Is Extended Family in Low-Income Countries Altruistically Linked? Evidences from Bangladesh

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Abstract

Using a micro data from Bangladesh, we test whether an extended family in low-income countries is altruistically linked. We test whether interhousehold transfer is negatively correlated to the recipient's income and whether consumption of each of related households is uncorrelated with its own income, controlling for pooled income of the family. The results do not support altruism. Transfer from relatives is estimated to be uncorrelated with the recipient's income or wealth. Households' non-food consumption is estimated to be strongly correlated with their own income and wealth, even after related households' pooled income is controlled for.

1 Introduction

Economic linkages among family members in developing countries are stronger than those in developed countries. Family in developing countries is likely to live together for longer period and to transfer money and food more frequently to each other than its counterpart in developed countries. According to a survey by Cox and Jimenez (1990), 20 to 90 percent of households in developing countries receive private transfers, while only 15 percent do in the United States (Cox and Jimenez 1990, Table 1). Furthermore, the transfer received comprises 2 to 20 percent of household income on average in developing countries, but only 1 percent of household income in the United States.

What gives rise to the strong economic ties among (extended) family in low-income countries? It may be strong familial altruism. The degree of familial altruism and economic development may not be directly related, but to casual observers, people living in low-income countries in the South such as Asia, Latin America, and Africa look 'family-oriented' while those in developed countries in the North such as North America and Europe look 'individualistic.' Or it may be just needs that arise from lack of financial institutions in developing countries. Extended family members may be substitutes for financial institutions such as bank and insurance company and the transfers among them are actually financial transactions or quid pro quos.

The nature of familial ties bears a significant policy implication. It is well known that, if a public transfer program is introduced to a society where family members are economically linked by pure altruism, the program will bring little change to income distribution or individuals' welfare, because individuals will adjust private transfers so that they neutralize the program's desired effects (Barro 1974). For a country that lacks any public transfer program and is about to introduce one, therefore, it is imperative for its policymakers to be informed of the nature of private economic linkages in the country, in order for them to devise an effective program. In that sense, research on the nature of familial economic linkages is more important to developing countries that gradually

discover needs for public transfer programs due to demographic changes and aging than developed countries with established such programs.

Despite of the need, however, whether an extended family in low-income countries is altruistically linked or not has been seldom tested by other means than studying interhousehold transfers. Ravallion and Dearden (1988), Lillard and Willis (1997), and Cox et al. (1998) are examples of studies on interhousehold transfer in developing countries. Knowledge of interhousehold transfer behavior such as the relationship between the recipient's income and transfer amount provides us with important insights into familial economic linkages, but it has its own limitations. As pointed out by Altonji et al. (1992), the timing of transfer is arbitrary so that a study based on a cross-section data may lead to an incorrect inference, and there are many forms of transfer that cannot be measured (e.g., business partnership, service transfer). Furthermore, most data on interhousehold transfers lack information on the donors, which may cause omitted variable bias in estimating the transfer behavior. Pointing out the shortcomings of interhousehold transfer studies, Altonji et al. (1992) suggest an alternative test of altruism, namely the test of a dynasty model. Their test is based on an implication of altruism model that controlling for altruistically linked households' pooled income, each household's consumption should be uncorrelated with its own income. The limitation of their test is that it requires information on income and consumption of each of the potentially altruistically linked households, which is not readily available from any socioeconomic survey. They overcome the problem by using split-off household information in a long panel survey (Panel Study of Income Dynamics), a luxury we do not have for low-income countries.

Fortunately, a recent data on Bangladesh provides us a unique opportunity to test altruism as the basis of interhousehold linkages in a low-income country setting by the direct method of Altonji et al. The Matlab Health and Socioeconomic Survey (MHSS) of Bangladesh in 1996 is a cross-sectional survey whose unique feature is its outmigrant survey. Over five hundred outmigrant households are tracked down and asked the same questions as the original households. Matching the outmigrants with their original family,

we can test the dynasty model. Using the data, this paper tests whether an extended family in low-income countries is altruistically linked.

The tests are twofold. One test is based on an altruistic interhousehold transfer model. The model implies that if households are altruistically linked to each other, interhousehold transfers must be negatively correlated with the recipient's income; and reducing the income of donor household by one dollar and increasing the income of a recipient household by one dollar reduces the amount transferred by one dollar (Cox 1987, Altonji et al. 1997). The other test is based on the dynasty model. That is, if households are altruistically linked to each other, each household's consumption should be uncorrelated with its own resources, controlling for the linked households' pooled resources (Becker 1974, Altonji et al. 1992).

