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Inter-household Allocations within Extended Family: Evidence from the Indonesia Family Life Survey

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Inter-household Allocations within Extended Family: Evidence from the Indonesia Family Life Survey

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Abstract

This paper uses data from two waves of the Indonesia Family Life Survey (IFLS2-1997 and IFLS3-2000) to investigate whether households that belong to the same extended families pool their income to smooth their consumption. We exploit the fact that the survey also tracks and interviews split-off households during the follow-up surveys, enabling us to construct a panel of extended families. The findings suggest that in contradiction to the null hypothesis of extended-family income pooling, household own income still matters to household consumption even after controlling for extended family resources. The result stands after correcting for potential measurement error and endogeneity of income. More importantly, the findings also suggest that although the change in household own income matters to the change in household consumption, controlling for extended family resources, the magnitudes of the coefficients are small. We also find evidence that household consumption is affected by characteristics of other households in the same extended family.

Keywords: Consumption smoothing; Risk-sharing; Extended families;

JEL classification: D13, J12, O12

1 Introduction

Households break-up over time for several reasons such as members migrating to other villages or cities to find jobs, adult children leaving to form new households, or marriage dissolution. However, households with familial links may still have economic ties with each other. For instance, between these households there may be transfers of income, exchanges of gifts, or informal loans provided by one household to another. These inter-household transactions may be motivated by altruistic feelings of the households in the extended families toward each other. Parents may transfer income to their child's household because they derive utility from their child's consumption. But the transfers may also be motivated by self-interest: parents may provide transfer to their child in anticipation for receiving old age support from their child. In any case, one household's resource allocation decision may affect and be affected by allocation decisions of other households within the extended family.

While there have been many studies on intra-household allocations in developing countries, there are still few studies focusing on the role that an extended family plays in a household's allocation decision. This paper focuses on this issue, and in particular asks whether or not extended family provide a means for households to smooth their consumption.

In the absence of complete financial and insurance markets, households may be involved in informal arrangements with each other in order to smooth their consumption.[1] Previous studies on inter-household allocations as consumption smoothing mechanism have focused on various links through which the mechanism works. Many studies on consumption smoothing focus on how households in a geographic location insure themselves against consumption risk faced by the community. The seminal paper in this area by Townsend(1994), looking at households in southern Indian villages, argues that households within a village can make informal arrangement using local institutions to mitigate risks from uncertainty faced in an agricultural economy.[2] But geographical proximity may not be the only grounds the informal arrangement is based on. Households may also be involved in inter-household allocation with relatives or members of the extended families living in different villages or regions. Indeed, pooling resources with members of the extended family living in different village may protect the household from village-specific economic shocks. Rosenzweig and Stark (1989) study the practice in rural India of marrying daughters off to households living in different geographic locations. They find evidence that the marriage *cum* migration patterns plays a role in reducing household consumption variability. A study by Grimard (1997) on households

[1]There are of course mechanisms other than inter-household arrangement that a household can use to limit their consumption risks in the absence of complete financial and insurance markets. For example, households may adjust their labor supply, deplete their non-financial assets, or withdraw their children from school.

[2]See also Ravallion and Chauduri (1997) for a very closely related work using data from the same ICRISAT villages.

in Cote d'Ivoire focuses on consumption smoothing between households with the same ethnicity, allowing for the possibility of risk-sharing among members of the same ethnicity who live in different regions. The study shows some evidence of partial insurance performed by individual household with the members of the same ethnic group living across different geographic locations. However, the study can only identify the ethnic group, not the particular lineage that the households belong to.

In different social settings, using ethnic group as the "insurance group" may not be the most appropriate. As noted by Townsend (1994), closer relationship such as family ties between members of an extended family rather than ethnicity or geographical proximity may be a more important factor on which households base their informal arrangement. Altonji, Hayashi, and Kotlikoff (1992) investigate whether households within extended families in the United States smooth their consumption. Using data from several waves of Panel Study of Income Dynamics, they reject the null hypothesis of dynastic altruism among families in the sample. They find that at a point in time, the distribution of consumption between parents and children is affected by the distribution of their income. They also find that changes in distribution of income within extended family affect changes in the distribution of consumption. Although they interpret the test as a test for extended family altruism, the test is similar to that of inter-household risk-sharing.

It is worth noting that Altonji et al.(1992) are looking at extended families in the United States. There are several reasons why focusing on households in developing countries might produce different results. Households in developing countries face very different risk environment from their counterpart in developed countries. Majority of the households depend on the agricultural sector, where variability in income is high. As has already been mentioned above, the lack of social security system and the absence of complete financial and insurance market may cause households in these countries to rely on inter-household informal arrangements as a way to smooth their consumption. It is therefore reasonable to believe that extended families may play a larger role than they do in the developed countries.

However, focusing on extended families imposes a data requirement that is hard to meet by most household surveys. This is especially true for household surveys from developing countries. Many of the surveys do not purposely collect information on households that have familial links with each other.

This paper takes advantage of an unusual feature of the Indonesia Family Life Survey, namely the fact that this longitudinal household survey tracks a large fraction household members who have moved out of their original households and re-interview them in their new households (the split-off households) in the follow-up surveys. By identifying the household from which the members originated from, we can identify the households that have family ties and define elements of the extended families.[3]

The approach used in this paper is based on that of Altonji et al. (1992). Using data from two waves of the IFLS - IFLS2 (1997) and IFLS3 (2000)- we test whether households within an extended family pool their income to smooth their consumption. 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 is an important and interesting subject. This paper contribute towards our understanding the dynamics of household behavior during a period of economic crisis.[4]

The findings show some evidence against complete risk-sharing within extended-families among the IFLS households, both in 1997 and in 2000. To control for the potential measurement error and endogeneity of income, the models are estimated using instrument variables to instrument income. The distribution of income matters for the distribution of consumption within an extended family even after controlling for extended-family fixed-effects. The first-difference version of the model is estimated to control for possibility that household-specific fixed-effects that are correlated with income. This test also helps to tell us whether households use inter-household transfer as a consumption smoothing mechanism to cope with the financial and economic crisis during the period. As in the static tests, we use instrumental variables estimation to correct for the potential measurement error and endogeneity of income changes. The dynamic tests return estimates of income coefficients that are statistically different from zero, even after controlling for extended-family fixed-effects. However, the magnitudes of these income coefficients are small.

The paper is organized as follows. The next section briefly reviews some evidence on inter-household transfers in Indonesia. The section also provides a brief background of the IFLS. The composition of households that constitute the sample is also discussed in this section. Section three

[3]Note that throughout this paper, family formation and dissolution are assumed to be exogenous, as is common in most of studies on household in developing countries. Understanding how household structure and composition respond to economic incentives is one of the key question in economics of the household but it is beyond the scope of this paper. See Foster and Rosenzweig (2002) for an example of a study that explicitly model household division in the case of developing countries.

[4]This paper is also motivated by the question of how to take advantage of the longitudinal household surveys that interview original as well as split-off households. Collecting information from the split-off households in addition to the original households helps to 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 a question since analysis using panel households 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 surveys to define "original" and "split-off" households are often designed for ease in the fieldwork rather than based on some analytical underpinnings. This, coupled with the concern that dropping 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, one could choose to define the panel by treating an original household and its split-off households as a single extended family. This approach, however, implies that the extended family acts as if it were a single household, or that household decisions are made at the extended family level.

discusses the model used in the estimation. The variables used in the estimation including the instrumental variables are discussed in section four. Section five discusses the estimation results, and the paper is concluded in section six.

2 Background

2.1 Evidence on Inter-household Allocations in Indonesia

In the past years there have been numerous empirical studies that look at inter-household transfers in both developed and developing countries. Altonji et al.(1997) use data from the PSID to look at inter-generational transfers and test whether inter-vivos transfers from parents to child are motivated by altruism. In another study, Hayashi, Altonji, and Kotlikoff (1996) tests whether there is complete risk-sharing between and within the PSID 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.

Empirically, there is evidence that inter-household transfers are an important source of income for households in developing countries (Cox and Jimenez, 1990).[5] While motives for transfers could vary (e.g. altruism, self-interest motivated), evidence have shown that transfers narrow inequality and serve as social insurance (Cox and Jimenez, 1990). Lillard and Willis (1997) find evidence that transfers from children to parents are an important source of old age support among Malaysian families. More recently 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.

Inter-household transfers are also important among Indonesian households.[6] For example, a study by Ravallion and Reardon (1988) using data from the 1981 National Socioeconomic Household Survey (the SUSENAS) finds that around 25 percent of rural and 40 percent of urban households in the province of Yogyakarta in Java are net recipients of transfers, and around 54 percent and 31 percent of households are net giver of transfers. They also find that that transfers are targeted

[5]The review by Cox and Jimenez (1990) of studies on transfers in developing countries reports the percentage of households receiving transfers as well as the average transfer amount as percentage of average income. The numbers are typically high. For example, 93 percent of households in rural South India receive transfers. Transfers account for 46 percent of the average income of the Malaysian households in the lowest income quintile.

