenditure (Rp)	294,662	(331,967)
Per capita real income (Rp)	189,583	(330,464)
Household size	3.93	(2.07)
Number of hh members:		
0-5 years	0.49	(0.68)
6-14 years	0.56	(0.87)
15-59 years, male	1.24	(0.97)
15-59 years, female	1.30	(0.89)
60+ years, male	0.15	(0.36)
60+ years, female	0.18	(0.40)
Male household head (=1)	0.82	(0.39)
Age of hh head	43.54	(16.23)
Maximum years of education	9.56	(4.06)
Farm households (=1)	0.32	(0.47)
Urban (=1)	0.50	(0.50)
Median wage, male (Rp)	1,888	(2,221)
Median wage, female (Rp)	1,098	(2,608)
Median prices of sugar (Rp)	3,692	(451)
Median prices of oil (Rp)	3,510	(241)
Real land value (Rp)	8,412,357	(39,100,000)
Real value of farm prod.assets (Rp)	1,302,529	(8,585,182)
Real value of non-farm prod.assets (Rp)	4,148,803	(32,500,000)

Table 4.3 Descriptive Statistics: Parent-Child Extended Households , IFLS3 (2000)

Number of extended households		1,510				
Number of households		3,377				
	Parent households (n=1,451)		Child households (n=1672)		Parent, child households (n=254)	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
HH real expenditure (Rp)	982,448	(947,128)	983,004	(1,037,599)	883,395	(786,430)
HH real income (Rp)	727,319	(999,774)	618,111	(1,108,942)	629,633	(1,351,942)
Per capita real expenditure (Rp)	265,465	(287,640)	328,564	(378,505)	241,681	(244,088)
Per capita real income (Rp)	193,671	(288,280)	189,975	(364,352)	167,239	(387,782)
Household size	4.22	(2.06)	3.64	(2.04)	4.13	(2.02)
Number of hh members:						
0-5 years	0.34	(0.64)	0.60	(0.69)	0.54	(0.68)
6-14 years	0.66	(0.95)	0.44	(0.79)	0.84	(0.95)
15-59 years, male	1.28	(0.97)	1.23	(0.94)	1.07	(1.16)
15-59 years, female	1.40	(0.89)	1.24	(0.89)	1.30	(0.79)
60+ years, male	0.27	(0.44)	0.06	(0.24)	0.13	(0.34)
60+ years, female	0.28	(0.46)	0.07	(0.27)	0.24	(0.43)
Male household head (=1)	0.82	(0.39)	0.86	(0.35)	0.59	(0.49)
Age of hh head	54.41	(11.80)	33.29	(13.23)	46.87	(14.13)
Maximum years of education	8.95	(4.28)	10.30	(3.69)	8.62	(3.92)
Farm households (=1)	0.42	(0.49)	0.24	(0.42)	0.36	(0.48)
Urban (=1)	0.47	(0.50)	0.54	(0.50)	0.46	(0.50)
Median wage, male (Rp)	1,602	(1,090)	2,178	(2,966)	1,687	(1,934)
Median wage, female (Rp)	855	(1,383)	1,266	(2,401)	1,320	(6,835)
Median prices of sugar (Rp)	3,680	(466)	3,705	(450)	3,721	(402)
Median prices of oil (Rp)	3,499	(243)	3,521	(240)	3,502	(238)
Real land value (Rp)	13,100,000	(48,100,000)	4,843,583	(28,900,000)	7,188,051	(40,700,000)
Real value of farm prod.assets (Rp)	1,973,674	(11,900,000)	769,319	(3,917,893)	1,504,460	(9,487,436)
Real value of non-farm prod.assets (Rp)	3,805,023	(22,100,000)	4,272,634	(40,300,000)	3,150,708	(20,400,000)

Table 4.4 Descriptive Statistics: Parent-Son Extended Households , IFLS3 (2000)

Number of extended households	834					
Number of households	1,785					
	Parent households(n=780)		Son households (n=812)		Parent, son households (n=193)	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
HH real expenditure (Rp)	972,868	(977,596)	1,002,756	(1,032,616)	913,630	(832,089)
HH real income (Rp)	705,566	(956,660)	629,218	(1,127,130)	610,921	(1,071,315)
Per capita real expenditure (Rp)	273,136	(315,336)	343,296	(417,527)	248,387	(266,024)
Per capita real income (Rp)	196,626	(288,538)	191,807	(379,658)	155,656	(232,138)
Household size	4.11	(2.10)	3.75	(2.22)	4.23	(2.15)
Number of hh members:						
0-5 years	0.36	(0.64)	0.58	(0.70)	0.52	(0.69)
6-14 years	0.61	(0.91)	0.45	(0.79)	0.87	(0.98)
15-59 years, male	1.22	(0.94)	1.51	(1.04)	1.15	(1.25)
15-59 years, female	1.34	(0.91)	1.08	(0.90)	1.28	(0.82)
60+ years, male	0.28	(0.45)	0.05	(0.23)	0.15	(0.35)
60+ years, female	0.30	(0.48)	0.07	(0.26)	0.26	(0.44)
Male household head (=1)	0.80	(0.40)	0.94	(0.23)	0.59	(0.49)
Age of hh head	55.05	(12.01)	33.12	(13.04)	48.08	(14.39)
Maximum years of education	8.93	(4.30)	10.29	(3.60)	8.84	(3.81)
Urban (=1)	0.48	(0.50)	0.54	(0.50)	0.48	(0.50)
Farm households (=1)	0.39	(0.49)	0.23	(0.42)	0.35	(0.48)
Median wage, male (Rp)	1,646	(1,078)	2,062	(2,356)	1,736	(2,158)
Median wage, female (Rp)	936	(1,718)	1,226	(1,938)	1,508	(7,829)
Median prices of sugar (Rp)	3,670	(413)	3,709	(426)	3,721	(349)
Median prices of oil (Rp)	3,500	(248)	3,526	(242)	3,504	(247)
Real land value (Rp)	12,600,000	(48,100,000)	3,907,617	(25,600,000)	8,774,091	(46,500,000)
Real value of farm prod.assets (Rp)	2,370,475	(14,900,000)	811,911	(3,956,163)	1,861,475	(10,900,000)
Real value of non-farm prod.assets (Rp)	4,624,339	(27,000,000)	3,554,007	(26,200,000)	2,984,996	(17,800,000)

Table 4.5 Descriptive Statistics: Parent-Daughter Extended Households , IFLS3 (2000)

