Inequality, Reciprocity, and Credit in Social Networks

Laura Schechter and Alex Yuskavage

While informal insurance and social networks are important in all societies, networks are critical in rural areas of developing countries. Townsend (1994) was one of the first to document the importance of risk-sharing within villages. More recently, theorists have begun to model sharing as taking place within a network, rather than within the village as a whole (Bramoullé and Kranton 2007; Bloch, Genicot, and Ray 2008; Ambrus, Möbius, and Szeidl 2010).

Empirical studies have also shown the importance of risk-sharing within social networks (Rosenzweig 1988; Udry 1994; De Weerdt and Dercon 2006). Given this local nature of risk-sharing within networks, it is important to analyze who forms links with whom and the types of relationships formed. The effects of development policies will depend on the operation of social networks and the features that cause individuals to form links.

Research on the determinants of risk-sharing links has found contradictory results. Experimental studies, such as Attanasio et al. (2009), find that risk-sharing groups are assortative on consumption. Survey-based evidence, such as De Weerdt (2004) and Fafchamps and Gubert (2007), find

Laura Schechter is an assistant professor of Economics at Michigan State University. Alex Yuskavage is a financial economist in the Office of Tax Analysis at the U.S. Treasury. Schechter thanks the Wisconsin Alumni Research Foundation, the Russell Sage Foundation, and the Delta Foundation for funding. We are grateful to Idelin Molinas and Instituto Desarrollo for their support in Paraguay. Jennifer Alix-Garcia, Joachim De Weerdt, Garance Genicot, Paul Niehaus, Mark Rosenzweig, and Guanming Shi gave helpful comments.

that individuals with larger wealth differences are more likely to be linked. Our results suggest that this contradiction arises because the two literatures make different assumptions about the nature of links. The experimental literature looks only at reciprocated risk-sharing, while the survey literature has combined reciprocated and unreciprocated links.

A main contribution of this paper is that we distinguish between reciprocated and unreciprocated links. We find that dyad characteristics affect the likelihood of these links differently. Both links are more likely when two households are related or live closer to one another. But unreciprocated relationships are more likely to exist when one household is wealthier and more educated than the other. Reciprocated links do not depend on wealth differences and instead are more likely to occur between two similarly wealthy households.

The fact that wealth differences predict unreciprocated links may be a sign of altruism, patron-client relationships, intergenerational transfers, or inequality in risk-sharing. Our results suggest that both reciprocated and unreciprocated sharing are forms of risk-sharing. We verify the prediction from models of risk-sharing with limited commitment (Genicot 2006; Munshi and Rosenzweig 2009). These models show that inequality leads to relationships resembling pure lending rather than the typical image of mutual risk-sharing.

In the next section we discuss the literature on sharing in networks. We then give details regarding the data and explains how we define links. After that, we lay out the estimation strategy used while the next section presents the results. The final section concludes.

Sharing in Networks

The experiment-based and survey-based literatures on sharing in networks have come to different conclusions regarding whether similar individuals are more or less likely to be linked. Attanasio et al. (2009) use data from experiments in which individuals are allowed to form groups for the specific purpose of sharing risk within the experiment. They find that individuals who have

similar levels of consumption are more likely to share risk with one another. The rules of the experiment only allow for reciprocated sharing.

Although the exact survey question used and the definition of a risk-sharing link differ across papers in the survey literature, there are similarities. Fafchamps and Gubert (2007) and De Weerdt (2004) ask households who they could rely on in case of need or to whom they give help when called upon to do so. Note that this is asked as one question, not two separate questions. This does not allow the researcher to differentiate giving help from receiving help, and so the analyses necessarily combine reciprocated and unreciprocated sharing.

Fafchamps and Gubert (2007) find that wealth differences and geographic proximity are good predictors of the existence of a link between two individuals. Links are more common between households which are more different in terms of wealth. Poorer households are more likely to mention households that are richer than themselves. De Weerdt (2004) also finds that households are more likely to be linked when household wealth is more dissimilar.