Test results of the paper cast doubt on altruism as the basis for familial economic ties in low-income countries. In the first test, we fail to reject that transfer from father, child, or sibling is not responsive to the recipient's income or wealth. In the second test, households' non-food consumption is estimated to be strongly correlated with their own income and wealth, even after related households' pooled income is controlled for. The test results are in line with those using the US data of Altonji et al. (1992, 1997). While familial economic linkage looks far stronger Bangladesh than in the United States, the motivation for them may not be different across the countries.

The balance of the paper is organized as follows. Section 2 derives implications of altruism model that are basis of the tests in this paper. The samples used in the paper and the data set from which the samples are extracted, the Matlab Health and Socioeconomic Survey (MHSS), are described in Section 3. The test results are presented in Section 4. Section 5 concludes the paper.

2 Implications of Altruism Model

If two households are altruistically linked, inter vivos transfers between them may exist. The implications of altruistic transfer model are well explored in previous studies such as Cox (1987) and Altonji et al. (1997). The following simple model shows them.

Let us assume that household i cares about household j and determines transfer amount T to maximize its altruistic utility function given by $U_i = U(c_i, V(c_j))$, where c_i and c_j is the consumption of household i and j respectively and $V(c_j)$ is household j's utility function. Then the budget constraints of the households are given by

$$c_i \leq y_i - T \tag{1}$$

$$c_j \leq y_j + T. \tag{2}$$

If the budget constraints are binding, the first order Kuhn-Tucker conditions for i's utility maximization problem are

$$\frac{dU_i}{dT} = -U_c + U_v V_c \leq 0, \; T\frac{dU_i}{dT} = 0, \tag{3}$$

where $U_c = \partial U_i/\partial c_i$, $U_v = \partial U_i/\partial V$, and $V_c = \partial V/\partial c_j$. For an interior solution T^*, we can show that

$$\begin{aligned} \frac{\partial T}{\partial y_i} &= \frac{U_{cc} - U_{vc}V_c}{\Delta} \\ \frac{\partial T}{\partial y_j} &= \frac{U_{cv}V_c - U_{vv}V_c^2 - U_v V_{cc}}{\Delta}, \end{aligned}$$

where $\Delta = U_{cc} - U_{vc}V_c - U_{cv}V_c + U_{vv}V_c^2 + U_v V_{cc}$. That is,

$$\frac{\partial T^*}{\partial y_j} = -1 + \frac{\partial T^*}{\partial y_i}. \tag{4}$$

Equation (4) implies that as long as i's consumption is a normal good, the transfer

amount is negatively correlated with the recipient's income. It also implies that reducing the income of the donor household i by one dollar and increasing the income of the recipient household j by one dollar reduces the amount transferred by one dollar. Therefore, we can test whether interhousehold transfer is motivated by altruism or not by estimating an interhousehold transfer equation and verifying whether the theoretical implications hold in the data.

The interhousehold transfer model can be modified into a dynasty model, as shown by Altonji et al. (1992), that bears another testable implication for altruism. Note that the budget constraints (1) and (2) may be combined into a single 'pooled' budget constraint:

$$y_i + y_j = c_i + c_j \tag{5}$$

Suppose j takes the transfer from i as given. Then the first order condition for household i's utility maximization problem subject to the pooled budget constraint is $U_c = U_v V_c = \lambda$, where λ is the marginal utility of the pooled income. From the condition and the pooled budget constraint we can solve for c_i and c_j. It implies that household i and j's consumption does not depend on its own income, but on the pooled income. In that sense, household i and j are regarded members of a dynasty.

Altonji et al. (1992) show that, for a wide range of utility functions, we can test whether households are altruistically linked or not by estimating a demand function such as the following

$$c_{ik} = \boldsymbol{\beta}'\mathbf{x}_{ik} + \gamma y_{ik} + \alpha_i + u_{ik}, \tag{6}$$

for $k = 1, 2, \ldots, n_i$ and $i = 1, 2, \ldots, N$, where c_{ik} is the consumption of member household k of dynasty i, $\mathbf{x}_{ik}$ is the vector of its demographic characteristics, y_{ik} is the member household's own income, and α_i is the fixed effect across member households of the dynasty. Since the fixed effect α_i includes the pooled resources of the dynasty i, the dynasty model implies that if member households in a dynasty is altruistically linked and the fixed effect is controlled for, γ must be zero.