Number of extended households	907					
Number of households	1,933					
	Parent households(n=853)		Daughter households (n=893)		Parent, daughter households (n=187)	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
HH real expenditure (Rp)	961,427	(867,344)	963,012	(1,023,398)	866,467	(784,119)
HH real income (Rp)	734,249	(1,013,886)	610,254	(1,072,265)	690,815	(1,521,839)
Per capita real expenditure (Rp)	256,007	(243,260)	310,293	(337,011)	232,377	(203,964)
Per capita real income (Rp)	193,626	(282,026)	187,037	(344,820)	180,360	(437,116)
Household size	4.27	(2.12)	3.60	(1.88)	4.13	(2.03)
Number of hh members:						
0-5 years	0.33	(0.64)	0.62	(0.68)	0.55	(0.70)
6-14 years	0.69	(0.99)	0.46	(0.80)	0.86	(0.96)
15-59 years, male	1.31	(0.99)	0.98	(0.77)	1.06	(1.20)
15-59 years, female	1.42	(0.89)	1.40	(0.87)	1.30	(0.74)
60+ years, male	0.26	(0.44)	0.06	(0.25)	0.14	(0.35)
60+ years, female	0.26	(0.45)	0.08	(0.28)	0.22	(0.41)
Male household head (=1)	0.83	(0.37)	0.78	(0.41)	0.60	(0.49)
Age of hh head	53.98	(11.49)	33.74	(13.58)	46.27	(13.37)
Maximum years of education	8.92	(4.23)	10.30	(3.76)	8.56	(4.08)
Farm households (=1)	0.45	(0.50)	0.24	(0.43)	0.35	(0.48)
Urban (=1)	0.47	(0.50)	0.54	(0.50)	0.45	(0.50)
Median wage, male (Rp)	1,584	(1,157)	2,268	(3,391)	1,730	(2,111)
Median wage, female (Rp)	883	(1,678)	1,280	(2,720)	1,462	(7,947)
Median prices of sugar (Rp)	3,690	(503)	3,706	(473)	3,732	(438)
Median prices of oil (Rp)	3,511	(243)	3,521	(242)	3,508	(241)
Real land value (Rp)	13,400,000	(47,200,000)	5,630,861	(31,200,000)	4,781,312	(14,000,000)
Real value of farm prod.assets (Rp)	1,955,526	(11,600,000)	722,292	(3,819,855)	1,157,178	(5,144,637)
Real value of non-farm prod.assets (Rp)	2,631,286	(13,300,000)	4,813,277	(49,200,000)	3,633,156	(23,600,000)

Table 5.1 Regression estimates of the effect of household own income on household consumption

	OLS		2SLS			
	No Fixed Effects	Extended-Household Fixed Effects	No Fixed Effects	Extended-Household Fixed Effects	# Extended Households	# Households
1997 households						
Households in extended households with multiple sub-households	0.026	0.024	0.230	0.187	703	1,473
	(0.006)***	(0.006)***	(0.050)***	(0.048)***		
Parent-child extended households	0.023	0.026	0.214	0.151	562	1,172
	(0.006)***	(0.007)***	(0.057)***	(0.043)***		
Parent-son extended households	0.032	0.031	0.306	0.283	240	495
	(0.009)***	(0.011)***	(0.539)	(0.729)		
Parent-daughter extended households	0.022	0.025	1.509	1.205	339	696
	(0.009)**	(0.010)**	(0.494)***	(0.646)*		
2000 households that can be matched with 1997 households						
Households in extended households with multiple sub-households	0.022	0.021	0.216	0.135	1,723	3,899
	(0.004)***	(0.004)***	(0.031)***	(0.028)***		
Parent-child extended households	0.020	0.019	0.218	0.128	1,510	3,377
	(0.004)***	(0.004)***	(0.035)***	(0.031)***		
Parent-son extended households	0.026	0.025	0.284	0.126	834	1,785
	(0.006)***	(0.006)***	(0.062)***	(0.044)***		
Parent-daughter extended households	0.016	0.015	0.173	0.127	907	1,933
	(0.005)***	(0.006)**	(0.040)***	(0.042)***		

Robust standard errors in parentheses.
Regression results showing the coefficients on other covariates for the sample of 2000 households are reported in Table 5.2-5.7.

Table 5.2 Static tests: 2000 Extended Households and Parent-Child Extended Households

Dependent variable: log (household real expenditure)	Households in extended households with multiple sub-households		Parent-child extended households	
	No Fixed Effects	Fixed Effects	No Fixed Effects	Fixed Effects
log(household real income)	0.022	0.021	0.020	0.019
	(0.004)***	(0.004)***	(0.004)***	(0.004)***
log(household size)	0.408	0.521	0.410	0.556
	(0.035)***	(0.042)***	(0.037)***	(0.045)***
Proportion if hh members:				
6-14 years	0.564	0.303	0.594	0.307
	(0.077)***	(0.098)***	(0.082)***	(0.105)***
15-59 years, male	0.424	0.299	0.483	0.377
	(0.078)***	(0.094)***	(0.085)***	(0.101)***
15-59 years, female	0.498	0.320	0.513	0.355
	(0.080)***	(0.102)***	(0.086)***	(0.110)***
60+ years, male	0.548	0.276	0.536	0.257
	(0.110)***	(0.133)**	(0.122)***	(0.148)*
60+ years, female	0.258	0.102	0.245	0.205
	(0.140)*	(0.158)	(0.155)	(0.172)
Male household head (=1)	0.147	0.138	0.146	0.123
	(0.032)***	(0.042)***	(0.034)***	(0.045)***
Age of hh head	0.019	0.014	0.021	0.017
	(0.004)***	(0.004)***	(0.004)***	(0.005)***
Age of hh head (squared)	-0.000	-0.000	-0.000	-0.000
	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Maximum years of education	0.068	0.042	0.068	0.040
	(0.003)***	(0.005)***	(0.003)***	(0.005)***
Farm households (=1)	-0.036	-0.040	-0.036	-0.048
	(0.024)	(0.033)	(0.026)	(0.035)
log (median wage), male	0.092	0.043	0.089	0.040
	(0.018)***	(0.022)*	(0.019)***	(0.024)*
log (median wage), female	0.032	0.025	0.032	0.011
	(0.012)***	(0.017)	(0.013)**	(0.018)
log (median prices of sugar)	-0.414	0.313	-0.336	0.310
	(0.170)**	(0.321)	(0.178)*	(0.342)
log (median prices of oil)	0.268	0.017	0.281	-0.137
	(0.109)**	(0.196)	(0.117)**	(0.207)
Constant	11.623	8.505	10.871	9.840
	(1.605)***	(3.034)***	(1.700)***	(3.248)***
Observations	3899	3899	3377	3377
R-squared	0.42	0.33	0.42	0.33
Number of extended-households		1723		1510

Standar errors (in parentheses) are robust to serial correlation and heteroskedasticity. *** indicates statistical significance at 1%, ** at 5%, and * at 10 %. Omitted variables are proportion of hh members age 0-4, female hh head, and non-fam household. Variables included in the estimations but not reported on the table are province and urban dummy variables and province-urban dummy interactions.