Whether or not transfers are reciprocated may identify different types of relationships. While reciprocated relationships may be a signal of risk-sharing, it is less clear what is signaled by unreciprocated transfers. Unreciprocated sharing may be a form of intergenerational transfers, patron-client transfers in which a wealthier household helps a poorer household in exchange for labor and status (Fafchamps 1992), a method to discourage theft (Schechter 2007), or pure altruism. Foster and Rosenzweig (2001) present evidence that as altruism increases, more transfers flow from rich to poor. However, they also show theoretically that although altruism tends to increase risk-sharing, if altruism is high enough risk-sharing may break down.

Many other papers have investigated the purpose of transfers including altruism and risk-sharing. Lucas and Stark (1985) and Barr and Genicot (2008) find that both risk-sharing and altruism influence remittances in Botswana and risk sharing in Zimbabwe respectively. Leider et al. (2009) and Ligon and Schechter (2010) find that both directed altruism and reciprocity are important determi-

nants of transfers. Most of these papers do not allow for heterogeneous relationships, some with pure altruism and others with self-interested risk-sharing.

In addition to the previous potential explanations, unreciprocated relationships may actually be a signal of risk-sharing. Genicot (2006) shows that with decreasing absolute risk aversion, risk sharing becomes more like a credit relationship as inequality increases. The poor individual receives a transfer when he gets a bad shock and he repays when he gets a good shock. The fluctuations in the rich individual's income matter very little since he is less risk averse. (See also Munshi and Rosenzweig (2009).) This would appear in our data as unreciprocated relationships, since we are looking at lending and not at repayment.

We use data on altruism, risk aversion, and family relations to shed light on three of these explanations.[1] We find evidence that even unreciprocated relationships from rich to poor are motivated by risk-sharing rather than altruism or intergenerational transfers. However, we also find that the household characteristics underlying the two types of relationships are different, suggesting different types of risk-sharing arrangements.

Data

In 1991, the Land Tenure Center at the University of Wisconsin and the Centro Paraguayo de Estudios Sociológicos in Asunción conducted a household survey on a random sample stratified by land-holdings. The original survey was followed up by subsequent rounds of data collection in 1994, 1999, 2002, and 2007. In 2007, new households were added in an effort to interview 30 households in each of 15 villages. Villages ranged in size from around 30 to 600 households. This round added many questions measuring social networks.

These villages are mostly comprised of smallholder farmers. These Paraguayan villages do not involve any tribes or castes. There are no village chiefs or large plantation owners and government is at the municipal level which is larger than the village. There are no major moneylenders. In our sample, 42% of households lent money in the past year (to anyone inside or outside the village) but

only 4% lent to three or more households. Additionally, of the 30% of households which borrowed money in the past year, 62% also lent money.

Our survey asks respondents from which households they would ask to borrow 20,000 Gs (approximately $4) if they had a personal problem, and then asks separately which households would ask to borrow 20,000 Gs from them if they had a personal problem. This amount is much smaller than what a formal institution will lend. The lowest amount lent to a respondent by a formal institution is 100,000 Gs while the median is 2,500,000 Gs. Many authors have shown that such informal credit is a form of risk-sharing (Udry 1994; Ligon, Thomas, and Worrall 2002). Note that although loans, by nature, involve reciprocal transfers, the question we use in our analysis only asks about the initial loan, and not the repayment.

Respondents could list as many households as they wanted. They listed anywhere from 0 to 14 to whom they would go (with a median of 2) and anywhere from 0 to 32 (also with a median of 2) who would go to them. There are 1113 total instances of another household being listed as a source to borrow from, and 1086 total instances of another household being listed as a possible recipient of lending. Of the households listed as potential lenders, 48.9% of them were also listed as potential borrowers by the listing household. Of those listed as potential borrowers, 50.1% were also listed as potential lenders by the listing household.

There are 947 unique households mentioned by respondents as either a potential borrower or a potential lender. Adding in the 188 survey respondents who are not themselves mentioned by someone else (but may have mentioned someone), we have 1135 potential network members. We have survey data on 39.6% of these network members.[2] Since the relevant unit of observation is the dyadic link between households, our sample will consist of all potential links between those households for which we have survey data.