3 Data

The household samples used for the study are from the Matlab Health and Socioeconomic Survey (MHSS). The survey was conducted in 1996 in Matlab, Bangladesh, a rural area south to the capital city, Dhaka. The survey collected comprehensive information on household economy, individuals' demographic, economic, and health status, and community characteristics. The MHSS comprises of four distinct and separate surveys: main survey, determinants of natural fertility survey, outmigrant survey, and community/provider survey. The samples used in this paper are from the main and the outmigrant surveys.

The main survey of the MHSS consists of household and individual level information on 4,538 households who lived in Matlab at the time of survey and were randomly selected for the interviews. The outmigrant survey, a unique feature of the MHSS, consists of household and individual specific information on 552 outmigrants who had left the households of the main sample between 1982 and the date of the MHSS and not returned to their original households or neighborhood communities (*baris*).

The data shows that a substantial number of households in Matlab engage in inter-household transfers. 43 percent of the households in the main sample report that their one or more household members received cash or in-kind transfers from outside in the past year, and 57 percent report that their household members sent transfers to other households. The most common sources of the transfers received by the household members are the recipient's son (27%) and brother (13%).

Transfer data is constructed using non-coresident family information in the main survey. The MHSS collects information on transfer sent to and received from non-coresident parents, children, and siblings for the past year, along with demographic and limited economic information of theirs. The paper uses data of transfer received by household heads from non-coresident father, child, and sibling. Excluding heads whose reported household income or total asset value is not positive in order to minimize confounding effects of outliers, 507 pairs of head–father, 5,378 head–child pairs, and 12,550 head–sibling

pairs are used. Summary statistics of the sample are presented in Table 1.

[Table 1 here.]

The table shows that child-to-parent transfers are more common and greater in size than parent-to-child or sibling-to-sibling transfers. 18.6 percent of head–child pairs have had child-to-parent transfers during the past year, while 11.2 percent of head–father pairs have had father-to-child transfers and 3 percent of head–sibling pairs have had sibling-to-sibling transfers. Excluding zero transfers, on average, child-to-parent transfer amount is about three times greater than father-to-child or sibling-to-sibling transfer amount. For those who receive transfer from non-coresident family, transfer seems to be a sizeable addition to their income. The median ratio of transfer amount received to the recipient's own household income is 0.14 for father-to-child transfer, 0.36 for child-to-parent transfer, and 0.08 for sibling-to-sibling transfer (not shown).

For the test of the dynasty model, each outmigrant household is matched to its original household in Matlab. Excluding non-matched outmigrant households due to coding errors, and households whose income or total asset value is not positive or whose income belongs to the upper 5%, 754 households in total or 377 matched pairs are used for this study. Most outmigrants were household heads or children of household heads in 1982. the Table 2 shows summary statistics of the sample.

[Table 2 here.]

The table shows that, on average, the heads of outmigrant households are younger and better educated with fewer household members than the original household heads. Outmigrants' average household income for a year is greater than that of the original households by 10000 Bangladesh takas, while their total non-food consumption is smaller than that of the original households by 2000 takas. It also shows that far less outmigrant households have experienced family or economic hardship in households during the past year than the original households.

4 Test Results

4.1 Transfer Received

As discussed in section 2, altruism model of transfer bears a strong implication on the relationship between the recipient's income and the amount of transfer received—it must be monotonically negative. Therefore, a nonnegative relationship between them casts doubt on altruism as the motivation for interhousehold transfers.

Using the out-of-household family member information of the MHSS, which includes information on transfers to and from non-coresident parents, children, and siblings, the relationship of the household income with transfer amount received by household head from father, child, and sibling is estimated.

The estimated model is set up as follows. The basic assumption of the model is that individuals determine transfer amount to their out-of-household family members in two stages (Cox 1987). In the first stage do they decide whether they transfer or not. If they decide to transfer, in the second stage do they determine the transfer amount. Otherwise, the transfer amount is zero.