Table 5.3 Static tests: 2000 Parent-Son and Parent-Daughter Extended Households

Dependent variable: log (household real expenditure)	Parent-son extended households		Parent-daughter extended households	
	No Fixed Effects	Fixed Effects	No Fixed Effects	Fixed Effects
log(household real income)	0.026	0.025	0.016	0.015
	(0.006)***	(0.006)***	(0.005)***	(0.006)**
log(household size)	0.389	0.541	0.420	0.577
	(0.051)***	(0.059)***	(0.047)***	(0.062)***
Proportion if hh members:				
6-14 years	0.515	0.210	0.674	0.425
	(0.112)***	(0.149)	(0.110)***	(0.141)***
15-59 years, male	0.439	0.352	0.453	0.440
	(0.115)***	(0.138)**	(0.122)***	(0.152)***
15-59 years, female	0.407	0.172	0.616	0.517
	(0.131)***	(0.163)	(0.107)***	(0.147)***
60+ years, male	0.351	0.001	0.697	0.493
	(0.165)**	(0.195)	(0.163)***	(0.205)**
60+ years, female	-0.004	-0.012	0.260	0.398
	(0.185)	(0.224)	(0.216)	(0.236)*
Male household head (=1)	0.089	0.021	0.231	0.188
	(0.044)**	(0.058)	(0.047)***	(0.063)***
Age of hh head	0.019	0.012	0.021	0.019
	(0.005)***	(0.006)**	(0.006)***	(0.007)***
Age of hh head (squared)	-0.000	-0.000	-0.000	-0.000
	(0.000)***	(0.000)*	(0.000)***	(0.000)***
Maximum years of education	0.067	0.036	0.068	0.039
	(0.004)***	(0.007)***	(0.004)***	(0.007)***
Farm households (=1)	-0.016	0.021	-0.065	-0.099
	(0.037)	(0.051)	(0.034)*	(0.046)**
log (median wage), male	0.066	-0.034	0.116	0.111
	(0.025)***	(0.034)	(0.027)***	(0.033)***
log (median wage), female	0.040	0.049	0.021	-0.016
	(0.016)**	(0.023)**	(0.017)	(0.024)
log (median prices of sugar)	-0.597	-0.230	-0.165	0.632
	(0.245)**	(0.432)	(0.226)	(0.505)
log (median prices of oil)	0.246	-0.622	0.325	-0.044
	(0.172)	(0.311)**	(0.148)**	(0.263)
Constant	13.515	18.798	8.873	5.854
	(2.363)***	(4.378)***	(2.167)***	(4.559)
Observations	1785	1785	1933	1933
R-squared	0.42	0.36	0.43	0.34
Number of extended-households		834		907

Standar errors (in parentheses) are robust to serial correlation and heteroskedasticity. *** indicates statistical significance at 1%, ** at 5%, and * at 10 %. Omitted variables are proportion of hh members age 0-4, female hh head, and non-fam household. Variables included in the estimations but not reported on the table are province and urban dummy variables and province-urban dummy interactions.

Table 5.4 Static tests with 2SLS: 2000 Extended Households and Parent-Child Extended Households

Dependent variable: log (household real expenditure)	Households in extended households with multiple sub-households		Parent-child extended households	
	2SLS: No Fixed Effects	2SLS: Fixed Effects	2SLS: No Fixed Effects	2SLS: Fixed Effects
log(household real income)	0.216	0.135	0.218	0.128
	(0.031)***	(0.028)***	(0.035)***	(0.031)***
log(household size)	0.086	0.361	0.109	0.429
	(0.069)	(0.063)***	(0.073)	(0.063)***
Proportion if hh members:				
6-14 years	1.099	0.585	1.200	0.604
	(0.141)***	(0.135)***	(0.162)***	(0.149)***
15-59 years, male	0.528	0.381	0.638	0.471
	(0.109)***	(0.113)***	(0.121)***	(0.121)***
15-59 years, female	0.569	0.353	0.643	0.427
	(0.115)***	(0.120)***	(0.127)***	(0.130)***
60+ years, male	0.775	0.336	0.695	0.257
	(0.156)***	(0.157)**	(0.173)***	(0.172)
60+ years, female	0.471	0.237	0.489	0.334
	(0.186)**	(0.189)	(0.207)**	(0.204)
Male household head (=1)	-0.202	-0.086	-0.211	-0.091
	(0.072)***	(0.074)	(0.080)***	(0.080)
Age of hh head	-0.038	-0.020	-0.042	-0.020
	(0.010)***	(0.010)**	(0.012)***	(0.012)*
Age of hh head (squared)	0.000	0.000	0.000	0.000
	(0.000)***	(0.000)**	(0.000)***	(0.000)
Maximum years of education	0.052	0.029	0.053	0.027
	(0.005)***	(0.006)***	(0.005)***	(0.007)***
Farm households (=1)	-0.092	-0.105	-0.074	-0.100
	(0.035)***	(0.042)**	(0.037)**	(0.044)**
log (median wage), male	0.053	0.017	0.055	0.026
	(0.023)**	(0.027)	(0.025)**	(0.028)
log (median wage), female	0.014	0.008	0.005	-0.009
	(0.016)	(0.020)	(0.018)	(0.022)
log (median prices of sugar)	-0.383	0.289	-0.298	0.289
	(0.232)*	(0.379)	(0.251)	(0.399)
log (median prices of oil)	0.149	0.176	0.236	0.096
	(0.160)	(0.234)	(0.173)	(0.250)
Constant	12.411	7.488	11.021	8.111
	(2.220)***	(3.585)**	(2.417)***	(3.821)**
Test of overidentification (p-values)	0.89	0.21	0.93	0.22
Observations	3899	3899	3377	3377
Number of extended-households		1723		1510

Standar errors (in parentheses) are robust to serial correlation and heteroskedasticity. *** indicates statistical significance at 1%, ** at 5%, and * at 10 %. Omitted variables are proportion of hh members age 0-4, female hh head, and non-fam household. Variables included in the estimations but not reported on the table are province and urban dummy variables and province-urban dummy interactions. For the 2SLS estimations, instrumental variables not included in the first stage regressions are: log of real value of land owned, farm productive assets, and non-farm productive assets.