[6]The importance of the role of extended family in Indonesia in providing resources to its members has long been discussed by anthropologists (see for example, Geertz (1961), and Jay (1967)). The extended family is expected to assist not only the members who are facing a crisis, but sometime also in the human capital investment of family members. For instance, if a family is unable to pay for the education of a promising child, the extended family is expected to make sacrifices to help the family(Geertz, 1961).

to disadvantaged households. Cameron and Cobb-Clark (2001) use data from IFLS1-1993 and find that between 50 percent to 70 percent of elderly receive transfers. Focusing on old age support, Cameron and Cobb-Clark (2001) find that transfers from children to parents are not strongly related to parental need or ability of children to give to their parents. Using the same data but focusing on married couples, Frankenberg, Lillard and Willis (2002) find that close to 44 percent of couples transfer money to their non-coresident children and 55 percent of couples receive transfers from adult children. While they find that there are differences in the extent of exchange as well as motivations underlying inter-household transfers, but they also find substantial evidence supporting the insurance motives. Levine and Kevane (2000) look specifically at transfers from parents to daughters in Indonesia to see whether parents invest lest to daughters who move away after marriage. Looking at schooling and health outcomes, they also find that there is no evidence that parents invest less on daughters who move away after marriage. The study by Park (2003), using data from IFLS1-1993, looks beyond the inter-generational transfers between parents and children. Determinants for three types of transfers (parents to children, children to parents, and between siblings) are separately estimated and the results suggest that different motives lie behind the different types of transfers.

The studies discussed above show that there is no single motive that can explain all inter-household transfers in Indonesia. Regardless of the motives or the direction of transfers, it is evident that inter-household transfers play a role in household allocations in Indonesia. This paper will not be focusing on transfers directly.[7] Instead, drawing on the evidence, the study looks at what happens to household consumption, taking into account the inter-household ties. To the extent that inter-household transfers help households to smooth their consumption, we examine whether extended family pool their resources.

2.2 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.[8]

[7] We did look at the incidence of transfers among IFLS3 households. Individuals were asked about the amount of transfers received from, and provided to, non-coresidence parents and children in the last 12 months . At the household level, we find that around 43 percent of households reported to have received transfers from and 56 percent have provided transfers to their parents or children. For the net recipients, the amount of transfers divided by 12 are around 7 percent of household monthly expenditure. For the net givers, the number is around 3 percent.

[8] See Frankenberg and Karoly (1995) for full documentation of IFLS1.

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.

Respondent moving from the original survey location is one of the main causes of sample attrition in most household surveys. The IFLS is one of the very few surveys conducted in developing countries that track its target respondents when they move.[9] Tracking in the IFLS explain why the survey has a very low attrition rate, even compared to surveys conducted in developed countries. 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. The IFLS2, which was conducted in 1997 have a re-contact rate of 93.4 percent (see Table 1) as 6,752 original households as well as 877 split-off households were re-contacted.

The IFLS3 that was conducted in 2000 managed to re-contact 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 re-interviewed in 2000. In addition, 2,645 new 2000 split-off households were contacted in 2000.

2.3 Household Structure and Characteristics

This section discusses the structure and the characteristics of the households that constitute the sample. Who are the split-offs and how are their households different from the old households? This information is essential because it may tell us whether or not the test of income pooling within an extended family is plausible. In particular, it is important to know how big the fraction of the extended families actually represents inter-generational (i.e., parent-child relationships) linkages. Another concern is that a lot of the households that split might have done so as a result of divorce or marital separation (although again, this paper treats household break-up as exogenous). In this case, altruistic linkage between households may not be plausible.

We define an *extended family* as the set of households originating from the same 1993 households.[10] A *target* household is a household that was interviewed in any prior wave of the survey. A *split-off* household consists of an individual or group of individuals who moved out from the original households to form a new household.

In 1997, the target households were the 1993 original households. Thus in 1997, an extended

[9]See Frankenberg and Thomas (2000) for full documentation of IFLS2.

[10]It is important to note that it is never possible to observe a "complete" extended family in the sample. In most of the cases, the households identified as extended family in the sample will only include the household of the parents and their children's households. Pooling of resources - if it occurs at all- may involve the larger extended family, many of whom are not survey respondents (for example, the household of the child's in-laws).

family with multiple households will include a target household and at least a split-off household. In 2000, the target households include the 1993 original households, the 1997 split-off households, and the 1998 split-off households.

Table 2 shows the number of households and extended families 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 families (93.8 percent of 1993 households). Out of the 10,435 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 (see Frankenberg and Thomas, 2000). In practice, this will be the household living at the same address as the previous wave. This "first-contact" rule has the advantage of ensuring at least some information of all target household members was gathered, and it also minimizes the risk of losing information of the whereabouts of other 1993 household members. However, the rule also results in a great deal of arbitrariness. For instance, in some cases, a household defined as a split-off household may retain more members as well as household characteristics of the original household than the one assigned as "original" household according to the rule. (see Witoelar (2004) for more discussion on this issue). The question that arises when one wants to restrict the analysis on only the panel of the original households is: are the 'correct' households being chosen?

While analysis using only the panel of 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 4 shows the descriptive statistics of some of the economic and demographic variables of the 2000 target and 2000 new split-off households. Income and 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 members 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 of adult 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 household break-up non-random. 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 5 shows the number of extended families with multiple households as well as parent-child extended families. A *parent-child* extended family is defined as an extended family in which there are at least one parent-child relationship between individuals in the different households.[11] In 1997, there are 791 extended families with multiple households, of which 653 were parent-child extended families (82 percent). By 2000, there are 2,610 extended families with multiple households. Around 83 percent of them (2,176 extended families) are parent-child extended families.[12]

If a household split as a result of marriage dissolution, one may question whether it is still plausible to think that the households have any altruistic linkage. For cases of divorce 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, some pooling of resources can still be observed although it might not necessarily be motivated by altruism.[13]

Table 6 shows the current marital status of the head of households in 2000 in the target households and the new split-off households. 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 slightly higher (2.9 percent).[14] The low percentage of the heads of split-off households that were divorced or separated help to support the case that marital break-ups do not seem to play a major role in the spawning of new split-off households in the data. However, it is important to note

[11]By this definition it is possible that a household can have someone identified as "parent" and "child. In fact in some cases, one individual is both a parent and a child.

[12]Using the similar approach we also define samples of parent-son extended families and parent-daughter extended families to see whether there are differences between these two samples. A parent-son (daughter) extended family is an extended family in which there is at least one parent-son (daughter) relationship between individuals in different households. This is of interest since parents may behave differently towards their son's household and their daughter's household due to factors such as local norms, traditions, and other social institutions. For example, transfer behavior may depend on where the adult children reside after marriage.

[13]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 making payment at all. This suggests that one needs to pay attention to the pervasiveness of divorces and marital separation among the households in the sample.

[14]Indonesia used to have a very high divorce rate: 13 per 1,000 population aged 15 and above in 1960, compared to 1.8 in developed countries in the same period (Jones, 1994:p. 180). However, the rate has declined to 4.6 by 1975 and 1.1 by 1990).

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. There is some degree of arbitrariness in defining which households are "original" and which are "split-off". These facts suggest that analyzing panel of only the original households may not be appropriate and in that respect looking at a panel of extended families seems to be preferable. Moreover, the data also show that inter-generational relationships account for most of the relationships between the original and the split-off households. It thus seems plausible to hypothesize about altruism linkage within extended families in the data.

3 Model and Empirical Specification

Borrowing from the literatures on testing the dynastic nature of households and the closely related intra-household allocation literature, Altonji et al.(1992) 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. 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 allocation models 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 family, one can think of the model in terms of household of the head of the extended family (e.g., household of the parents) and other households in the extended family (e.g., households of their children) operating on a unitary, extended-family budget constraint.

The parent's utility maximization problem is given by:

$$U_h = \theta_h U(c_h) + \theta_k U(c_k) \tag{1}$$

subject to

$$c_h.p_h + c_k.p_k = R_h + R_k \tag{2}$$

[15] For review on the subject of intra-household allocations, see for example, the volume edited by Haddad, Hoddinot, and Alderman (1997). Strauss, Mwabu, and Beegle (2000) review the theories and empirical evidence on the subject. See also Thomas (1990, 1993, 1994).

where c is quantity of good consumed, p is price, R is resources, and h, k stands for parent and child respectively. Note that parent and child may face different prices, for example, if they reside in different communities. The parameter θ_h 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 $c_k.p_k = R_k + T$ and $c_h.p_h = R_h - T$. 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 $\frac{\theta_h.U'(c_h)}{p_h} = \frac{\theta_k.U'(c_k)}{p_k} = \lambda$ where λ is the marginal utility of income. Suppose now that the utility function is of the form $U(c) = c^{1-\gamma}/1-\gamma$. To the first order conditions of the problem, we can add an index i denoting an extended family and error terms to obtain:

(3) $$\log c_{ih} = -(\frac{1}{\gamma_i})\log\lambda_i + (\frac{1}{\gamma_i})\log\theta_{ih} - (\frac{1}{\gamma_i})\log p_{ih} + u_{ih}$$

and

(4) $$\log c_{ik} = -(\frac{1}{\gamma_i})\log\lambda_i + (\frac{1}{\gamma_i})\log\theta_{ik} - (\frac{1}{\gamma_i})\log p_{ik} + u_{ik}$$

The parameter λ_i can be interpreted as the extended-family i fixed-effect (Altonji et al., 1992). Since λ_i 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_h do not enter either of the consumption function. Rather, it is the extended family's unified resources R that enters the consumption equations through λ_i, the marginal utility of income.