The first-stage decision is modelled as follows:

$$t_{ij} = \alpha_0 + \alpha_1 y_j + \boldsymbol{\alpha_2 H_j} + \boldsymbol{\alpha_3 X_j} + \boldsymbol{\alpha_4 X_i} + \boldsymbol{\alpha_5 Z_{ij}} + \varepsilon, \tag{7}$$

where t_{ij} is i's latent utility of send a transfer to j, y_j is j's income, $\boldsymbol{H_j}$ is the vector of j's household characteristics (asset, experience of family and economic hardship, and household size), $\boldsymbol{X_j}$ is the vector of j's individual characteristics (age, age squared, education level, sex, and marital status), $\boldsymbol{X_i}$ is the vector of i's individual characteristics (age, education level, sex, martial status, homestead ownership, farm land ownership, and non-farm business ownership), $\boldsymbol{Z_{ij}}$ is the vector of i-j interaction dummies (frequency of meeting and correspondence), and ε is the random shock. Inclusion of i-j interaction dummies is motivated by Cox and Rank (1992) who show that the frequency of contacts

has significant effects on parent to child transfers. i transfers to j if and only if $t_{ij} > 0$. If i transfers to j, the transfer amount T_{ij} in the second stage is assumed to be determined by

$$T_{ij} = \beta_0 + \beta_1 y_j + \boldsymbol{\beta_2 H_j} + \boldsymbol{\beta_3 X_j} + \boldsymbol{\beta_4 X_i} + \boldsymbol{\beta_5 Z_{ij}} + \eta, \tag{8}$$

where η is another random shock. Assuming ε and η follow a bivariate standard normal distribution, coefficient vector of equation (8) is estimated using Heckman's two-step estimation method.[1] The estimation results are presented in Tables 3 and 4. Table 3 reports the estimation results using levels of transfer, income, and asset, while Table 4 reports those using natural logarithms of the three variables.

[Tables 3 and 4 here.]

Key coefficients we pay attention to in order to infer the nature of relationship among extended family members are β_1 and $\boldsymbol{\beta_2}$. If they are linked through altruism, we expect income coefficient (β_1) and asset coefficient to be negative and coefficients of family and economic hardship to be positive, since they are negative income shocks.

Table 3 shows that recipient's income is estimated to have little effect on the donor's transfer amount decision. The estimated coefficients of recipient's household income are small and positive except for that for transfer from sibling—.16 for transfer received from father, .01 for transfer received from child, and -.01 for transfer received from sibling—and none of them are statistically different from zero at any conventional level. The estimated coefficients of the recipient's household asset are even smaller in terms of magnitude and, except that for transfer from sibling, statistically insignificant. While transfer amount from child and sibling is estimated to be positively related with the recipient's experience of family hardship (death or sickness in family) and household size, the recipient's experience of economic hardship (income loss due to crop loss, price fall, business loss, or unemployment) is estimated to have a negative, but statistically insignificant, impact on the transfer amount.

[1]The income variable in equation (7) is replaced with income quartile dummies.

The elasticity estimates presented in Table 4 are similar to the level estimates in Table 3. While the estimated log income coefficients are all negative, their magnitude is small. It is estimated that the recipient's 1% income drop induces only .03% increase in transfer from father, .09% increase in transfer from child, and .03% increase in transfer from sibling. Furthermore, except for the income coefficient for transfer from child, they are statistically insignificant. Estimated log asset coefficients are all positive and statistically significant at 5% level for transfer from child and sibling, but still small in magnitude. Except for family hardship coefficient for log transfer from sibling, no estimated coefficient of experience of family/economic hardship is statistically significant.

The estimation results summarized above render little support to altruism as the motivation for interhousehold transfers among extended family members. Both in level and elasticity, transfer amount is estimated to be extremely irresponsive to the recipient's income or wealth, which is inconsistent with the theoretical prediction of altruism model.

4.2 Household Consumption

A demand function for consumption goods specified in equation (6) is estimated. For consumption, only non-food consumption is counted, because most food consumed is home-grown and few households report their food expenses. The estimation results can be found in Tables 5 and 6. Table 5 shows the OLS estimation results and Table 6 shows the fixed-effect estimation results.

[Tables 5 and 6 here.]

As discussed in Section 2, if two households are linked altruistically, each household's consumption is not limited by its own income, but by the pooled income. Therefore, if a migrant's household and his or her original household are altruistically linked, we expect each household's own income to have no effect on the household consumption, controlling for the pooled income.