Table 5.5 Static tests with 2SLS: First Stage Regression, 2000 Households

Dependent variable: log (household real income)	Households in extended households with multiple sub-household		Parent-child extended households	
	No Fixed Effects	Fixed Effects	No Fixed Effects	Fixed Effects
log(household size)	1.487	1.196	1.418	1.011
	(0.146)***	(0.177)***	(0.207)***	(0.242)***
Proportion of hh members:				
6-14 years	-2.717	-2.324	-3.116	-2.863
	(0.332)***	(0.403)***	(0.440)***	(0.568)***
15-59 years, male	-0.388	-0.441	-0.767	-0.982
	(0.338)	(0.386)	(0.455)*	(0.548)*
15-59 years, female	-0.227	0.057	-0.738	-0.878
	(0.368)	(0.418)	(0.493)	(0.596)
60+ years, male	-1.107	-0.458	-0.859	-0.165
	(0.516)**	(0.566)	(0.689)	(0.799)
60+ years, female	-0.854	-1.347	-1.181	-1.368
	(0.627)	(0.685)**	(0.802)	(0.933)
Male household head (=1)	1.771	1.906	1.672	1.821
	(0.155)***	(0.176)***	(0.196)***	(0.240)***
Age of hh head	0.255	0.262	0.296	0.305
	(0.022)***	(0.018)***	(0.028)***	(0.024)***
Age of hh head (squared)	-0.002	-0.003	-0.003	-0.003
	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Maximum years of education	0.056	0.081	0.065	0.106
	(0.013)***	(0.019)***	(0.017)***	(0.027)***
Farm households (=1)	-0.160	-0.324	-0.213	-0.438
	(0.151)	(0.254)	(0.187)	(0.344)
log (median wage), male	0.300	0.288	0.185	0.140
	(0.072)***	(0.091)***	(0.102)*	(0.130)
log (median wage), female	0.131	0.132	0.157	0.203
	(0.048)***	(0.070)*	(0.063)**	(0.097)**
log (median prices of sugar)	-0.415	-1.002	-0.092	0.490
	(0.724)	(1.327)	(0.975)	(1.855)
log (median prices of oil)	0.460	0.121	0.271	-1.857
	(0.466)	(0.811)	(0.640)	(1.121)*
log (real land value)	0.011	0.039	0.009	0.048
	(0.005)**	(0.011)***	(0.007)	(0.016)***
log (real value of farm prod.assets)	0.037	0.047	0.036	0.047
	(0.012)***	(0.021)**	(0.015)**	(0.028)*
log (real value of non-farm prod.assets)	0.065	0.070	0.062	0.060
	(0.005)***	(0.008)***	(0.006)***	(0.011)***
Constant	-0.685	7.120	-1.605	11.754
	(6.775)	(12.412)	(9.255)	(17.601)
F-test of exclusionary restrictions	42.28	19.43	32.41	15.82
(p-values)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	3899	3899	3377	3377
R-squared	0.30	0.33	0.29	0.34
Number of extended-households		1723		1510

Standar errors (in parentheses) are robust to serial correlation and heteroskedasticity. *** indicates statistical significance at 1%, ** at 5%, and * at 10 %. Omitted variables are proportion of hh members age 0-4, female hh head, and non-fam household. Instrumental variables not included in the first stage regressions are: log of real value of land owned, farm productive assets, and non-farm productive assets. Variables included in the estimations but not reported on the table are province and urban dummy variables and province-urban dummy interactions.

Table 5.6 Static tests with 2SLS: 2000 Parent-Son and Parent-Daughter Extended Households

Dependent variable: log (household real expenditure)	Parent-son extended households		Parent-daughter extended households	
	No Fixed Effects	Fixed Effects	No Fixed Effects	Fixed Effects
log(household real income)	0.284	0.126	0.173	0.127
	(0.062)***	(0.044)***	(0.040)***	(0.042)***
log(household size)	-0.052	0.401	0.248	0.493
	(0.130)	(0.090)***	(0.074)***	(0.079)***
Proportion if hh members:				
6-14 years	1.283	0.484	0.975	0.659
	(0.272)***	(0.208)**	(0.159)***	(0.185)***
15-59 years, male	0.635	0.433	0.237	0.383
	(0.192)***	(0.163)***	(0.162)	(0.179)**
15-59 years, female	0.245	0.172	0.800	0.673
	(0.225)	(0.188)	(0.147)***	(0.181)***
60+ years, male	0.555	0.025	0.688	0.407
	(0.276)**	(0.226)	(0.199)***	(0.241)*
60+ years, female	-0.077	-0.004	0.373	0.532
	(0.317)	(0.259)	(0.236)	(0.280)*
Male household head (=1)	-0.299	-0.158	-0.043	-0.037
	(0.121)**	(0.102)	(0.090)	(0.111)
Age of hh head	-0.050	-0.019	-0.023	-0.015
	(0.018)***	(0.015)	(0.013)*	(0.015)
Age of hh head (squared)	0.000	0.000	0.000	0.000
	(0.000)***	(0.000)	(0.000)*	(0.000)
Maximum years of education	0.046	0.025	0.054	0.024
	(0.009)***	(0.009)***	(0.006)***	(0.009)***
Farm households (=1)	-0.087	-0.045	-0.083	-0.118
	(0.062)	(0.065)	(0.042)**	(0.054)**
log (median wage), male	0.057	-0.023	0.075	0.081
	(0.040)	(0.039)	(0.030)**	(0.040)**
log (median wage), female	0.039	0.049	-0.015	-0.053
	(0.028)	(0.027)*	(0.022)	(0.031)*
log (median prices of sugar)	-0.439	-0.320	-0.247	0.507
	(0.399)	(0.500)	(0.292)	(0.592)
log (median prices of oil)	0.104	-0.443	0.277	0.144
	(0.298)	(0.366)	(0.192)	(0.315)
Constant	12.840	17.724	10.102	5.518
	(3.935)***	(5.068)***	(2.782)***	(5.327)
Test of overidentification				
(p-values)	0.90	0.47	0.56	0.01
Observations	1785	1785	1933	1933
Number of extended-households		834		907

Standar errors (in parentheses) are robust to serial correlation and heteroskedasticity. *** indicates statistical significance at 1%, ** at 5%, and * at 10 %. Omitted variables are proportion of hh members age 0-4, female hh head, and non-fam household. Variables included in the estimations but not reported on the table are province and urban dummy variables and province-urban dummy interactions. For the 2SLS estimations, instrumental variables not included in the first stage regressions are: log of real value of land owned, farm productive assets, and non-farm productive assets.