It is clear how the test works: if an extended family has altruistic linkages, the marginal utilities of income of the members are the same. In the empirical specification the marginal utility of income is represented by the extended-family fixed effects. Controlling for these fixed effects, the parent's income should not affect his consumption and child's income should not affect her consumption.

3.1 Empirical Specification of the Static Model

The demand function resulting from the first order conditions can be written as:

(5) $$c_h = c(\lambda_{ikt}, p_{ikt}; \mathbf{x}_{ikt}), \quad k = 1, 2, ..., n_i, \quad i = 1, 2, ..., N$$

where c_{ikt} is logarithm of consumption at time t of household k , which is a member of extended family i, p_{ikt} is the price vector, and $\mathbf{x}_{ikt}$ represents household observable characteristics and other variables that might affect household weights θ_h and θ_k. The empirical specification of the demand function can be written as:

$$c_{ikt} = \beta' \mathbf{x}_{ikt} + \xi p_{ikt} + \alpha_{it} + u_{ikt} \tag{6}$$

where u_{ikt} is the error term that uncorrelated with $\mathbf{x}_{ikt}$. The altruistic linkage between households in an extended family is the common marginal utility of income (λ in the model), and it is represented by the extended-family fixed-effects, α_{it} in equation (6) - thus α_{it} represents log λ_t. If all members of an extended family reside in the same community, it is likely that they will face the same price vector p_{ikt}. The extended-family fixed-effects α_{it} will then also capture prices faced by the family. However, when some members of the extended family live in other community, this may no longer be true. In this case we need to add community prices as additional explanatory variables.

The income pooling test is performed by estimating the following equation:

$$c_{ikt} = \beta' \mathbf{x}_{ikt} + \Psi Y_{ikt} + \xi p_{ikt} + \alpha_{it} + u_{ikt} \tag{7}$$

where Y_{ikt} is household k's own income. The error term u_{ikt} contains unobserved household characteristics that may or may not be correlated with income.

It is first assumed that the error term u_{ikt} (which is uncorrelated with $\mathbf{x}_{ikt}$) is also uncorrelated with Y_{ikt}. Under the null hypothesis of the extended-family altruism, the coefficient on Y_{ikt} should be zero. That is, after controlling for own household characteristics and the extended-family fixed-effects, household's own income should not affect its consumption.

However, the assumption that the error term u_{ikt} is uncorrelated with Y_{ikt} may not hold. Observable household characteristics $\mathbf{x}_{ikt}$ may not fully capture the factors that belong to θ_h and θ_k. These omitted variables will end up in the u_{ikt} and they maybe correlated with Y_{ikt}. Extended-family fixed effect estimation only sweeps away parts of the unobservables that are common across all households, while parts that are household-specific and vary across the 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 the income variables.

Even if one fails 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:

$$c_{ikt} = \beta' \mathbf{x}_{ikt} + \Psi Y_{ikt} + \phi \sum_j Y_{ijt} + \xi p_{ikt} + \alpha_{it} + u_{ikt}, \quad j \neq k \tag{8}$$

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

3.2 Dynamic Specification

Consider an extended family i, with households $k = 1, ..., n_i$, facing the state of nature $s = 1, ..., S$ with known probability of occurrence π_s. The discount factor is given by β, $0 < \beta < 1$. As before, θ_k denotes the household weight of household k in the extended family i. When the households pool their resources, the maximization program that is faced by the extended family is that of maximizing the sum of weighted utilities:

$$max \sum_{k=1}^{n_i} \theta_k \sum_{t=1}^{T} \beta^t \sum_{s=1}^{S} \pi_s U(c_{kt}) \tag{9}$$

subject to, assuming no borrowing:

$$\sum_{k=1}^{n_i} c_{kt}.p_{kt} = \sum_{k=1}^{n_i} R_{kt} \tag{10}$$

For each household k in state s at time t, the first order conditions with respect to c_k, is:

$$\theta_k.\beta^t.\pi_s.U'(c_{kt}) = \mu_t.p_{kt} \tag{11}$$

or

$$\frac{\theta_k.U'(c_{kt})}{p_{kt}} = \lambda_t \tag{12}$$

where $\lambda_t = \mu_t/\beta^t.\pi_s$ and μ_t is the Lagrange multiplier on the resource constraints at time t.[16] Note that λ_t is common across all households $k\epsilon i$. Note also that this first-order condition should hold at any time t. Assuming that the utility function is $U(c) = c^{1-\gamma}/1-\gamma$, one can take logs and solve for consumption of household k and add an index i denoting the extended family to obtain:

$$\log c_{ikt} = -(\frac{1}{\gamma_i}) \log \lambda_{it} + (\frac{1}{\gamma_i}) \log \theta_k - (\frac{1}{\gamma_i}) \log p_{ikt} + u_{ikt} \tag{13}$$

We can then first-difference consumption over the two period t and $t-1$ to obtain:

$$\begin{aligned} \log c_{ikt} - \log c_{ikt-1} &= -(\frac{1}{\gamma_i})(\log \lambda_{it} - \log \lambda_{it-1}) - (\frac{1}{\gamma_i})(\log p_{ikt} - \log p_{ikt-1}) \\ &\quad +(u_{ikt} - u_{ikt-1}) \end{aligned} \tag{14}$$

First-differencing sweeps away the time-invariant household weight θ_k. Household k's own income change does not enter into determination of the household's consumption change. The

[16] This dynamic maximization problem is similar to the problem studied by Townsend (1994). 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 in the village. The maximization problem is also similar to that discussed by Mace (1991) and Cochrane (1991)

extended family's income change does, however, affect change in consumption through the change in marginal utility of income. The statistical representation of the dynamic specification can be written as follows:

$$\Delta c_{ikt} = \beta' \Delta \mathbf{x}_{ikt} + \xi \Delta p_{ikt} + \Delta \alpha_{it} + \Delta u_{ikt} \tag{15}$$

where $\Delta c_{ikt} = c_{ikt} - c_{ikt-1}$, $\Delta \mathbf{x}_{ikt} = \mathbf{x}_{ikt} - \mathbf{x}_{ikt-1}$, $\Delta p_{ikt} = c_{ikt} - c_{ikt-1}$,$\Delta \alpha_{ikt} = \alpha_{ikt} - \alpha_{ikt-1}$,$\Delta c_{ikt} = c_{ikt} - c_{ikt-1}$. The dynamic test is performed by including the change in household k's income, $\Delta Y_{ikt} = Y_{ikt} - Y_{ikt-1}$:

$$\Delta c_{ikt} = \beta' \Delta \mathbf{x}_{ikt} + \psi \Delta Y_{ikt} + \xi \Delta p_{ikt} + \Delta \alpha_{it} + \Delta u_{ikt} \tag{16}$$

Note that equation (16) is also the first-differenced version of the empirical specification given by equation (7). In the static specification, the extended-family fixed effect α_i represents the log of marginal utility of income that is common across all households in extended family i. 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 households. Controlling for these fixed-effects, changes in household own income should not affect changes in household consumption. Household-specific factors belonging to the household weights 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 families have different - but time-invariant - preferences over the households (Altonji et al., 1992).

Consider the case where the extended families 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:

$$\begin{aligned} c_{ikt} &= \beta' \mathbf{x}_{ikt} + \Psi Y_{ikt} + \phi \sum_j Y_{ijt} + \xi p_{ikt} + \alpha_{it} + \delta_{ik} + u_{ikt}, \\ & \quad k = 0, 1, ..., n_i, \; i = 1, 2, ..., N \end{aligned} \tag{17}$$

where δ_{ik} represents the household-specific time-invariant constant. In other words, δ_{ik} can be seen as household fixed-effects that differ between the son's and the daughter's household and 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 fixed effect is time-invariant, the first-differencing will sweep δ_{ik} away, and this is what is shown in equation (16). To correct for potential measurement error in income, we also employ 2SLS for the dynamic tests.[17]

[17]The assumption that the household weights, θ_k, are time-invariant may not be true. In fact, it is in contrast

4 Data

4.1 Data

Monthly household consumption is calculated using all consumption expenditures including durable goods. For housing expenditures, rental value of housing is used (actual if available, imputed otherwise). The household composition 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 include a dummy variable whether a household is a male-headed household, and whether the household is a farm household. Maximum years of education of adults in the household is used as the household education variable.[18] [19] We also use dummy variables for province and urban residence. Community (enumeration area, approximately the size of a village) median wages for males and females were calculated from earnings and hours worked of those who earned labor income including those who were self-employed. Community median prices of sugar and cooking oil are used since these were the two prices for which data were available for the majority of the households both in 1997 and 2000. The prices were prices that the household paid for the last purchases in the past month.

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 non-business assets, and other non-labor income excluding transfers. Transfer income is excluded 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 values are in December 2000 prices.

with results 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 family has an unequal but time-invariant sharing rule, which is in favor toward the son's household. Under the null above, qk are time-invariant. If θ_k include time-varying household specific factors, first-differencing will not get rid of these factors, even with extended family fixed effect, and there can still be factors that determine θ_k that are correlated with ΔY_{ikt}. This is another reason why instrumenting changes in income would be helpful even after adding the extended-household fixed-effects.