We also have data on which households the respondents borrowed from or lent to in the past year, in addition to transfers of agricultural produce and gifts of money to cover health expenses.[3] Ideally we would look only at actual loan data. The gifts in our data may be transfers to help

out a household in need, but they may also be gifts to thank or repay a household which helped them out in the past. Unfortunately, for the regressions involving actual transactions, we must combine giving and lending because there are very few pure lending relationships which happen to be reciprocated within the past 12 months. In other words, it is extremely unlikely that both i lends to j and j lends to i in a 12 month period.[4]

In this paper we look at two types of links which we call lending links (L-links). In this case $L_{ij} = 1$ if household i says it would lend to j, *or* household j says it would borrow from i. The direction of this link is determined by the direction in which households expect transfers to flow, regardless of which household mentions that the link exists. We divided these L-links into reciprocated and unreciprocated links. Reciprocated lending links (LR-links) are those for which $L_{ij} = L_{ji} = 1$ while unreciprocated lending links (LU-links) are those for which $L_{ij} = 1$ while $L_{ji} = 0$. Of the 748 links for which $L_{ij} = 1$, 434 links (217 pairs) are reciprocated while 314 are unreciprocated.

Empirical Estimation

We model the prediction of the existence of reciprocated and unreciprocated lending links. From the 445 observations there are 12,762 possible relationships. This is fewer than the 197,580=445*444 we would obtain if we allowed for every possible link between households. Because the 15 villages are not close to one another and so households in a village do not know households in the other villages, we do not include these as potential links.

In all regressions we include the geographic distance between the two households and whether the two households are immediate relatives (that is, parents, children, or siblings but not uncles, cousins, or grandparents). These are characteristics of the relationship between the pair of individuals, not household-level characteristics.

We also include household-level characteristics. For the unreciprocated links we include the sum $(x_i + x_j)$ and the difference $(x_i - x_j)$ of each of the household characteristics as explanatory variables. For the reciprocated links, symmetry implies that the absolute value of the difference

($|x_i - x_j|$) must be used instead.[5] Table shows summary statistics of household characteristics, while table shows summary statistics of dyad characteristics.

The standard errors of the regressions must take into account that dyadic observations are not independent due to individual-specific factors common to all observations involving that household. We correct both for the non-independence of dyads sharing a common member and for the non-independence of observations within a village by clustering standard errors at the village level.

We focus on the determinants of reciprocated and unreciprocated links. For every directed relationship (i, j), there is either an unreciprocated link from i to j, a reciprocated link from i to j, or no link at all from i to j. This would suggest that we should estimate the correlates of unreciprocated and reciprocated links jointly using multinomial logit. Because we use differences $(x_i - x_j)$ to explain unreciprocated links and the absolute value of the difference $(|x_i - x_j|)$ to explain reciprocated links, we constrain the coefficients of the differences to be 0 in the reciprocated regressions and the coefficients of the absolute differences to be 0 in the unreciprocated regressions.

Results

Table 3 shows the correlates of unreciprocated (LU) and reciprocated lending links (LR) for both the hypothetical and actual data. Like previous work, we find that households which live closer to one another or are directly related are more likely to be linked. This may be due to the lowering of informational asymmetries in risk-sharing and altruistic relationships when households live closer and are related. Monitoring is less costly among such households. On the other hand, correlated risks are probably larger when households live closer to one another. But since we look only at networks within villages, we are unlikely to see households diversifying risk over large distances.

We use the share of agricultural income in total income to test whether households which are more or less dependent on agriculture are more or less likely to be linked. Theory predicts that households will want to reduce correlated risk by linking with households with different earning portfolios. On the other hand, it may be easier for a farmer to monitor another farmer than to

monitor a brickmaker. We find that households which depend more on agriculture are more likely to be linked. But we don't find a tendency for diversification.[6] Likewise, Fafchamps and Gubert (2007) find that links are not more likely between households with lower income correlations.