Table 5.7 Static tests with 2SLS: First Stage Regressions, 2000 Parent-Son and Parent-Daughter Extended Households

Dependent variable: log (household real income)	Parent-son extended households		Parent-daughter extended households	
	No Fixed Effects	Fixed Effects	No Fixed Effects	Fixed Effects
log(household size)	1.612	1.200	0.971	0.642
	(0.264)***	(0.329)***	(0.272)***	(0.327)*
Proportion of hh members:				
6-14 years	-3.114	-2.840	-1.924	-2.243
	(0.630)***	(0.831)***	(0.578)***	(0.741)***
15-59 years, male	-0.763	-0.890	1.307	0.340
	(0.556)	(0.774)	(0.613)**	(0.804)
15-59 years, female	0.521	-0.175	-1.230	-1.602
	(0.651)	(0.914)	(0.632)*	(0.776)**
60+ years, male	-0.870	-0.374	0.053	0.720
	(0.878)	(1.094)	(0.882)	(1.084)
60+ years, female	0.302	-0.157	-0.791	-1.512
	(0.867)	(1.257)	(1.087)	(1.250)
Male household head (=1)	1.374	1.619	1.628	1.889
	(0.256)***	(0.324)***	(0.248)***	(0.329)***
Age of hh head	0.248	0.287	0.267	0.277
	(0.037)***	(0.034)***	(0.034)***	(0.034)***
Age of hh head (squared)	-0.002	-0.003	-0.003	-0.003
	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Maximum years of education	0.070	0.095	0.071	0.112
	(0.022)***	(0.038)**	(0.021)***	(0.036)***
Farm households (=1)	-0.043	0.075	-0.301	-0.824
	(0.227)	(0.475)	(0.270)	(0.458)*
log (median wage), male	0.061	-0.054	0.258	0.249
	(0.143)	(0.189)	(0.135)*	(0.174)
log (median wage), female	0.020	0.006	0.256	0.371
	(0.087)	(0.130)	(0.078)***	(0.129)***
log (median prices of sugar)	-0.239	1.649	0.380	1.043
	(1.386)	(2.425)	(1.228)	(2.673)
log (median prices of oil)	0.436	-1.790	0.489	-1.195
	(0.928)	(1.739)	(0.793)	(1.398)
log (real land value)	0.014	0.039	0.012	0.062
	(0.010)	(0.023)*	(0.009)	(0.019)***
log (real value of farm prod.assets)	0.025	0.026	0.036	0.044
	(0.017)	(0.039)	(0.021)*	(0.037)
log (real value of non-farm prod.assets)	0.057	0.066	0.062	0.051
	(0.009)***	(0.016)***	(0.008)***	(0.015)***
Constant	0.751	5.050	-7.753	0.218
	(12.841)	(24.532)	(11.549)	(24.114)
F-test of exclusionary restrictions	14.26	7.45	21.3	9.23
(p-values)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	1785	1785	1933	1933
R-squared	0.27	0.35	0.33	0.37
Number of extended-households		834		907

Standar errors (in parentheses) are robust to serial correlation and heteroskedasticity. *** indicates statistical significance at 1%, ** at 5%, and * at 10 %. Omitted variables are proportion of hh members age 0-4, female hh head, and non-fam household. Instrumental variables not included in the first stage regressions are: log of real value of land owned, farm productive assets, and non-farm productive assets. Variables included in the estimations but not reported on the table are province and urban dummy variables and province-urban dummy interactions.

Table 5.8 Regression estimates of the effect of the change in household own income on the change in household consumption

	First Differenced Estimation		First Differenced Estimation, 2SLS							
			1		2		3			
	No Fixed Effects	Extended-Household Fixed Effects	No Fixed Effects	Extended-Household Fixed Effects	No Fixed Effects	Extended-Household Fixed Effects	No Fixed Effects	Extended-Household Fixed Effects	# Extended Households	# Households
Households in extended households with multiple sub-households	0.017	0.020	0.132	0.059	0.136	0.072	0.084	0.049	1,723	3,899
	(0.003)***	(0.004)***	(0.049)***	(0.033)*	(0.047)***	(0.031)**	(0.032)***	(0.028)*		
Parent-child extended households	0.019	0.019	0.133	0.067	0.157	0.090	0.085	0.073	1,510	3,377
	(0.004)***	(0.004)***	(0.053)**	(0.031)**	(0.053)***	(0.031)***	(0.033)***	(0.028)***		

Robust standard errors in parentheses. Regression results showing coefficients on other covariates are reported in Table 5.8-5.13.
(1) Instrumental variables not included in the second regressions are: log of land value 1997 and changes in land value.
(2) Instrumental variables not included in the second regressions are: log of land value 1997, log of productive assets 1997, changes in real land value.
(5) and (6) Instrumental variables not included in the second regressions are: log of land value 1997, log of productive assets 1997, changes in real land value, interactions of changes in median real wages (male, female) with maximum years of education 1997.