[18] Information in schooling is collected on the highest education level attended and the highest grade completed at the level. The information is then converted into a variable on completed years of schooling. The value ranges from 0 (no schooling or not completed first grade) to 17 (university graduate).

[19] One could also use average education of the adult instead of maximum. Jolliffe (1997) uses data on households in Ghana to tests which of the following education variables matter most in determining household income: household head's schooling, maximum schooling of adults, or average schooling of adult. The results show that either maximum or average schooling of adults is a better measure than schooling of the household head. Foster and Rosenzweig (1996) find that maximum years of education is a better predictor of the adoption of the new agricultural technology during the Indian "Green Revolution".

4.2 Instrumenting Income

Income variables are notoriously hard to measure without error.[20] In particular, the income variables may be measured with errors in the sense of classical errors-in-variables, biasing the coefficient on income towards zero. Failure to take into account possible measurement error may lead to incorrectly failing to reject the null hypothesis of income pooling.

To correct for this potential problem, we use instrumental variables that are predictive of income but that can reasonably be excluded from the consumption regressions.[21]

The set of IVs we use in the static specifications consists of the value of land, farm productive assets, and non-farm productive assets (all in logs). Farm productive assets include plants, house or building 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 have to assume that these assets are predictive of income but are not correlated with the error term in the consumption regressions, an assumption that may be contentious for some. [22]

We also employ the use of instrumental variables in the dynamic tests. In addition to allowing the possibility of household specific fixed-effects, the dynamic test may help us solve the systematic measurement error problem. For example, if richer households under-report more than poorer households, and if the measurement errors are unchanged between survey waves, then, these errors will be differenced out. However, there is still a potential problem of random measurement error. In addition, changes in income may also be endogenous.

To correct for these, in the dynamic specifications, we use as instruments: lagged value of land owned (value in 1997), lagged value of non-land productive assets, and the change in the value of land between 1997 and 2000. Using changes in productive assets to instrument changes in income may potentially induce additional endogeneity into the model. Changes in income may affect investment in productive assets which in turns may be correlated with consumption changes. By using lagged values of assets as instruments, we are assuming that they are uncorrelated with the error terms in the first-differenced consumption equation. In addition to the 1997 lagged value of

[20] As noted by Deaton (1997),"...All of the difficulties of measuring consumption - imputations, recall bias, seasonality, long questionnaires- apply with a greater force to the measurement of income..."

[21] Note, however, that while the instrument variables may help correct for random measurement errors, they may not help in solving the systematic measurement errors. Indeed, Table 4 shows that for the 2000 target 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 a serious underreporting of income that may or may not be systematic.

[22] In particular it is likely that the productive assets are correlated with the Pareto weights θ, which means that the IVs are not valid. In other specifications, we try to use community infrastructure variables as additional instrumental variables (see Witoelar, 2004). Data from the Village Potential Statistics (the PODES) collected by the Central Bureau of Statistics were used. Unfortunately, none of the IVs that were obtained from the PODES contribute significantly to explaining variation in household income in the first stage regressions.

land owned, we also include the change in log value of land. The 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. 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 some specifications we also add the interaction of changes in the median wage of males and females with the 1997 household maximum years of education. Changes in wages between the periods may affect households differently depending on the level of education in the households.

5 Empirical Results

5.1 Static Specifications

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

Table 9 summarizes the result of the 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 Appendix Table 1-3.

The first panel of Table 9 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 focus the attention to 2000 split-off households which consist of a much larger fraction of households in 2000 than in 1997.[23]

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 0.022 to 0.026. It is clear however that the coefficients on income are small in magnitude; they translate

[23] The estimates of the coefficients on household income under 2SLS using the sample of parent-daughter extended families 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 over-identification tests miserably; the null hypothesis that the equation is properly specified and the instruments are valid instruments (p-values is 0.000 in each case) is rejected. The same is also true for the sample of parent-son extended families in 1997, although the estimates are not as high as those for parent-daughter extended families.

into income elasticity of consumption of .022 to 0.026. This is consistent with the possibility that the income variables suffer from measurement error.

Looking at the regression results in Appendix Table 1, it is clear that most of the explanatory variables appear to be statistically significant when we estimate the consumption equation without extended family fixed effect. Column (1) shows that the coefficient on income for the sample of household in multi-member extended families is 0.022 and it is statistically significant at 1 percent 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 family fixed-effects sweep away some of the community level variables. Similar results are obtained using the sample of parent-child extended families (column 3 and 4 in Appendix Table 1).

The summary of the results of the 2SLS estimation is also presented in Table 9. The second stage regressions for the sample of extended families with multiple households and parent-child extended families are reported in Appendix Table 2.[24] The corresponding first stage regressions are reported in Appendix Table 3.

The coefficients on household income in the 2SLS estimations are greater than in the OLS estimations by as much as ten-fold. For the sample of 2000 extended households, 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.[25] Controlling for fixed effects, the coefficient drops to 0.135 (with standard error 0.028) - lower than without controlling for fixed effects- but six times higher than in the specification without instrumental variables (0.021). The IVs pass the overidentification tests for this sample. The p-values for the Hausman tests with the null that the variable log of household real income is exogenous are 0.000 (column 1-4, Appendix Table 2) suggesting that instrumental variables estimations are required.

Since the model is derived from a model of parental altruism, we are particularly interested in whether using the sample of only parent-child extended families would produce different results. It turns out that the results are very similar (column 3 and 4 in Appendix Table 2). For the parent-child extended families the coefficient on income under 2SLS but without fixed effect is 0.218 (standard error 0.035) and after controlling for fixed effects it drops to 0.128 (standard error 0.044). Coefficient on income before controlling for fixed effects is highest using the sample of parent-son

[24] For 1997, only the estimates of the coefficients on household income are presented in Table 9. The regression results are not reported but are available upon request.

[25] Altonji et al.(1992) reports income elasticities of food consumption of around 0.240-0.286 for US households. However, this is arguably not comparable to the results above since one would expect that food in the US would be far less sensitive than all consumption in a developing country.

extended families; 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 families. Except for the 2SLS estimate with fixed effects for the sample of parent-daughter extended families, the IVs pass the over-identification tests. As noted above, the Hausman tests suggest that income is indeed endogenous.

The results thus far seem to suggest that the household's own income matters even after controlling for the extended-family fixed-effects. The estimations without instrumental variables show that the coefficients on income are small in magnitude and almost the same with and without the fixed effects. 2SLS estimations provide us with more reasonable estimates of the coefficients on income. Under 2SLS, controlling for extended-family fixed-effects 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.[26]

5.2 Dynamic Specification

Table 10 presents the summary of results from the dynamic tests. Without controlling for the extended-family fixed effects, the coefficient on changes in log (household real income) is positive and statistically significant, although the magnitude, 0.017 is very small. After adding the extended-family fixed effects, the income coefficient is slightly greater (0.020), and it is still statistically significant. As in the static version, 2SLS would provide a better estimate about the effects of the changes in household income on changes in consumption, provided the instrumental variables are valid. The second stage regression results for all extended families and for parent-child extended families are reported in Appendix Table 7 and 9, respectively. The first stage regression results for the corresponding samples are reported in Appendix Table 8 and 10, respectively.

The F-tests for the identifying instrumental variables reported in Appendix Table 8 and 10 suggest that the instrumental variables contribute in predicting changes in income. The first 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 families, the coefficient on income changes is 0.132 (standard error 0.049) before adding the fixed effects. After accounting for extended-family fixed-effects, the coefficient drops to 0.059 (standard error 0.033). Similar results were obtained using the sample of parent-child extended families. Note that while the test can reject the null that the change in household income is endogenous in the specification without the extended-family fixed-effects, the test fails to reject the null when the fixed effects are controlled for. This suggests that there is no

[26] We also estimate the static regressions using community dummy variables in place of prices and wages. The results are shown in Appendix Table 4 and 5. Identification comes from extended families with members living in different communities. Around 60 percent of the extended families do span across different communities. The coefficient on own income is 20 percent lower (0.203 compared to 0.256) after controlling for extended-household fixed-effects and it is statistically significant.

need to treat the change in income as an endogenous variable when we include the fixed-effects. Nonetheless, the estimations appear to be well identified and the coefficient after controlling for fixed effects under 2SLS (0.059), and under OLS (0.020) are both significantly lower than the estimates under 2SLS before controlling for fixed effects. It is reasonable to conclude that controlling for extended-family fixed-effects, the effects of a change in household own income on the change in household own consumption are small.

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 the instrumental variables did not pass the over-identification test, especially after accounting for extended family fixed effect. Using changes in median wage of male and female interacted with the household education variable in 1997 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 effects are much lower than in previous specifications. But again, the instrumental variables perform very poorly in over-identification tests.

The results from the dynamic specifications 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 family fixed-effects become small.

5.3 Do Other Households' Resources Affect Own Household's Consumption?

Including income of other households from the same extended family directly in consumption regression may provide some insight about the role of other households' income in household consumption. Note that this is not a formal test of consumption smoothing: it will just tell us whether the coefficient on other households' income is statistically significant. If it is, then it indicates that resources of other households do play a role in determining household consumption.