We see in table 3 that, while reciprocated links are more likely between individuals with similar wealth, the unreciprocated link is instead more likely between households with large wealth differences.[7] [8] While the coefficient on sum of wealth remains positive in both cases, the t-statistic is higher in the *LR* regression than in the *LU* regression. This means that the typical reciprocated relationship would be between two similarly wealthy households. The typical unreciprocated relationship, though, would consist of a wealthy household making transfers to a poorer household.

Additionally, we find that more educated households are more likely to have unreciprocated relationships lending money to less educated households. Households with more similar and higher education are more likely to have reciprocated relationships.[9] This suggests that the conflation of different kinds of links can have a strong effect on what is considered an important determinant of links. Previous results in the survey-based literature finding that households of different wealth and education levels are more likely to be linked may be concentrating on unreciprocated relationships. The bigger the difference in wealth level between the two households, the less likely they are to have a reciprocated risk-sharing relationship.

Risk Aversion versus Altruism

Unreciprocated transfers may be evidence of risk-sharing, altruism, or intergenerational transfers between family members. Models of risk-sharing with inequality such as those constructed by Genicot (2006) and Munshi and Rosenzweig (2009) show that, with decreasing absolute risk aversion, risk-sharing between more equal pairs involves reciprocal transfers when either partner experiences a negative shock. Risk-sharing between unequal pairs involves lending from the wealthier individual to the poorer individual.

We explore whether risk-sharing can explain our results better than altruism or intergenerational transfers. When we restrict our sample to only include dyads which do not involve direct family relationships, all of our previous results continue to hold. This suggests that these unreciprocated transfers are not due to intergenerational transfers.

To explore the distinction between risk-sharing and altruism, we use an experiment-based measure of altruism and a survey-based measure of risk aversion. The survey asks a series of hypothetical risk questions. We use the number of risky choices made as our measure of risk aversion.[10] The 19 percent of respondents who chose a dominated option are dropped from this analysis. Alternatively, we can calculate a minimum coefficient of relative risk aversion (they must be at least so risk averse to have turned down a given gamble) given CES utility. We find an average coefficient of 1.84 with a standard deviation of 1.61. None of the qualitative results change if we include the coefficient of relative risk aversion rather than the number of risky choices.

After completing the survey, we invited the respondents to participate in a dictator game. The dictator was given 14,000 Gs and decided how to divide it between himself and an anonymous recipient. The recipient could be any household in his village and the amount the dictator sent was doubled. We use the amount sent as a measure of the dictator's altruism. The 15 percent of respondents who did not participate in the experiments must be dropped from this analysis.

We conduct the analysis on risk aversion and altruism separately because looking at either variable cuts the number of households by 19 and 15 percent respectively. Table 4 presents the results including risk preferences. Remember that the higher the measure of risk, the *less* risk averse the respondent is. We see from the coefficient on the risk attitude difference that unreciprocated relationships are most likely when the giver is less risk averse than the receiver. This is what a model of risk-sharing with limited commitment would suggest; with unequal agents, risk-sharing relationships end up with the wealthier and/or less risk averse person lending to the poorer and/or more risk averse agent in times of need in return for a higher payback in other periods.

In table 5 we include the measure of altruism. Altruism has no effect on unreciprocated relationships which suggests that these relationships are not based on altruism. In the unreciprocated regressions we back out what would have been the coefficient on the dictator's altruism, but it is also not significant. Looking at stated links, we find that the more altruistic both agents are, the less likely they are to be linked reciprocally, but this result does not hold for the actual lending and giving. These results provide suggestive evidence that unreciprocated relationships are not due to intergenerational transfers or altruism, but are rather a different form of risk-sharing.

Conclusion

We look at lending relationships within social networks and distinguish between unreciprocated relationships in which loans go only from one household to the other, and reciprocated relationships in which loans can go in both directions. We find that the determinants of these two types of relationship are quite different. One-directional loans are more likely to involve flows from wealthier households to less wealthy households while reciprocated relationships are more likely to occur between wealthier households of similar wealth levels.