Table 5.9 Dynamic tests: First difference estimation without IVs

Dependent variable: Δ log (household expenditure)	Households in extended households with mutliple sub-households		Parent-child extended households	
	No Fixed Effects	Fixed Effects	No Fixed Effects	Fixed Effects
	1	2	3	4
Δ log(household income)	0.017	0.020	0.019	0.019
	(0.003)***	(0.004)***	(0.004)***	(0.004)***
Δ log(household size)	0.030	0.035	0.030	0.034
	(0.005)***	(0.005)***	(0.005)***	(0.005)***
Δ proportion of hh members:				
6-14 years	0.542	0.507	0.552	0.529
	(0.036)***	(0.045)***	(0.039)***	(0.049)***
15-59 years, male	0.345	0.316	0.330	0.352
	(0.086)***	(0.104)***	(0.091)***	(0.112)***
15-59 years, female	0.440	0.348	0.480	0.405
	(0.088)***	(0.105)***	(0.093)***	(0.112)***
60+ years, male	0.404	0.321	0.442	0.377
	(0.093)***	(0.111)***	(0.099)***	(0.120)***
60+ years, female	-0.079	-0.127	-0.226	-0.129
	(0.152)	(0.163)	(0.167)	(0.178)
Δ Male household head (=1)	0.216	0.094	0.379	0.129
	(0.130)*	(0.145)	(0.143)***	(0.160)
Δ Age of hh head	0.103	0.102	0.128	0.123
	(0.035)***	(0.044)**	(0.037)***	(0.049)**
Δ Maximum years of education	0.083	0.180	0.075	0.162
	(0.041)**	(0.045)***	(0.044)*	(0.048)***
Δ Farm households (=1)	-0.018	-0.077	-0.010	-0.059
	(0.025)	(0.033)**	(0.026)	(0.036)
Δ log (median wage), male	0.038	0.069	0.040	0.078
	(0.018)**	(0.023)***	(0.020)**	(0.025)***
Δ log (median wage), female	0.032	0.042	0.036	0.037
	(0.012)***	(0.016)***	(0.013)***	(0.018)**
Δ log (median prices of sugar)	0.230	0.117	0.176	-0.026
	(0.075)***	(0.153)	(0.082)**	(0.168)
Δ log (median prices of oil)	0.319	0.351	0.344	0.302
	(0.115)***	(0.276)	(0.123)***	(0.302)
Constant	-0.107	0.257	-0.072	0.140
	(0.045)**	(0.226)	(0.049)	(0.262)
Observations	3899	3899	3377	3377
R-squared	0.22	0.26	0.22	0.26
Number of extended-households		1723		1510

Standar errors (in parentheses) are robust to serial correlation and heteroskedasticity. *** indicates statistical significance at 1%, ** at 5%, and * at 10 %. Variables included in the estimations but not reported on the table are 1997 province and 1997 urban dummy variables and province-urban dummy interactions.

Table 5.10 Dynamic tests: First difference estimation, 2SLS, Parent-Child Extended Households

Dependent variable: Δ log (household expenditure)	Households in extended households with mutliple sub-households					
	2SLS: No Fixed Effects	2SLS: Fixed Effects	2SLS: No Fixed Effects	2SLS: Fixed Effects	2SLS: No Fixed Effects	2SLS: Fixed Effects
	1	2	3	4	5	6
Δ log(household income)	0.132	0.059	0.136	0.072	0.084	0.049
	(0.049)***	(0.033)*	(0.047)***	(0.031)**	(0.032)***	(0.028)*
Δ log(household size)	0.023	0.032	0.023	0.031	0.026	0.033
	(0.006)***	(0.006)***	(0.006)***	(0.006)***	(0.005)***	(0.006)***
Δ proportion of hh members:						
6-14 years	0.316	0.443	0.309	0.421	0.410	0.459
	(0.104)***	(0.071)***	(0.101)***	(0.070)***	(0.072)***	(0.064)***
15-59 years, male	0.508	0.394	0.513	0.421	0.440	0.375
	(0.123)***	(0.125)***	(0.122)***	(0.125)***	(0.102)***	(0.119)***
15-59 years, female	0.410	0.366	0.409	0.372	0.423	0.362
	(0.104)***	(0.109)***	(0.105)***	(0.111)***	(0.093)***	(0.108)***
60+ years, male	0.441	0.342	0.442	0.349	0.426	0.337
	(0.110)***	(0.115)***	(0.111)***	(0.117)***	(0.098)***	(0.114)***
60+ years, female	0.215	0.031	0.223	0.086	0.092	-0.008
	(0.208)	(0.213)	(0.206)	(0.212)	(0.170)	(0.200)
Δ Male household head (=1)	0.463	0.196	0.471	0.231	0.360	0.171
	(0.180)**	(0.172)	(0.179)***	(0.172)	(0.148)**	(0.164)
Δ Age of hh head	-0.095	0.024	-0.101	-0.004	-0.013	0.043
	(0.092)	(0.080)	(0.089)	(0.078)	(0.064)	(0.072)
Δ Maximum years of education	-0.094	0.100	-0.099	0.073	-0.020	0.120
	(0.087)	(0.081)	(0.085)	(0.079)	(0.063)	(0.072)*
Δ Farm households (=1)	-0.081	-0.109	-0.083	-0.12	-0.055	-0.101
	(0.039)**	(0.043)**	(0.039)**	(0.043)***	(0.031)*	(0.040)**
Δ log (median wage), male	-0.001	0.057	-0.002	0.052	0.016	0.060
	(0.026)	(0.025)**	(0.026)	(0.026)**	(0.021)	(0.025)**
Δ log (median wage), female	0.022	0.040	0.022	0.039	0.026	0.040
	(0.014)	(0.017)**	(0.014)	(0.017)**	(0.012)**	(0.016)**
Δ log (median prices of sugar)	0.319	0.116	0.321	0.116	0.282	0.116
	(0.089)***	(0.156)	(0.089)***	(0.159)	(0.077)***	(0.155)
Δ log (median prices of oil)	0.144	0.240	0.138	0.201	0.217	0.267
	(0.156)	(0.298)	(0.155)	(0.302)	(0.132)	(0.291)
Constant	-0.051	0.163	-0.05	0.13	-0.074	0.186
	(0.060)	(0.245)	(0.060)	(0.248)	(0.052)	(0.239)
Test of overidentification (p-values)	0.32	0.41	0.60	0.21	0.19	0.00
Observations	3899	3899	3899	3899	3899	3899
Number of extended-households		1723		1723		1723

Standar errors (in parentheses) are robust to serial correlation and heteroskedasticity. *** indicates statistical significance at 1%, ** at 5%, and * at 10 %.

(1) and (2) Instrumental variables not included in the second regressions are: log of land value 1997, changes in land value.

(3) and (4) Instrumental variables not included in the second regressions are: log of land value 1997, log of productive assets 1997, changes in real land value.

(5) and (6) Instrumental variables not included in the second regressions are: log of land value 1997, log of productive assets 1997, changes in real land value, interactions of changes in median real wages (male, female) with maximum years of education 1997.