As instruments, we use own household's as well as other households' log of land value, farm and non-farm productive assets. However, the instrumental variables failed the over-identification tests (p-values = 0.039 and 0.052) for the sample of extended families with multiple households and parent-child extended families, respectively. The Hausman tests suggest that other households' income is not endogenous in the household consumption equation. Overall, the results seem to show, at least in the static context, that income of other households does not play any role in determining own household consumption (see Appendix Table 11 and 12).

In addition, we also estimate a reduced form regression of household consumption by regressing log of household consumption not on the income variables but on all of the exogenous explanatory variables included belonging to own household as well as other households, and also on log value of land, farm, and non-farm productive assets of own and other households (see Appendix Table 13). The F-test of other household variables in these regressions are 2.09 (p-value=0.001) and 2.02 (p-value=0.001) for the sample of extended families with multiple households and parent-child extended households, respectively. This suggests that other households' variables do have some effects, if only small, on households' own consumption.

This result is related to the body of literature that looks at the outcome of linked households. For example, Foster (1993) looked at the effects of household partition in rural Bangladesh on child's schooling. In particular the study asks whether decision on child's schooling depend on resources available to a particular household or to resources available to all the linked and neighboring households as a whole.

6 Conclusion

In this paper we have shown that there is evidence against income pooling within extended families, both in the static and dynamic settings. The findings show that household own income and income changes affect consumption and consumption changes even after adding the extended-family fixed-effects. In terms of the magnitudes of the income (and income changes) coefficients, the results are mixed. The 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 can strongly reject the income pooling hypothesis. This in itself is perhaps not surprising: even *within* households, income pooling is almost always rejected in most empirical studies.

The more interesting results come from the dynamic tests that show that controlling for extended family fixed-effects, the magnitudes of the coefficient on income change seem to be small (0.067 to 0.090), although they are statistically significant. This suggests that at least to some degree, households within an extended family do pool their resources. The findings also suggest that although extended family do not fully act as a unitary household , allocation decisions may be made at the extended family level. This implies that, under some conditions, looking at a panel of extended families may be preferable to using only panel of ”original” household when one wants to analyze household consumption or income changes.

It is also important to note that pooling resources is not the only mechanism available to the households to cope with economic crisis. Frankenberg, Smith, and Thomas (2003), using data from IFLS2 (1997) and IFLS2+ (1998) - a shorter period of observation- show how households in Indonesia use the sale of 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 (e.g., members moving out of households in some cases, or joining other households in other case), a household decision that we assume to be exogenous in this paper.[27]

Perhaps one of the more important lessons to be learned from this research is the fact that inter-household ties may be be influential in shaping household allocation decisions. Rejection against extended family income pooling does not mean that extended families do not behave as a single household in other dimension of household behavior. One possible extension of this study is then to look whether and how inter-household ties affect other household behavior such as labor market supply, home production, and investment in human capita. The study by Foster (1993) on the effects of household partition in rural Bangladesh on child schooling is one of the few studies that looks at the effects of linked household resources on household outcome.

One important issue that is not being addressed in this paper is the process of household break-up and formation. In this paper we treat household structure and composition as exogenous, although family formation and dissolution are themselves results of economic decisions. One could extend the study by incorporating the endogeneity of household break-up and formation into the analysis of inter-household ties and household outcomes.

[27]Excluding household composition variables from the specifications does not change the result qualitatively, although the coefficient on income and the change in income increase slightly. For example, the coefficient on the change income in column (1) of Table 10 and with the extended-family fixed-effects increases from 0.059 to 0.091 when we exclude household composition variables. Without the extended-family fixed effects the coefficient in column (1) increases from 0.132 to 0.171.

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Table 1. Household Re-contact Rates

Number of Households	IFLS1	All Members Died	IFLS2 Households Contacted	Re-contact 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
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	

Re-contact 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. Number of Households Interviewed: Target vs. Split-off Households

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

Table 3. Relationship of the members of the 2000 target households to household head and their 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
Sibling,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 4. Target vs Split-off Households, IFLS3 (2000)

	2000 Target households		2000 Split-off Households	
Number of households	7,505		2,517	
	Mean	Std. Dev	Mean	Std. Dev
HH expenditure (Rp)	1,031,107	(1,168,745)	979,148	(1,101,291)
HH income (Rp)	726,652	(1,169,290)	641,019	(1,120,006)
Per capita expenditure (Rp)	261,172	(300,586)	329,163	(378,229)
Per capita 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	(14.1)	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 5. Number of Household and Extended Families

	1997		2000		
	(1)	(2)	(3)	(4)	(5)
Extended families	6,742	6,382	6,774	6,698	6,175
Households	7,619	7,152	10,435	10,022	8,351
Extended families with multiple households	791	703	2,610	2,450	1,723
Households	1,668	1,473	6,271	5,774	3,899
Parent-child extended families	653	562	2,176	2,070	1,510
Households	1,343	1,172	5,075	4,785	3,377

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 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	15.7	80.7	87.6	18.2	76.5
% separated	0.2	3.3	0.7	0	3.5	0.6
% divorced	0.5	10	2.2	0.3	7.3	1.4
% widow/er	2.8	64.5	13.9	0.8	21.5	4.1
Total	100	100	100	100	100	100
Number of observations	6384	1406	7790	2222	423	2645

Table 7. Descriptive Statistics:Extended Families with Multiple Households, IFLS3 (2000)

Number of extended families	1,723	
Number of households	3,889	
	Mean	Std. Dev
HH expenditure (Rp)	983,498	(1,000,331)
HH income (Rp)	672,242	(1,085,537)
Per capita expenditure (Rp)	294,662	(331,967)
Per capita 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	1.3	(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)	0.5	(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)
Land value (Rp)	8,412,357	(39,100,000)
Value of farm prod. assets (Rp)	1,302,529	(8,585,182)
Value of non-farm prod. assets (Rp)	4,148,803	(32,500,000)

Table 8. Descriptive Statistics: Parent-Child Extended Families , IFLS3 (2000)

Number of extended families	1,510					
Number of households	3,377					
	Parent households (n=1,451)		Child households (n=1,672)		Parent, child households (n=254)	
	Mean	Std. Dev	Mean	Std. Dev	Mean	Std. Dev
HH expenditure (Rp)	982,448	(947,128)	983,004	(1,037,599)	883,395	(786,430)
HH income (Rp)	727,319	(999,774)	618,111	(1,108,942)	629,633	(1,351,942)
Per capita expenditure (Rp)	265,465	(287,640)	328,564	(378,505)	241,681	(244,088)
Per capita 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)	10.3	(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	(1090.00)	2,178	(2966.00)	1,687	(1934.00)
Median wage, female (Rp)	855	(1383.00)	1,266	(2401.00)	1,320	(6835.00)
Median prices of sugar (Rp)	3,680	(466.00)	3,705	(450.00)	3,721	(402.00)
Median prices of oil (Rp)	3,499	(243.00)	3,521	(240.00)	3,502	(238.00)
Land value (Rp)	13,100,000	(48,100,000)	4,843,583	(28,900,000)	7,188,051	(40,700,000)
Value of farm bus.assets (Rp)	1,973,674	(11,900,000)	769,319	(3,917,893)	1,504,460	(9,487,436)
Value of non-farm bus.assets (Rp)	3,805,023	(22,100,000)	4,272,634	(40,300,000)	3,150,708	(20,400,000)

Table 9. Effect of household own income on household consumption

	OLS		2SLS			
	No Fixed Effects	Extended-Family Fixed-Effects	No Fixed Effects	Extended-Family Fixed-Effects	Extended Families	Households
	(1)	(2)	(3)	(4)		
1997 households						
Households in extended families with multiple households	0.026	0.024	0.23	0.187	703	1,473
	(0.006)***	(0.006)***	(0.050)***	(0.048)***		
Parent-child extended families	0.023	0.026	0.214	0.151	562	1,172
	(0.006)***	(0.007)***	(0.057)***	(0.043)***		
2000 households						
Households in extended families with multiple households	0.026	0.025	0.239	0.161	2,450	5,774
	(0.003)***	(0.003)***	(0.026)***	(0.023)***		
Parent-child extended families	0.022	0.022	0.251	0.154	2,070	4,785
	(0.003)***	(0.004)***	(0.032)***	(0.025)***		
2000 households that can be matched with 1997 households						
Households in extended families with multiple households	0.022	0.021	0.216	0.135	1,723	3,899
	(0.004)***	(0.004)***	(0.031)***	(0.028)***		
Parent-child extended families	0.020	0.019	0.218	0.128	1,510	3,377
	(0.004)***	(0.004)***	(0.035)***	(0.031)***		

Robust standard errors in parentheses.
Regression results showing the coefficients on other covariates for the sample of 2000 households that can be matched with 1997 households are reported in Appendix Table 1-4. Results for the other samples are not reported.