However, results in Tables 5 and 6 show otherwise. For all matched migrant-original households (the first column in the tables), own income and asset have positive and statistically significant effect on non-food consumption both in level and elasticity by OLS or fixed effect model estimation. Increase of household income by 100 Bangladesh Takas is estimated to increase non-food consumption by 7 Takas by OLS and by 8 Takas by fixed-effect model. Furthermore, 1% increase in household income is estimated to increase non-food consumption by .18% by OLS and by .20% by fixed-effect model. The estimates are statistically significant at any conventional level.

One may question using all matched households in estimation, because a sizeable number of migrants included in the sample are females who are married to a man from another family. The female migrants are likely to have little influence on their own household's economic decisions. The economic linkage between the original household and the female's household may be different from other cases, because the female's household is viewed as the in-laws' household by the female migrant's original family. In order to minimize the confounding effects that may arise from the difference in interhousehold relationship, we restrict the sample to the migrant households whose head is the migrant himself or herself and their matched original households. Estimation results using the restricted sample are presented in the second column of Tables 5 and 6.

Even with the restricted sample, the estimation results are little different from those using all households. Own household income coefficient is still estimated to be positive and statistically significant by both OLS and fixed-effect model estimation. An increase of household income by 100 Takas is estimated to raise household's non-food consumption by 12–13 Takas and 1% increase in own household income is associated with .14%–.16% increase in non-food consumption.

The third column of Tables 5 and 6 shows the estimated coefficients of equation (6) using the sample of migrants who stay in Matlab region and their original households. Since the migrant households and their original households are geographically close, their interhousehold economic linkages are likely to be stronger than those who live in separate

regions. The estimation results are, however, very similar to those using other samples. That is, the positive effect of own income on non-food consumption is still strong. In all four specifications, the own household income coefficients are positive and statistically significant at all popular levels.

It is worthwhile to note that except for two cases own household asset value is estimated to be positively correlated with non-food consumption with strong statistical significance. The magnitude of the coefficient estimates are very small on level, ranging from .001 to .007. The estimates of elasticity of non-food consumption with respect to wealth range from .13 to .24.

The estimation results discussed above do not support the dynasty model or the altruistic linkage between migrant's and original households. The results, especially of the fixed-effect model, are inconsistent with the theoretical implication of the dynasty model that each of altruistically linked households' consumption should be uncorrelated with its own household income after controlling for the pooled income.

5 Conclusions

Using a data from Bangladesh, the paper tests two theoretical implications of altruism model—if two households are altruistically linked, transfer from one household to another should be negatively correlated with the recipient's income; and altruistically linked households' consumption should be uncorrelated with their own household income after controlling for their pooled income. Although familial economic ties seem very strong in low-income countries, the test results do not support that extended family in low-income countries is altruistically linked. The estimation results fail to reject that transfer from father, child, or sibling is not responsive to the recipient's income or wealth in most cases. Furthermore, households' non-food consumption is estimated to be strongly correlated with their own income and wealth, even after related households' pooled income is controlled for.

If not altruism, then what motivates individuals to transfer to each other? One may transfer to another to repay (implicit) loans in the past. Especially, child to parent transfer may be intended to be repayment of human capital investment by the parent in the child (Johnson and Whitelaw 1974, Lillard and Willis 1997). Positive and statistically significant estimates of child's education level coefficient for transfer from child may indicate existence of repayment motive. In a similar vein, transfer may be a quid pro quo for service received by the donor. Cox (1987) and Cox and Rank (1992) find evidence to support the argument that parent-to-child transfer is given in exchange for child's service to parents such as companionship, emotional support, etc. Transfer may be a means to secure future payment from the recipient (Lucas and Stark 1985). It may be intended to motivate the recipients to keep providing service to the donor (Bernheim, Shleifer, and Summers 1985).

Cash transfer may be a means to fulfil familial obligations that may have little to do with the recipient's economic status but much to do with the relationship between the recipient and donor. For example, eldest sons may be under more or less the same filial obligations to their parents regardless of the parents' economic status, everything else equal. Large and negative estimated coefficients of meeting frequency dummies for transfer from chid and sibling whose absolute value increases as meeting frequency increases—for example, a child who never meets the parents transfers 44,572 takas more to the parents than a child who meets them everyday—suggest that cash transfer and direct contacts may be substitutes.[2] Then what determines the amount of cash transfer in a given relationship between the donor and the sender must be the opportunity cost of the donor's time, not the recipient's economic status.