Table 5.11 Dynamic tests, 2SLS, First stage regressions

Dependent variable: Δ log (household real income)	Households in extended households with mutliple sub-households					
	2SLS: No Fixed Effects	2SLS: Fixed Effects	2SLS: No Fixed Effects	2SLS: Fixed Effects	2SLS: No Fixed Effects	2SLS: Fixed Effects
Δ log(household size)	1.944	1.653	1.922	1.622	1.907	1.624
	(0.206)***	(0.253)***	(0.208)***	(0.254)***	(0.208)***	(0.253)***
Δ proportion of hh members:						
6-14 years	-1.493	-2.194	-1.513	-2.241	-1.555	-2.201
	(0.468)***	(0.596)***	(0.469)***	(0.596)***	(0.471)***	(0.595)***
15-59 years, male	0.237	-0.585	0.220	-0.636	0.201	-0.576
	(0.530)	(0.604)	(0.531)	(0.604)	(0.531)	(0.605)
15-59 years, female	-0.333	-0.635	-0.366	-0.693	-0.428	-0.679
	(0.509)	(0.638)	(0.511)	(0.638)	(0.510)	(0.638)
60+ years, male	-2.630	-4.275	-2.617	-4.338	-2.641	-4.288
	(0.924)***	(0.928)***	(0.923)***	(0.928)***	(0.925)***	(0.928)***
60+ years, female	-2.151	-2.701	-2.188	-2.768	-2.265	-2.732
	(0.748)***	(0.831)***	(0.751)***	(0.831)***	(0.751)***	(0.830)***
Δ Male household head (=1)	1.721	2.052	1.716	2.038	1.725	2.054
	(0.218)***	(0.250)***	(0.218)***	(0.250)***	(0.218)***	(0.249)***
Δ Age of hh head	1.437	1.874	1.432	1.887	1.439	1.884
	(0.247)***	(0.254)***	(0.247)***	(0.254)***	(0.247)***	(0.254)***
Δ Maximum years of education	0.059	0.086	0.059	0.086	0.055	0.084
	(0.027)**	(0.029)***	(0.027)**	(0.029)***	(0.027)**	(0.029)***
Δ Farm households (=1)	0.267	0.070	0.245	0.049	0.236	0.059
	(0.164)	(0.232)	(0.164)	(0.232)	(0.165)	(0.232)
Δ log (median wage), male	0.334	0.314	0.332	0.304	1.053	0.756
	(0.105)***	(0.130)**	(0.106)***	(0.130)**	(0.301)***	(0.387)*
Δ log (median wage), female	0.102	0.079	0.103	0.083	-0.304	-0.496
	(0.060)*	(0.092)	(0.060)*	(0.092)	(0.158)*	(0.249)**
Δ log (median prices of sugar)	-0.817	-0.046	-0.810	-0.022	-0.825	-0.020
	(0.379)**	(0.878)	(0.378)**	(0.877)	(0.378)**	(0.881)
Δ log (median prices of oil)	1.675	2.890	1.686	3.037	1.683	2.991
	(0.625)***	(1.588)*	(0.625)***	(1.588)*	(0.628)***	(1.589)*
Instrumental variables excluded from the second stage:						
log (real land value) 1997	0.032	-0.033	0.039	-0.008	0.039	-0.004
	(0.011)***	(0.025)	(0.012)***	(0.028)	(0.012)***	(0.028)
Δ log (real land value)	0.050	0.075	0.052	0.076	0.052	0.076
	(0.011)***	(0.015)***	(0.011)***	(0.015)***	(0.011)***	(0.015)***
log (real value of prod.assets) 1997			-0.016	-0.050	-0.017	-0.053
			(0.012)	(0.025)**	(0.012)	(0.025)**
Δ log (median wage, male) x max. educ 1997					-0.077	-0.044
					(0.029)***	(0.035)
Δ log (median wage, male) x max. educ 1997					0.044	0.059
					(0.016)***	(0.024)**
Constant	-0.561	2.591	-0.483	2.992	-0.498	3.045
	(0.239)**	(1.298)**	(0.248)*	(1.312)**	(0.249)**	(1.314)**
F-test of identifying IVs	12.45	15.09	8.95	11.40	7.64	8.24
(p-value)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	3899	3899	3899	3899	3899	3899
R-squared	0.18	0.23	0.18	0.23	0.18	0.23
Number of extended-households		1723		1723		1723

Standar errors (in parentheses) are robust to serial correlation and heteroskedasticity. *** indicates statistical significance at 1%, ** at 5%, and * at 10 %.

Table 5.12 Dynamic tests: First difference estimation, 2SLS, Parent-Child Extended Households

Dependent variable: Δ log (household expenditure)	Parent-child extended households					
	2SLS: No Fixed Effects	2SLS: Fixed Effects	2SLS: No Fixed Effects	2SLS: Fixed Effects	2SLS: No Fixed Effects	2SLS: Fixed Effects
	1	2	3	4	5	6
Δ log(household income)	0.133	0.067	0.157	0.090	0.085	0.073
	(0.053)**	(0.031)**	(0.053)***	(0.031)***	(0.033)***	(0.028)***
Δ log(household size)	0.021	0.030	0.020	0.028	0.025	0.029
	(0.007)***	(0.006)***	(0.007)***	(0.007)***	(0.005)***	(0.006)***
Δ proportion of hh members:						
6-14 years	0.346	0.456	0.304	0.421	0.433	0.447
	(0.105)***	(0.069)***	(0.106)***	(0.071)***	(0.070)***	(0.066)***
15-59 years, male	0.510	0.444	0.547	0.489	0.434	0.456
	(0.137)***	(0.131)***	(0.142)***	(0.135)***	(0.110)***	(0.129)***
15-59 years, female	0.476	0.437	0.475	0.452	0.477	0.441
	(0.110)***	(0.118)***	(0.116)***	(0.123)***	(0.099)***	(0.119)***
60+ years, male	0.504	0.410	0.517	0.427	0.478	0.415
	(0.120)***	(0.126)***	(0.127)***	(0.131)***	(0.106)***	(0.127)***
60+ years, female	0.061	0.079	0.119	0.179	-0.061	0.105
	(0.224)	(0.229)	(0.233)	(0.235)	(0.182)	(0.221)
Δ Male household head (=1)	0.636	0.250	0.689	0.308	0.527	0.265
	(0.201)***	(0.184)	(0.208)***	(0.189)	(0.163)***	(0.181)
Δ Age of hh head	-0.083	0.015	-0.127	-0.037	0.006	0.002
	(0.107)	(0.087)	(0.107)	(0.088)	(0.071)	(0.080)
Δ Maximum years of education	-0.127	0.057	-0.169	0.006	-0.042	0.044
	(0.106)	(0.085)	(0.106)	(0.086)	(0.072)	(0.078)
Δ Farm households (=1)	-0.052	-0.086	-0.061	-0.098	-0.034	-0.089
	(0.036)	(0.041)**	(0.038)	(0.042)**	(0.030)	(0.040)**
Δ log (median wage), male	-0.004	0.067	-0.013	0.062	0.015	0.066
	(0.029)	(0.026)**	(0.030)	(0.027)**	(0.023)	(0.026)**
Δ log (median wage), female	0.018	0.030	0.014	0.027	0.025	0.030
	(0.016)	(0.019)	(0.017)	(0.020)	(0.014)*	(0.019)
Δ log (median prices of sugar)	0.255	-0.037	0.272	-0.042	0.222	-0.038
	(0.094)***	(0.175)	(0.099)***	(0.182)	(0.081)***	(0.176)
Δ log (median prices of oil)	0.180	0.179	0.146	0.120	0.249	0.164
	(0.164)	(0.323)	(0.171)	(0.335)	(0.139)*	(0.324)
Constant	-0.011	-0.021	0.002	-0.099	-0.037	-0.041
	(0.066)	(0.291)	(0.069)	(0.301)	(0.056)	(0.289)
Test of overidentification (p-values)	0.61	0.59	0.47	0.00	0.09	0.00
Observations	3377	3377	3377	3377	3377	3377
Number of extended-households		1510		1510		1510