Using data on risk aversion and altruism, we find suggestive evidence that unreciprocated relationships are not based on altruism. Our results validate models of risk-sharing with inequality which show that risk-sharing between unequal partners will resemble a credit relationship from the rich to the poor. Reciprocated and unreciprocated relationships may have distinct characteristics, while both being a form of risk-sharing.

Notes

[1]We lack the data necessary to test the patron-client hypothesis and the crime-prevention hypothesis.

[2]The 449 survey respondents listed 947 unique households. 261 of the households listed were themselves survey respondents. This is similar to the results of Fafchamps and Gubert (2007) who survey 206 respondents reporting 939 unique households, of which 189 were themselves survey respondents.

[3]The hypothetical questions were asked at the beginning of the interview, while the actual lending questions were asked towards the end of a 2-3 hour interview.

[4]We ran logit regressions on the determinants of unreciprocated pure lending LU-Links and find that, in general, the results are stronger than when considering giving and lending together. But we can not compare unreciprocated and reciprocated actual pure lending links since there are not enough reciprocated links.

[5]Inclusion of these sums and differences makes it impossible to include individual fixed effects. Since there is no variation in a household's individual characteristics, it is impossible to identify an individual-invariant effect as well as the effect of both the sum and difference of household characteristics.

[6]We tried separating agricultural income into that which comes from crops and that which comes from animals, but found no significant relationship.

[7]Although social capital may impact wealth, we follow the literature in assuming wealth to be exogenous.

[8]In the basic regressions we can reject the hypothesis that the effect of wealth differences is the same in the *LU* and *LR* models at the 1% level and that the effect of wealth sums is the same in the *LU* and *LR* models at the 5% level.

[9]In the basic regressions, we can reject the hypothesis that the effect of education differences is the same in the *LU* and *LR* models at the 5% level and that the effect of education sums is the same in the *LU* and *LR* models at the 10% level.

[10]The question asks them to choose between drawing a bill from a bag with one 50,000 Gs bill and a bag with a 100,000 Gs bill and a 50,000 Gs bill. If they choose the latter, it asks them to choose between the bag with one 50,000 Gs bill and a bag with one 100,000 and one 40,000 Gs bill. For people who choose the latter it goes on to change the second bag to contain 100,000 and 30,000 Gs bills, then 100,000 and 20,000 Gs, and finally 100,000 and 10,000 Gs.

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Wealth is calculated in USD using the exchange rate of 5300 Gs to 1 USD.

Variable	Mean	Standard Deviation
Household Wealth (in $)	32,655	138,246
Log Household Wealth	8.54	1.89
Years of Education	8.26	3.72
Age of Household Head	53.73	14.53
Agriculture Share	0.62	0.28
Adult Members	2.32	1.16
Disabled Members	0.29	0.56
Days Sick	23.30	45.04
Households	445	
Villages	15	

Table 1. Household statistics

Wealth is calculated in USD using the exchange rate of 5300 Gs to 1 USD.

	Difference of		Abs Value of Difference		Sum of	
Variable	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Household Wealth (in $)	0	186,791	48,154	180,477	66,821	205,443
Log Household Wealth	0	2.37	1.77	1.58	17.09	3.00
Years of Education	0	5.10	3.96	3.22	16.53	5.42
Age of Household Head	0	20.04	16.01	12.05	107.48	20.98
Agriculture Share	0	0.38	0.30	0.23	1.23	0.40
Adult Members	0	1.61	1.19	1.09	4.65	1.68
Disabled Members	0	0.79	0.47	0.64	0.58	0.79
Days Sick	0	63.80	36.20	52.53	46.51	63.36

Variable	Mean	Std. Dev.
Immediate Family	0.03	0.17
Distance in Km	1.91	1.57
Households	445	
Villages	15	
Possible Links	12762	
Standard Links	653	
Reciprocated Links	312	
Unreciprocated Pairs of Links	212	

Table 2. Link statistics

Basic regressions use hypothetical lending as the dependent variable. Actual giving and lending uses actual lending or gift-giving in the past 12 months as the dependent variable. *LU*-Links are unreciprocated lending links, and *LR*-Links are reciprocated lending links. *LU*-Link and *LR*-Link are estimated jointly using multinomial logit. 'Absolute Value of Difference' is used instead of 'Difference' for the *LR*-Link regressions. Village fixed effects are included in the estimation but not shown. Regressions clustered at the village level. *,, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.**