Test of the competing hypotheses on non-altruistic motivation for economic linkages described above seems to be worth pursued in future research.

[2]Including dummy variables that indicate location of the child's residence makes the coefficients smaller in absolute value and statistically insignificant. However, the signs are still negative and their absolute value increases as meeting frequency increases.

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Table 1: Summary statistics: samples used for transfer received by household head

Variable	Mean/%	Mean/%	Mean/%
	Head–Father	Head–Child	Head–Sibling
Household characteristics			
own income$\times 10^{-3}$	40.6	29.5	35.5
	(205.1)	(62.8)	(107.6)
asset$\times 10^{-3}$	265.6	2252.1	1224.5
	(1906.0)	(58638.3)	(38635.5)
economic hardship	16.4	21.7	22.9
family hardship	10.5	11.8	13.0
size	5.1	5.1	5.5
	(1.6)	(2.6)	(2.1)
Head's characteristics			
age	36.7	62.2	45.7
	(7.7)	(9.6)	(12.4)
education level	3.0	2.5	3.2
	(3.6)	(3.3)	(3.8)
male	72.2	81.2	83.5
married	93.0	80.5	89.9
Family's characteristics			
age	71.4	29.9	44.2
	(11.1)	(8.5)	(14.4)
some school	35.9	–	–
education level	–	4.1	2.9
		(4.0)	(3.7)
male	–	40.0	50.3
married	–	84.8	85.5
has homestead	90.3	31.9	81.2
has farm land	72.0	19.7	64.5
has non-farm business	3.6	3.2	6.0
Meeting frequency			
at least once a year	9.1	26.7	25.9
at least once a month	19.9	46.1	34.8
at least once a week	7.1	5.8	7.1
everyday	61.9	13.8	25.6
Correspondence frequency			
at least once a year	1.4	4.8	4.7
at least once a month	2.2	12.2	3.6
at least once a week	0.0	0.2	0.1
everyday	0.5	0.3	0.5
Observations	507	5378	12550
Head received transfer	57	1000	377
Transfer amount received $\times 10^{-3}$	5.3	16.4	5.4
	(9.2)	(47.0)	(13.3)

Note: Standard deviations are in the parentheses.

Table 2: Summary statistics: samples used for dynasty model test

Variable	Mean/%	Mean/%
	Original households	Outmigrant households
non-food consumption$\times 10^{-3}$	9.1	7.0
	(13.0)	(14.5)
own household income$\times 10^{-3}$	26.4	36.0
	(23.4)	(25.0)
own asset$\times 10^{-3}$	380.4	215.2
	(1156.7)	(604.2)
family hardship	14.3	5.6
economic hardship	24.7	4.5
head's age	51.0	36.4
	(13.7)	(11.3)
head is female	12.5	7.2
head is married	89.1	87.0
head's education	3.3	4.8
	(3.9)	(4.3)
household size	5.5	4.0
	(2.3)	(2.5)
Observations	377	377