Table 10. 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-Family FE	No Fixed Effects	Extended-Family FE	No Fixed Effects	Extended-Family FE	No Fixed Effects	Extended-Family FE	Number of Extended Families	Number of Households
Extended families with multiple households	0.017 (0.003)***	0.02 (0.004)***	0.132 (0.049)***	0.059 (0.033)*	0.136 (0.047)***	0.072 (0.031)**	0.084 (0.032)***	0.049 (0.028)*	1,723	3,899
Parent-child extended families	0.019 (0.004)***	0.019 (0.004)***	0.133 (0.053)**	0.067 (0.031)**	0.157 (0.053)***	0.09 (0.031)***	0.085 (0.033)***	0.073 (0.028)***	1,510	3,377

Robust standard errors in parentheses. Regression results showing coefficients on other covariates are reported in Appendix Table 6-10.
(1) Instrumental variables not included in the second stage regressions are: log of land value 1997 and changes in land value.
(2) Instrumental variables not included in the second stage regressions are: log of land value 1997, log of productive assets 1997, changes in real land value.
(3) Instrumental variables not included in the second stage 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.

Appendix Table 1. Static tests: 2000 Extended Families with Multiple Households and Parent-Child Extended Families

Dependent variable: log (household expenditure)	**Extended families with multiple households**		**Parent-child extended families**	
	No Fixed Effects	**Fixed Effects**	**No Fixed Effects**	**Fixed Effects**
log(household income)	0.022	0.021	0.02	0.019
	(0.004)***	(0.004)***	(0.004)***	(0.004)***
log(household size)	0.408	0.521	0.41	0.556
	(0.035)***	(0.042)***	(0.037)***	(0.045)***
Proportion of 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)	0.0001	0.0001	0.0001	0.0001
	(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	9.84
	(1.605)***	(3.034)***	(1.700)***	(3.248)***
Number of households	3899	3899	3377	3377
R-squared	0.42	0.33	0.42	0.33
Number of extended-families		1723		1510

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

Appendix Table 2. Static tests with 2SLS: 2000 Extended Families and Parent-Child Extended Families

Dependent variable: log (household expenditure)	**Extended families with multiple households**		**Parent-child extended families**	
	2SLS: No Fixed Effects	**2SLS: Fixed Effects**	**2SLS: No Fixed Effects**	**2SLS: Fixed Effects**
Log(household 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 of hh members:				
6-14 years	1.099	0.585	1.2	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)***	-0.08
Age of hh head	-0.038	-0.02	-0.042	-0.02
	(0.010)***	(0.010)**	(0.012)***	(0.012)*
Age of hh head (squared)	0.0001	0.0001	0.0001	0.0001
	(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	-0.1
	(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)**
p-values for null hypothesis that:				
- IVs are valid (overidentification test)	0.89	0.21	0.93	0.22
- log (hh income) is exogenous	0.00	0.00	0.00	0.00
Number of households	3899	3899	3377	3377
Number of extended families				1510

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

Appendix Table 3. Static Tests with 2SLS:
First Stage Regression, 2000 Extended Families and Parent-Child Extended Families

Dependent variable: log (household income)	**Extended families with multiple households**		**Parent-child extended families**	
	2SLS: No Fixed Effects	**2SLS: Fixed Effects**	**2SLS: No Fixed Effects**	**2SLS: 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)	-0.16	-0.324	-0.213	-0.438
	(0.151)	(0.254)	(0.187)	(0.344)
log (median wage), male	0.3	0.288	0.185	0.14
	(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	0.49
	(0.724)	(1.327)	(0.975)	(1.855)
log (median prices of oil)	0.46	0.121	0.271	-1.857
	(0.466)	(0.811)	(0.640)	(1.121)*
Instrumental variables excluded from the second stage:				
log (land value)	0.011	0.039	0.009	0.048
	(0.005)**	(0.011)***	(0.007)	(0.016)***
log (value of farm prod.assets)	0.037	0.047	0.036	0.047
	(0.012)***	(0.021)**	(0.015)**	(0.028)*
log (value of non-farm prod.assets)	0.065	0.07	0.062	0.06
	(0.005)***	(0.008)***	(0.006)***	(0.011)***
Constant	-0.685	7.12	-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
Number of households	3899	3899	3377	3377
R-squared	0.3	0.33	0.29	0.34
Number of extended-families		1723		1510

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

Appendix Table 4. Static Tests with 2SLS: 2000 Extended Families with Multiple Households and Parent-child Extended Families with Community Dummy Variables

Dependent variable: log (household expenditure)	**Extended families with multiple households**		**Parent-child extended families**	
	2SLS: No Fixed Effects	**2SLS: Fixed Effects**	**2SLS: No Fixed Effects**	**2SLS: Fixed Effects**
log (household income)	0.256	0.203	0.263	0.212
	(0.040)***	(0.065)***	(0.048)***	(0.082)***
log(household size)	-0.023	0.163	-0.009	0.206
	(0.080)	(0.135)	(0.091)	(0.145)
Proportion of hh members:				
6-14 years	0.871	0.561	0.995	0.569
	(0.131)***	(0.184)***	(0.155)***	(0.215)***
15-59 years, male	0.21	0.187	0.333	0.223
	(0.115)*	(0.168)	(0.125)***	(0.185)
15-59 years, female	0.33	0.214	0.454	0.323
	(0.117)***	(0.173)	(0.128)***	(0.197)
60+ years, male	0.572	0.152	0.576	0.28
	(0.156)***	(0.225)	(0.173)***	(0.259)
60+ years, female	0.149	-0.181	0.161	-0.184
	(0.185)	(0.283)	(0.205)	(0.319)
Male household head (=1)	-0.187	-0.179	-0.17	-0.127
	(0.073)**	(0.117)	(0.080)**	(0.128)
Age of hh head	-0.023	-0.023	-0.028	-0.02
	(0.010)**	(0.016)	(0.013)**	(0.019)
Maximum years of education	0.036	0.022	0.035	0.019
	(0.007)***	(0.011)**	(0.008)***	(0.013)
Farm households (=1)	-0.125	-0.136	-0.09	-0.146
	(0.039)***	(0.067)**	(0.041)**	(0.074)**
Constant	10.14	12.01	10.057	9.287
	(0.769)***	(1.275)***	(0.787)***	(1.810)***
p-values for null hypothesis that:				
- IVs are valid (overi-dentification test)	0.515	0.577	0.867	0.471
- log (hh real income) is exogenous	0.000	0.000	0.000	0.000
Number of households	3899	3899	3377	3377
Number of extended families		1723		1510
Number of extended families with households in different communities		1124		985

Standard errors (in parentheses) are robust to serial correlation and heteroskedasticity. *** indicates statistical significance at 1 percent, ** at 5 percent, and * at 10 percent. Omitted variables are proportion of hh members age 0-4,female hh head, and non-farm 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.

Appendix Table 5. Static Tests with 2SLS: First Stage, 2000 Extended Families with Multiple Households and Parent-child Extended Families with Community Dummy Variables

Dependent variable: log (household income)	Extended families with multiple households		Parent-child extended families	
	2SLS: No Fixed Effects	2SLS: Fixed Effects	2SLS: No Fixed Effects	2SLS: Fixed Effects
log(household size)	1.513	1.601	1.471	1.279
	(0.198)***	(0.286)***	(0.215)***	(0.316)***
Proportion of hh members:				
6-14 years	-1.613	-1.338	-1.956	-1.435
	(0.483)***	(0.614)**	(0.528)***	(0.660)**
15-59 years, male	0.33	0.336	0.115	0.139
	(0.493)	(0.611)	(0.525)	(0.655)
15-59 years, female	-0.119	-0.095	-0.419	-0.473
	(0.515)	(0.639)	(0.553)	(0.694)
60+ years, male	-0.976	-0.635	-0.739	-0.826
	(0.714)	(0.821)	(0.771)	(0.896)
60+ years, female	0.238	1.238	0.22	0.999
	(0.876)	(0.993)	(0.869)	(1.080)
Male household head (=1)	1.33	1.382	1.217	1.181
	(0.206)***	(0.274)***	(0.216)***	(0.298)***
Age of hh head	0.211	0.19	0.229	0.192
	(0.028)***	(0.029)***	(0.030)***	(0.031)***
Age of hh head (squared)	-0.002	-0.002	-0.002	-0.002
	(0.000)***	(0.000)***	(0.000)***	(0.000)***
Maximum years of education	0.121	0.093	0.113	0.099
	(0.018)***	(0.031)***	(0.021)***	(0.033)***
Farm households (=1)	-0.017	0.002	-0.177	-0.187
	(0.206)	(0.377)	(0.194)	(0.394)
Instrumental variables excluded from the second stage:				
log (real value of land)	0.006	0.03	0.008	0.02
	(0.009)	(0.017)*	(0.009)	(0.018)
log(real value of farm assets)	0.033	0.023	0.031	0.043
	(0.017)*	(0.031)	(0.016)*	(0.032)
log(real value of nonfarm assets)	0.051	0.042	0.046	0.035
	(0.008)***	(0.013)***	(0.008)***	(0.013)***
F-test of exclusionary restrictions	17.36	5.74	12.28	3.88
(p-values)	0.000	0.001	0.000	0.009
Number of households	3,899	3,899	3,377	3,377
Number of extended families		1,723		1,510
Number of extended families with households in different communities		1,124		985
R-squared	0.57	0.71	0.58	0.74

Standard errors (in parentheses) are robust to serial correlation and heteroskedasticity. *** indicates statistical significance at 1 percent, ** at 5 percent, and * at 10 percent. Omitted variables are proportion of hh members age 0-4,female hh head, and non-farm 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.