	Basic Regressions				Actual Giving and Lending			
Variable	*LU*-Link	*z*-value	*LR*-Link	*z*-value	*LU*-Link	*z*-value	*LR*-Link	*z*-value
Immed.	1.665***	6.04	2.083***	6.49	1.692***	5.34	2.679***	8.00
Distance in Km	-1.409***	-7.85	-2.339***	-11.41	-1.323***	-7.18	-2.113***	-5.51
Difference of								
Log (Hh Wealth)	0.310***	13.03	-0.163	-1.45	0.176***	2.89	0.091	0.93
Years of Educ	0.056***	3.77	-0.014	-0.58	0.016	1.58	0.029	0.69
Age of Hh Head	-0.012***	-4.32	-0.007	-0.73	-0.012***	-2.87	-0.005	-0.50
Agric Share	0.104	0.36	0.127	0.20	0.300	1.04	1.450*	1.74
Adult Members	-0.023	-0.60	-0.003	-0.04	0.039	0.51	0.071	1.18
Disabled Members	0.115	1.12	-0.147	-0.54	0.051	0.28	0.788	1.36
Days Sick	0.002	1.63	0.004	1.11	-0.000	-0.12	0.010	1.42
Sum of								
Log (Hh Wealth)	0.144***	3.45	0.323***	6.38	0.054*	1.74	0.277***	3.32
Years of Educ	0.008	0.47	0.039**	2.33	-0.007	-0.36	-0.064	-1.62
Age of Hh Head	-0.009**	-2.32	-0.011	-1.61	0.003	0.73	-0.012**	-2.02
Agric Share	0.410*	1.67	0.655**	2.19	0.573**	2.21	0.422	0.92
Adult Members	0.066	1.64	0.199**	2.11	0.087**	2.56	0.212	1.39
Disabled Members	0.245***	2.87	0.351**	2.32	0.079	1.28	-0.627	-1.05
Days Sick	0.001	0.48	-0.004	-1.03	0.000	0.36	-0.008	-1.22
Households	445		445		445		445	
Villages	15		15		15		15	
Possible Links	12762		12762		12762		12762	
Actual Links	312		424		292		138	

Table 3. Basic regressions

Basic regressions use hypothetical lending as the dependent variable. Actual giving and lending uses actual lending or gift-giving in the past 12 months as the dependent variable. *LU*-Link and *LR*-Link regressions are estimated jointly using multinomial logit. 'Absolute Value of Difference' is used instead of 'Difference' for the *LR*-Link regressions. Village fixed effects are included in the estimation but not shown. Regressions are clustered at the village level. *,, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.**

	Basic Regression				Actual Giving and Lending			
Variable	*LU*-Link	*z*-value	*LR*-Link	*z*-value	*LU*-Link	*z*-value	*LR*-Link	*z*-value
Immed. Family	1.593***	3.95	2.113***	4.65	1.721***	4.81	2.580***	5.59
Distance in Km	-1.493***	-5.62	-2.400***	-9.30	-1.448***	-5.63	-2.405***	-4.15
Difference of								
Log (Hh Wealth)	0.322***	5.78	-0.252**	-2.09	0.187**	2.43	0.092	0.67
Years of Educ	0.048**	2.09	-0.021	-0.60	0.018	0.95	0.021	0.54
Age of Hh Head	-0.015***	-2.70	-0.006	-0.45	-0.018***	-3.00	-0.008	-0.55
Agric Share	0.065	0.20	0.198	0.37	-0.018	-0.06	0.963	1.18
Adult Members	-0.015	-0.32	0.038	0.26	0.008	0.09	0.038	0.41
Disabled Members	0.230*	1.73	-0.146	-0.46	0.185	1.06	0.754	1.19
Days Sick	0.001	0.71	0.011*	1.96	0.001	0.62	0.002	0.20
Risk Attitude	0.068**	2.01	-0.021	-0.32	0.068***	3.05	0.068	0.48
Sum of								
Log (Hh Wealth)	0.162**	2.50	0.336***	6.31	0.046	1.02	0.129**	2.06
Years of Educ	-0.007	-0.41	0.040**	2.10	-0.028	-1.47	-0.014	-0.26
Age of Hh Head	-0.004	-1.09	-0.011	-1.48	0.003	0.51	-0.013	-1.51
Agric Share	0.398	1.32	0.761**	2.10	0.870***	3.89	0.656	1.09
Adult Members	0.102	1.55	0.214**	2.35	0.154***	3.55	0.161	0.86
Disabled Members	0.071	0.59	0.242	1.27	0.066	0.75	-0.474	-0.71
Days Sick	-0.001	-0.60	-0.012***	-2.94	0.000	0.21	-0.006	-0.74
Risk Attitude	0.019	0.52	0.024	0.38	-0.036	-1.03	-0.073	-1.03
Households	361		361		361		361	
Villages	15		15		15		15	
Possible Links	8406		8406		8406		8406	
Actual Links	183		274		188		90	