Table 3: Transfer received by household head

Variable	Coef.	Coef.	Coef.
	From father	From child	From sibling
Dependent Variable			
transfer received $\times 10^{-3}$			
Household characteristics			
income$\times 10^{-3}$	.155 (1.22)	.013 (0.38)	-.014 (1.47)
asset$\times 10^{-3}$	-.003 (0.49)	.001 (0.88)	.002 (1.79)
economic hardship	-4.307 (0.69)	-1.956 (0.51)	-.757 (0.52)
family hardship	9.980 (1.12)	7.441 (1.59)	2.939 (1.58)
size	-.683 (0.56)	1.515 (2.26)	.782 (2.31)
Recipient's characteristics			
age	-1.172 (0.78)	-2.792 (1.71)	-.354 (0.91)
age squared	0.032 (1.66)	.020 (1.56)	.002 (0.42)
education level	.503 (1.03)	-.009 (0.01)	.061 (0.29)
male	3.959 (0.79)	-5.744 (0.69)	5.473 (2.34)
married	3.784 (0.55)	2.519 (0.36)	-6.036 (1.98)
Sender's characteristics			
age	-.251 (1.36)	.189 (0.69)	-.070 (1.08)
some school	-3.631 (0.96)	–	–
education level	–	1.818 (2.15)	.117 (0.32)
male	–	43.775 (2.70)	2.862 (1.44)
married	–	-6.859 (1.33)	.866 (0.47)
has homestead	4.151 (0.47)	-6.055 (0.86)	-.322 (0.12)
has farm land	2.255 (0.47)	9.182 (1.43)	3.688 (1.57)
has non-farm business	3.243 (0.39)	7.589 (0.83)	1.471 (0.65)
Recipient meets sender[a]			
at least once a year	8.328 (1.05)	-20.090 (3.88)	-8.39 (2.58)
at least once a month	-3.371 (0.55)	-30.171 (5.46)	-8.465 (2.03)
at least once a week	–	-35.203 (3.23)	-6.795 (1.51)
everyday	-.325 (0.05)	-44.572 (4.86)	-11.325 (3.09)
Recipient corresponds with sender[a]			
at least once a year	-25.182 (1.53)	7.154 (0.95)	-.415 (0.12)
at least once a month	-9.092 (1.03)	22.014 (2.83)	8.891 (1.78)
at least once a week	–	20.894 (0.94)	14.861 (1.61)
everyday	–	-28.768 (0.61)	–
Constant	35.870 (1.37)	23.444 (0.50)	7.421 (0.41)
Mill's ratio	-14.771 (1.61)	45.644 (2.28)	4.251 (0.60)
Obs	507	5378	12550
Uncensored obs	57	1000	377

Note: Absolute asymptotic t-values are in the parentheses.

[a] Base case: never.

Table 4: Log Transfer received by household head

Variable	Coef.	Coef.	Coef.
	From father	From child	From sibling
Dependent Variable			
log transfer received			
Household characteristics			
log income	-.026 (0.13)	-.090 (2.51)	-.033 (0.55)
log asset	.160 (1.16)	.084 (2.20)	.179 (3.20)
economic hardship	-.648 (0.89)	-.008 (0.07)	.060 (0.33)
family hardship	1.138 (1.07)	.190 (1.41)	.621 (2.71)
size	.028 (0.23)	.100 (4.81)	.151 (3.51)
Recipient's characteristics			
age	-.093 (0.51)	-.045 (0.92)	-.002 (0.05)
age squared	.003 (1.34)	2.8×10^{-4} (0.76)	-2.3×10^{-4} (0.44)
education level	.063 (0.96)	.027 (1.66)	-.005 (0.17)
male	1.361 (2.14)	.077 (0.32)	.621 (2.08)
married	-.719 (0.97)	.101 (0.50)	-.735 (1.98)
Sender's characteristics			
age	-.039 (1.64)	.007 (0.90)	-.017 (2.18)
some school	-.298 (0.66)	–	–
education level	–	.071 (2.65)	.059 (1.33)
male	–	1.773 (3.64)	.566 (2.34)
married	–	-.607 (4.03)	-.058 (0.26)
has homestead	1.334 (1.24)	-.205 (0.98)	-.153 (0.47)
has farm land	.842 (1.45)	.101 (0.53)	.350 (1.17)
has non-farm business	-.202 (0.22)	.336 (1.27)	.315 (1.13)
Recipient meets sender[a]			
at least once a year	-.211 (0.22)	-1.149 (7.89)	-.542 (1.34)
at least once a month	-1.212 (1.63)	-1.282 (8.20)	-.041 (0.08)
at least once a week	–	-1.265 (3.92)	.336 (0.61)
everyday	-1.115 (1.40)	-2.237 (8.22)	-.733 (1.61)
Recipient corresponds with sender[a]			
at least once a year	-2.816 (1.42)	-.097 (0.44)	.521 (1.23)
at least once a month	-.943 (0.97)	.687 (2.94)	1.231 (1.98)
at least once a week	–	.256 (0.41)	1.271 (1.10)
everyday	–	.267 (0.19)	–
Constant	8.342 (2.29)	7.258 (5.20)	2.904 (1.36)
Mill's ratio	-1.703 (2.03)	.765 (1.25)	.963 (1.12)
Obs	507	5378	12550
Uncensored obs	57	1000	377

Note: Absolute asymptotic t-values are in the parentheses.

[a] Base case: never.