Appendix Table 6. Dynamic tests: 2000 Extended Families with Multiple Households and Parent-Child Extended Families

Dependent variable: Δ log (household expenditure)	**Extended families with multiple households**		**Parent-child extended families**	
	2SLS: No Fixed Effects	**2SLS: Fixed Effects**	**2SLS: No Fixed Effects**	**2SLS: Fixed Effects**
Δ log(household income)	0.017	0.02	0.019	0.019
	(0.003)***	(0.004)***	(0.004)***	(0.004)***
Δ log(household size)	0.03	0.035	0.03	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	0.33	0.352
	(0.086)***	(0.104)***	(0.091)***	(0.112)***
15-59 years, female	0.44	0.348	0.48	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)***	(.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	0.18	0.075	0.162
	(0.041)**	(0.045)***	(0.044)*	(0.048)***
Δ Farm households (=1)	-0.018	-0.077	-0.01	-0.059
	(0.025)	(0.033)**	(0.026)	(0.036)
Δ log (median wage), male	0.038	0.069	0.04	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)	0.23	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	0.14
	(0.045)**	(0.226)	(0.049)	(0.262)
Number of households	3899	3899	3377	3377
R-squared	0.22	0.26	0.22	0.26
Number of extended families		1723		1510

Standard errors (in parentheses) are robust to serial correlation and heteroskedasticity. *** indicates statistical significance at 1 percent, ** at 5 percent, and * at 10 percent. Omitted variables are changes in proportion of hh members age 0-4, female hh head, changes in the status of non-farm household.

Appendix Table 7. Dynamic tests: 2SLS, 2000 Extended Families with Multiple Households

Dependent variable: Δ **log (household expenditure)**	**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	0.41	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	0.44	0.375
	(0.123)***	(0.125)***	(0.122)***	(0.125)***	(0.102)***	(0.119)***
15-59 years, female	0.41	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	0.36	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	0.1	-0.099	0.073	-0.02	0.12
	(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	0.06
	(0.026	(0.025)**	(0.026	(0.026)**	-0.021)	(0.025)**
Δ log (median wage), female	0.022	0.04	0.022	0.039	0.026	0.04
	(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	0.24	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
	(.060)	(0.245)	(0.060)	(0.248)	(0.052)	(0.239)
p-values for null hypothesis that:						
- IVs are valid (over-identification test)	0.32	0.41	0.60	0.21	0.19	0.00
-Δ log (hh real income) is exogenous	0.00	0.12	0.00	0.08	0.02	0.28
Number of households	3899	3899	3899	3899	3899	3899
Number of extended-households		1723		1723		1723

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

(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.

Appendix Table 8. Dynamic tests: 2SLS, First Stage regressions, 2000 Extended Families with Multiple Households

Dependent variable: Δ log (household income)	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 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	0.22	-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	-2.63	-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	0.07	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	-0.81	-0.022	-0.825	-0.02
	(0.379)**	(0.878)	(0.378)**	(0.877)	(0.378)**	(0.881)
Δ log (median prices of oil)	1.675	2.89	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 (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 (land value)	0.05	0.075	0.052	0.076	0.052	0.076
	(0.011)***	(0.015)***	(0.011)***	(0.015)***	(0.011)***	(0.015)***
log (value of prod.assets) 1997			-0.016	-0.05	-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, female) 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	11.4	7.64	8.24
(p-value)	0.00	0.00	0.00	0.00	0.00	0.00
Number of households	3,899	3,899	3,899	3,899	3,899	3,899
R-squared	0.18	0.23	0.18	0.23	0.18	0.23
Number of extended families		1,723		1,723		1,723

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

Appendix Table 9. Dynamic tests: 2SLS, 2000 Parent-Child Extended Families

Dependent variable: **Δ log (household expenditure)**	**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	0.09	0.085	0.073
	(0.053)**	(0.031)**	(0.053)***	(0.031)***	(0.033)***	(0.028)***
Δ log(household size)	0.021	0.03	0.02	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	0.51	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	0.41	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	0.25	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)**	-0.03	(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	0.03	0.014	0.027	0.025	0.03
	(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)	0.18	0.179	0.146	0.12	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)
p-values for null hypothesis that:						
IVs are valid (over-identification test)	0.61	0.59	0.47	0.00	0.09	0.00
log (hh real income) is exogenous	0.01	0.12	0.00	0.01	0.03	0.04
Number of households	3,377	3,377	3,377	3,377	3377	3377
Number of extended families		1,510		1,510		1510

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

(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.

Appendix Table 10. Dynamic tests, 2SLS, First stage regressions, Parent-Child Extended Families

Dependent variable: Δ **log (household income)**	**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 size)	1.78	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	-1.66	-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	0.02	-0.807	-0.003	-0.85	-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	-0.27	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	-0.49
	(0.065)**	(0.100)*	(0.065)**	(0.100)*	-0.17	(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	2.32	1.593	2.492	1.58	2.427
	(0.656)**	(1.716)	(0.657)**	(1.718)	(0.660)**	(1.716)
Instrumental variables excluded from the second stage:						
log (land value) 1997	0.029	-0.05	0.036	-0.025	0.038	-0.019
	(0.012)**	(0.028)*	(0.012)***	-0.031	(0.012)***	-0.031
Δ log (land value)	0.05	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			-0.02	-0.05	-0.02	-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)***	-0.04
Δ log (median wage, male) x max. educ 1997					0.042	0.067
					(0.018)**	(0.026)**
Constant	-0.613	3.721	-0.516	4.07	-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)	0.00	0.00	0.00	0.00	0.00	0.00
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

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

Appendix Table 11.:
Do Other Households' Resources Affect Own Household's Consumption?
2SLS: Second Stage Regressions

Dependent variable: log (household expenditure)	**Extended families with multiple households**	**Parent-child extended families**
log (hh's income)	0.181	0.18
	(0.027)***	(0.029)***
log (other hh's income)	0.032	0.030
	(0.031)	(0.032)
Own hh's variables		
log(household size)	0.167	0.188
	(0.061)***	(0.065)***
Proportion of hh members:		
6-14 years	0.929	0.992
	(0.282)***	(0.309)***
15-59 years, male	0.253	0.313
	(0.219)	(0.234)
15-59 years, female	0.765	0.781
	(0.221)***	(0.245)***
60+ years, male	0.636	0.597
	(0.348)*	-0.407
60+ years, female	0.076	-0.047
	(0.405)	(0.461)
Male household head (=1)	-0.131	-0.139
	(0.065)**	(0.070)**
Age of hh head	-0.028	-0.031
	(0.009)***	(0.010)***
Maximum years of education	0.038	0.037
	(0.008)***	(0.009)***
Farm households (=1)	-0.100	-0.081
	(0.047)**	(0.051)
log (median wage), male	0.046	0.049
	(0.022)**	(0.024)**
log (median wage), female	0.008	-0.002
	(0.016)	(0.017)
log (median prices of sugar)	0.012	0.172
	(0.403)	(0.434)
log (median prices of oil)	0.056	0.021
	(0.307)	(0.335)
Other hh's variables		
log(household size)	0.01	0.015
	(0.021)	(0.023)
Proportion of hh members:		
6-14 years	0.061	0.069
	(0.303)	(0.325)
15-59 years, male	0.276	0.311
	(0.226)	(0.238)
15-59 years, female	-0.275	-0.223
	(0.230)	(0.247)
60+ years, male	0.381	0.536
	(0.430)	(0.482)
60+ years, female	0.11	0.096
	(0.372)	(0.433)

(*continued*)

Appendix Table 11.:
Do Other Households' Resources Affect Own Household's Consumption?
2SLS: Second Stage Regressions (Continued)

Dependent variable: log (household expenditure)	**Extended families with multiple households**	**Parent-child extended families**
Other hh's variables		
Male household head (=1)	-0.088	-0.081
	(0.069)	(0.071)
Age of hh head	-0.01	-0.011
	(0.011)	(0.012)
Maximum years of education	0.013	0.014
	(0.006)**	(0.006)**
Farm households (=1)	0.021	0.018
	(0.033)	(0.035)
log (median wage), male	0.035	0.034
	(0.024)	(0.025)
log (median wage), female	0.009	0.021
	(0.017)	(0.018)
log (median prices of sugar)	-0.099	-0.005
	(0.171)	(0.184)
log (median prices of oil)	-0.271	-0.241
	(0.235)	(0.252)
Constant	12.653	10.639
	(2.344)***	(2.532)***
p-value : significance of other hhs variables	61.61 (0.012)	59.18 (0.020)
p-values of null hypothesis that:		
- IVs are valid (over-identification test)	0.039	0.052
- Own hh income exogenous	0.000	0.000
- Other hh income exogenous	0.221	0.258
Number of households	3899	3377
Number of extended families	1723	1510

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

Appendix Table 12.:
Do Other Households' Resources Affect Own Household's Consumption?
2SLS: First Stage Regressions