Table 4. Stated links and actual giving with risk controls

Basic regressions use hypothetical lending as the dependent variable. Actual giving and lending uses actual lending or gift-giving in the past 12 months as the dependent variable.
***LU*-Link and *LR*-Link regressions are estimated jointly using multinomial logit.**
'Absolute Value of Difference' is used instead of 'Difference' for the *LR*-Link regressions.
Village fixed effects are included in the estimation but not shown. Regressions are clustered at the village level. *,, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.**

	Stated Link				Actual Giving and Lending			
Variable	*LU*-Link	*z*-value	*LR*-Link	*z*-value	*LU*-Link	*z*-value	*LR*-Link	*z*-value
Immed. Family	1.756***	6.97	2.150***	7.13	1.701***	4.66	2.803***	6.52
Distance in Km	-1.514***	-10.51	-2.378***	-8.37	-1.478***	-8.27	-2.076***	-5.22
Difference of								
Log (Hh Wealth)	0.321***	12.26	-0.178	-1.22	0.182***	3.69	0.048	0.34
Years of Educ	0.057***	3.19	-0.007	-0.34	-0.009	-0.55	-0.002	-0.06
Age of Hh Head	-0.014***	-3.14	-0.002	-0.26	-0.009**	-2.10	-0.003	-0.28
Agric Share	-0.028	-0.10	0.127	0.19	0.374	1.23	1.907*	1.92
Adult Members	-0.026	-0.55	-0.045	-0.56	0.095	1.16	0.104	1.51
Disabled Members	0.148	1.20	-0.324	-1.07	-0.004	-0.03	0.638	1.08
Days Sick	0.001	0.70	0.002	0.50	-0.001	-0.70	0.012**	2.13
Altruism	-0.038	-1.61	0.016	0.29	-0.007	-0.21	0.022	0.35
Sum of								
Log (Hh Wealth)	0.155***	3.29	0.338***	4.88	0.059	1.38	0.307***	2.86
Years of Educ	0.000	-0.01	0.020	0.91	-0.027	-1.33	-0.094**	-2.20
Age of Hh Head	-0.012***	-3.00	-0.013**	-2.06	0.006*	1.67	-0.016**	-2.48
Agric Share	0.262	1.06	0.451	1.23	0.721***	3.26	0.269	0.46
Adult Members	0.057	1.04	0.228**	2.40	0.105***	2.64	0.275**	1.97
Disabled Members	0.245**	2.06	0.531***	3.28	0.084	1.63	-0.381	-0.62
Days Sick	0.000	0.27	-0.002	-0.37	0.001	0.72	-0.009	-1.62
Altruism	-0.010	-0.52	-0.045*	-1.77	-0.019	-1.25	0.039	0.90
Households	380		380		380		380	
Villages	15		15		15		15	
Possible Links	9334		9331		9334		9334	
Actual Links	254		334		233		110	

Table 5. Stated links and actual giving with altruism controls