Table 5: Household Non-food Consumption – OLS estimation results

Variable	All	Migrant is head	Migrant is in Matlab
	(A) non-food consumption $\times 10^{-3}$		
own household income$\times 10^{-3}$	.068 (2.98)	.127 (2.83)	.062 (2.03)
own asset$\times 10^{-3}$	.002 (3.83)	.001 (1.01)	.007 (7.58)
family hardship	.736 (0.45)	1.206 (0.40)	.883 (0.44)
economic hardship	-.458 (0.31)	-.581 (0.23)	-1.492 (0.79)
head's age	.092 (2.29)	.157 (2.13)	.128 (2.61)
head is female	1.404 (0.76)	2.887 (1.10)	.878 (0.39)
head is married	2.031 (1.20)	3.230 (1.33)	2.383 (0.92)
head's education	.431 (3.39)	.303 (1.35)	.142 (0.78)
household size	.234 (1.03)	-.069 (0.15)	.282 (0.96)
migrant household	-1.210 (1.01)	-.923 (0.36)	-.754 (0.55)
constant	-2.883 (1.06)	-6.560 (1.31)	-5.732 (1.48)
R^2	.09	.07	.21
	(B) Log non-food consumption		
log own household income	.183 (5.79)	.136 (2.86)	.173 (4.12)
log own asset	.156 (7.94)	.151 (5.20)	.211 (6.77)
family hardship	.088 (0.86)	.162 (1.02)	.164 (1.11)
economic hardship	.123 (1.36)	.128 (0.95)	.040 (0.29)
head's age	.003 (0.96)	-.001 (0.23)	.003 (0.71)
head is female	.185 (1.51)	.146 (0.97)	-.014 (0.08)
head is married	.261 (2.44)	.252 (1.86)	.351 (1.81)
head's education	.044 (5.46)	.044 (3.66)	.039 (2.81)
household size	.060 (4.32)	.059 (2.47)	.071 (3.30)
migrant household	.015 (0.20)	.005 (0.04)	-.012 (0.12)
constant	4.036 (11.19)	4.747 (8.70)	3.332 (6.02)
R^2	.32	.29	.37
No. of observations	754	326	302

Note: Absolute asymptotic t-values are in the parentheses.

Table 6: Household Non-food Consumption – Fixed-effect model estimation results

Variable	All	Migrant is head	Migrant is in Matlab
	(A) Non-food consumption $\times 10^{-3}$		
own household income$\times 10^{-3}$	.078 (2.38)	.116 (1.68)	.110 (2.43)
own asset$\times 10^{-3}$	.002 (2.33)	.001 (0.56)	.007 (5.33)
family hardship	-.483 (0.21)	-.101 (0.02)	-1.336 (0.47)
economic hardship	-1.240 (0.60)	-4.289 (1.12)	.162 (0.06)
head's age	.030 (0.50)	.121 (1.12)	.058 (0.76)
head is female	1.326 (0.47)	4.148 (1.00)	-.191 (0.05)
head is married	1.513 (0.59)	2.430 (0.64)	.137 (0.03)
head's education	.224 (0.91)	-.007 (0.02)	-.386 (1.02)
household size	.492 (1.48)	.347 (0.54)	.219 (0.49)
migrant household	-1.848 (1.32)	-.690 (0.22)	-1.181 (0.76)
constant	.222 (0.05)	-3.808 (0.51)	-.293 (0.05)
R^2	.08	.05	.21
	(B) Log Non-food consumption		
Log own household income	.195 (4.41)	.159 (2.07)	.208 (3.41)
Log own asset	.130 (4.48)	.147 (3.21)	.238 (4.64)
family hardship	.062 (0.46)	.153 (0.72)	.013 (0.07)
economic hardship	.135 (1.11)	.006 (0.03)	.275 (1.47)
Head's age	.001 (0.22)	.003 (0.58)	-.001 (0.22)
Head is female	.157 (0.88)	.276 (1.18)	-.182 (0.68)
Head is married	.226 (1.45)	.174 (0.83)	.138 (0.45)
Head's education	.023 (1.57)	.015 (0.62)	.018 (0.68)
Household size	.064 (3.29)	.049 (1.54)	.041 (1.33)
Migrant household	-.006 (0.07)	.078 (0.49)	-.028 (0.25)
Constant	4.388 (8.51)	4.572 (5.32)	3.292 (4.03)
R^2	.31	.27	.37
No. of observations	754	326	302

Note: Absolute asymptotic t-values are in the parentheses.