	Extended families with multiple households		**Parent-child extended families**	
	Dependent variable:		**Dependent variable:**	
	log (own hh's real income)	**log (other hh's real income)**	**log (own hh's real income)**	**log (other hh's real income)**
Own hh's variables				
log(household size)	1.504	0.194	1.388	0.301
	(0.191)***	(0.162)	(0.208)***	(0.176)*
Proportion of hh members:				
6-14 years	-2.599	4.263	-2.57	4.176
	(0.984)***	(0.554)***	(1.092)**	(0.635)***
15-59 years, male	0.52	4.718	0.615	4.782
	(0.800)	(0.452)***	(0.858)	(0.509)***
15-59 years, female	-1.485	4.25	-1.659	4.484
	(0.907)	(0.492)***	-1.013	(0.579)***
60+ years, male	-1.021	3.214	-0.1	2.936
	(1.888)	(0.850)***	-2.058	(1.038)***
60+ years, female	-2.191	1.327	-2.153	1.437
	(1.971)	(1.232)	(1.890)	(1.330)
Male household head (=1)	1.694	-0.273	1.667	-0.275
	(0.185)***	(0.142)*	(0.197)***	(0.162)*
Age of hh head	0.263	-0.001	0.285	-0.003
	(0.027)***	(0.016)	(0.029)***	(0.016)
Maximum years of education	0.081	-0.151	0.079	-0.142
	(0.025)***	(0.023)***	(0.026)***	(0.025)***
Farm households (=1)	-0.001	0.29	-0.298	0.489
	(0.268)	(0.235)	(0.292)	(0.282)*
log (median wage), male	0.218	-0.002	0.17	-0.004
	(0.094)**	(0.065)	(0.106)	(0.073)
log (median wage), female	0.128	0.007	0.167	0.008
	(0.062)**	(0.049)	(0.067)**	(0.053)
log (median prices of sugar)	1.177	-0.113	0.804	-0.92
	(1.785)	(1.464)	(1.820)	(1.709)
log (median prices of oil)	-1.113	0.842	-1.504	1.447
	(1.291)	(1.095)	(1.344)	(1.214)
Other hh's variables				
log(household size)	-0.091	0.156	-0.115	0.185
	(0.077)	(0.058)***	(0.085)	(0.067)***
Proportion of hh members:				
6-14 years	-0.296	-5.035	-0.58	-4.691
	(1.068)	(0.705)***	(1.183)	(0.779)***
15-59 years, male	-1.347	-5.167	-1.556	-5.114
	(0.827)	(0.419)***	(0.896)*	(0.459)***
15-59 years, female	1.235	-4.912	1.189	-4.897
	(0.917)	(0.443)***	(1.015)	(0.496)***
60+ years, male	1.233	-1.291	1.174	-1.105
	(2.129)	(1.475)	(2.055)	(1.617)
60+ years, female	-0.333	-4.494	-0.854	-4.296
	(1.999)	(0.944)***	(2.149)	(1.130)***

continued

Appendix Table 12.:
Do Other Households' Resources Affect Own Household's Consumption?
2SLS: First Stage Regressions (continued)

	Extended families with with multiple households		Parent-child extended families	
	Dependent variable:		Dependent variable:	
	log (own hh income)	log (other hh income)	log (own hh income)	log (other hh income)
Other hh's variables				
Male household head (=1)	-0.087	1.842	-0.098	1.785
	(0.134)	(0.181)***	(0.143)	(0.193)***
Age of hh head	0.009	0.298	0.008	0.311
	(0.017)	(0.027)***	(0.017)	(0.030)***
Maximum years of education	-0.009	0.131	-0.011	0.117
	(0.015)	(0.015)***	(0.016)	(0.017)***
Farm households (=1)	-0.095	-0.157	0.093	-0.198
	(0.215)	(0.141)	(0.249)	(0.157)
log (median wage), male	-0.029	0.2	0.016	0.179
	(0.082)	(0.096)**	(0.088)	(0.107)*
log (median wage), female	-0.046	0.067	-0.043	0.099
	(0.062)	(0.058)	(0.065)	(0.063)
log (median prices of sugar)	1.348	0.018	1.479	-0.18
	(0.708)*	(0.645)	(0.750)**	(0.705)
log (median prices of oil)	-0.078	0.145	0.081	0.144
	(1.045)	(0.918)	(1.090)	(1.082)
IVs Excluded from 2nd Stage				
log(own land)	0.014	-0.028	0.013	-0.028
	(0.007)**	(0.009)***	(0.007)*	(0.011)***
log (own farm prod. assets)	0.032	0.007	0.036	-0.01
	(0.014)**	(0.018)	(0.015)**	(0.022)
log (own non-farm prod. assets)	0.063	0.0001	0.061	0.0001
	(0.006)***	(0.007)	(0.006)***	(0.008)
log (other's land)	-0.04	0.002	-0.039	0.001
	(0.011)***	(0.007)	(0.012)***	(0.008)
log (other's farm prod. assets)	0.024	0.041	0.006	0.044
	(0.020)	(0.013)***	(0.022)	(0.014)***
log (other's non-farm prod. assets)	0.0001	0.054	0.003	0.056
	(0.008)	(0.005)***	(0.008)	(0.006)***
Constant	-10.523	-6.461	-7.146	-3.898
	(9.133)	(8.383)	(9.920)	(9.224)
F-test of identifying IVs (*p*-values)				
Land and productive assets (own hh)	40.97 (0.000)	3.710 (0.011)	32.35 (0.000)	3.60 (0.013)
Land and productive assets (other hh)	4.72 (0.003)	41.62 (0.000)	4.15 (0.006)	35.43 (0.006)
Land and productive assets (own, other hh)	22.47(0.000)	22.22 (0.000)	18.07 (0.000)	19.00 (0.000)
Number of households	3899	3899	3377	3377
Number of extended families	1723	1723	1510	1510
R-squared	0.31	0.32	0.31	0.32

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

Appendix Table 13.:
Do Other Households' Resources Affect Own household's Consumption?
Reduced Form Regressions

Dependent variable: **log (household expenditure)**	**OLS: Extended families with multiple households**	**OLS: Parent-child extended families**
Own hh's variables		
log(household size)	0.447	0.448
	(0.034)***	(0.037)***
Proportion of hh members:		
6-14 years	0.563	0.615
	(0.182)***	(0.196)***
15-59 years, male	0.475	0.548
	(0.134)***	(0.149)***
15-59 years, female	0.612	0.598
	(0.134)***	(0.143)***
60+ years, male	0.542	0.657
	(0.280)*	(0.341)*
60+ years, female	-0.318	-0.443
	(0.301)	(0.318)
Male household head (=1)	0.162	0.149
	(0.031)***	(0.034)***
Age of hh head	0.02	0.021
	(0.004)***	(0.004)***
Maximum years of education	0.048	0.047
	(0.005)***	(0.005)***
Farm households (=1)	-0.081	-0.092
	(0.062)	(0.066)
log (median wage), male	0.087	0.081
	(0.018)***	(0.019)***
log (median wage), female	0.032	0.03
	(0.012)***	(0.013)**
log (median prices of sugar)	0.182	0.242
	(0.312)	(0.343)
log (median prices of oil)	-0.084	-0.168
	(0.233)	(0.251)
log(own land) x 10^{-2}	0.318	0.274
	(0.211)	(0.002)
log (own farm prod. assets) x 10^{-2}	0.611	0.669
	(0.424)	(0.004)
log (own non-farm prod. assets) x 10^{-2}	1.328	1.296
	(0.154)***	(0.166)***
Other hh's variables		
log(household size)	-0.003	-0.002
	-0.016	-0.017
Proportion of hh members:		
6-14 years	-0.118	-0.134
	(0.195)	(0.210)
15-59 years, male	-0.099	-0.092
	(0.129)	(0.144)
15-59 years, female	-0.181	-0.128
	(0.126)	(0.133)
60+ years, male	0.632	0.796
	(0.330)*	(0.352)**
60+ years, female	-0.085	-0.178
	(0.293)	(0.359)

(continued)

Appendix Table 13.:
Do Other Households' Resources Affect Own Household's Consumption?
Reduced Form Regressions (continued)

Dependent variable: log (household expenditure)	**OLS: Extended families with multiple households**	**OLS: Parent-child extended families**
Other hh's variables		
Male household head (=1)	-0.043	-0.044
	(0.027)	(0.029)
Age of hh head	0.001	-0.001
	(0.004)	(0.004)
Maximum years of education	0.015	0.014
	(0.003)***	(0.003)***
Farm households (=1)	-0.026	-0.021
	(0.038)	(0.041)
log (median wage), male	0.039	0.044
	(0.017)**	(0.019)**
log (median wage), female	0.006	0.019
	(0.013)	(0.014)
log (median prices of sugar)	0.135	0.251
	(0.125)	(0.131)*
log (median prices of oil)	-0.253	-0.188
	(0.182)	(0.200)
log (other's land) x 10^{-2}	0.099	0.126
	(0.189)	(0.207)
log (other's farm prod. assets) x 10^{-2}	0.16	0.077
	(0.309)	(0.339)
log (other's non-farm prod. assets) x 10^{-2}	0.19	0.211
	(0.144)	(0.157)
F-test		
Land and prod. assets (own)	28.36 (0.000)	22.80 (0.000)
Land and prod. assets (other)	0.96 (0.409)	0.86 (0.462)
All own hh's variables	27.01 (0.000)	22.99 (0.000)
All other hh's variables	2.09 (0.001)	2.02 (0.0001)
Constant	10.417	9.04
	(1.860)***	(1.985)***
Number of households	3899	3377

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