Standar errors (in parentheses) are robust to serial correlation and heteroskedasticity. *** indicates statistical significance at 1%, ** at 5%, and * at 10 %.

(1) and (2) Instrumental variables not included in the second regressions are: log of land value 1997and changes in land value.

(3) and (4) Instrumental variables not included in the second regressions are: log of land value 1997, log of productive assets 1997, changes in real land value.

(5) and (6) Instrumental variables not included in the second regressions are: log of land value 1997, log of productive assets 1997, changes in real land value, interactions of changes in median real wages (male, female) with maximum years of education 1997.

Table 5.13 Dynamic tests, 2SLS, First stage regressions, Parent-Child Extended Households

Dependent variable: Δ log (household real income)	Parent-Child Extended Households					
	2SLS: No Fixed Effects	2SLS: Fixed Effects	2SLS: No Fixed Effects	2SLS: Fixed Effects	2SLS: No Fixed Effects	2SLS: Fixed Effects
Δ log(household size)	1.780	1.526	1.757	1.506	1.735	1.511
	(0.223)***	(0.272)***	(0.225)***	(0.272)***	(0.225)***	(0.272)***
Δ proportion of hh members:						
6-14 years	-1.660	-2.132	-1.685	-2.185	-1.713	-2.165
	(0.507)***	(0.632)***	(0.508)***	(0.632)***	(0.509)***	(0.631)***
15-59 years, male	0.020	-0.807	-0.003	-0.850	-0.022	-0.782
	(0.565)	(0.635)	(0.566)	(0.635)	(0.565)	(0.635)
15-59 years, female	-0.553	-0.818	-0.602	-0.879	-0.669	-0.890
	(0.546)	(0.678)	(0.547)	(0.679)	(0.545)	(0.678)
60+ years, male	-2.583	-4.564	-2.559	-4.608	-2.571	-4.552
	(0.973)***	(0.999)***	(0.971)***	(0.999)***	(0.973)***	(0.998)***
60+ years, female	-2.257	-2.645	-2.319	-2.710	-2.418	-2.700
	(0.799)***	(0.901)***	(0.803)***	(0.901)***	(0.802)***	(0.900)***
Δ Male household head (=1)	1.849	2.288	1.840	2.273	1.835	2.261
	(0.238)***	(0.269)***	(0.238)***	(0.269)***	(0.237)***	(0.269)***
Δ Age of hh head	1.668	2.005	1.661	2.016	1.665	2.013
	(0.264)***	(0.267)***	(0.264)***	(0.266)***	(0.264)***	(0.266)***
Δ Maximum years of education	0.073	0.084	0.073	0.083	0.068	0.080
	(0.030)**	(0.031)***	(0.030)**	(0.031)***	(0.030)**	(0.031)***
Δ Farm households (=1)	0.076	-0.270	0.046	-0.293	0.042	-0.269
	(0.166)	(0.247)	(0.166)	(0.248)	(0.166)	(0.247)
Δ log (median wage), male	0.378	0.232	0.376	0.227	1.247	0.895
	(0.115)***	(0.139)*	(0.115)***	(0.139)	(0.341)***	(0.434)**
Δ log (median wage), female	0.165	0.164	0.166	0.165	-0.215	-0.490
	(0.065)**	(0.100)*	(0.065)**	(0.100)*	(0.170)	(0.272)*
Δ log (median prices of sugar)	-0.732	0.323	-0.720	0.324	-0.740	0.280
	(0.406)*	(0.953)	(0.406)*	(0.953)	(0.404)*	(0.953)
Δ log (median prices of oil)	1.586	2.320	1.593	2.492	1.580	2.427
	(0.656)**	(1.716)	(0.657)**	(1.718)	(0.660)**	(1.716)
Instrumental variables excluded from the second stage:						
log (real land value) 1997	0.029	-0.050	0.036	-0.025	0.038	-0.019
	(0.012)**	(0.028)*	(0.012)***	(0.031)	(0.012)***	(0.031)
Δ log (real land value)	0.050	0.082	0.052	0.083	0.052	0.083
	(0.011)***	(0.016)***	(0.011)***	(0.016)***	(0.011)***	(0.016)***
log (real value of prod.assets) 1997			-0.020	-0.050	-0.020	-0.053
			(0.013)	(0.029)*	(0.013)	(0.029)*
Δ log (median wage, male) x max. educ 1997					-0.092	-0.064
					(0.033)***	(0.040)
Δ log (median wage, male) x max. educ 1997					0.042	0.067
					(0.018)**	(0.026)**
Constant	-0.613	3.721	-0.516	4.070	-0.541	4.183
	(0.264)**	(1.478)**	(0.272)*	(1.491)***	(0.275)**	(1.490)***
F-test of identifying IVs	10.74	16.98	8.26	12.34	6.98	9.02
(p-value)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	3377	3377	3377	3377	3377	3377
R-squared	0.18	0.24	0.18	0.24	0.18	0.24
Number of extended-households		1510		1510		1510

Standar errors (in parentheses) are robust to serial correlation and heteroskedasticity. *** indicates statistical significance at 1%, ** at 5%, and * at 10 %.