Those with blue hair please step forward: An economic theory of group formation and application to *Cajas Rurales* in Honduras

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Abstract

This paper presents an economic model of group formation with an application to data collected from an agricultural credit program in western Honduras. We formulate a simple theory of group formation using the concept of centers of gravity to explain why individuals join a group. According to our theory, prospective members join based on the potential benefits and costs of group membership, and based on their perception of social distance between themselves and other group members. Social distance is unobservable by outsiders but known by the individual: if you are in then you know who has blue hair. Thus, we argue that social distance helps explain preferences for group formation. To test our theory we analyze data collected from members and non-members of PRODERT, a program that has helped create 188 "*Cajas Rurales*" (CRs). Using conjoint analysis we test for differences in preferences between members and non-members for the main attributes of the CR. We find that members and non-members exhibit similar preferences for the attributes of the CR; therefore non-membership is not related to supply factors. Using information gathered by executing field experiments, we estimate a proxy for social distance. We use this proxy to run a group formation equation and find that it explains, along with individual characteristics, participation in the CR. Finally we offer suggestions on how to balance performance and coverage in programs in which beneficiaries decide who joins. Small cohesive groups may show exceptional performance at the cost of low coverage, and the opposite may be true.

Introduction

The majority of the 700,000 people that live in the Trifinio Region—an area that includes Guatemala, Honduras and El Salvador—are poor and do not have access to opportunities that would allow them to climb out of poverty such as schools, health programs, an established infrastructure system, or an effective legal system. The challenges of this region have been recognized by the national governments of the Trifinio and there is political will to address them. As a result of this will, the Trifinio Commission was created in mid-1980s to coordinate efforts. The barriers for the development of the region are formidable and according to the Trifinio Commission the key is to break the vicious cycle of poverty-environmental degradation that characterizes the socio-economic dynamic of this region. Many projects in execution in the Trifinio address this issue; in this paper we focus on PRODERT Honduras, funded by *Banco Centroamericano de Integración Económica* (BCIE).

The overall objective of PRODERT is to promote sustainable development of the Trifinio by improving living conditions. More specifically, the project aims at: (i) increasing productivity in agriculture and livestock activities, both for commercial production and own consumption; (ii) improving infrastructure to facilitate trade; and (iii) facilitating the creation of institutions that would, at the local level, make decisions about development programs and provide services, including financing.

PRODERT Honduras decided early on that successful implementation of such an ambitious program required the active participation and ownership of the project by its participants. PRODERT packaged several components--financial and non-financial

services such as agricultural extension and housing improvements--and began to deliver them to the poor through CR. By law each CR is independent and fully owned by its members. NGOs are the link between each CR and PRODERT, and provide the technical assistance that is at the core of this project.

With limited resources PRODERT decided to prioritize poor rural communities that did not have support from other development programs. Initially PRODERT approached municipal Mayors to identify communities in most need. With the Mayor's sponsorship PRODERT visited communities and conveyed a meeting to explain the project. As a result of these meetings CR were created, with participation being voluntary. As of April 2008 PRODERT has facilitated the creation of 188 CR that serve over 3,850 families. In general CR are successful and are capitalizing rapidly. CR boast perfect debt service performance as measured by arrears. The program, however, also exhibits low coverage because on average membership includes only 30% of households in each community.

Perfect performance combined with low coverage suggests that there is room to increase coverage by balancing these competing objectives. PRODERT involved prospective beneficiaries from the beginning, and delegated execution to "them." But who are "they"? We argue that the proper definition of "them" is complicated and goes beyond the identification of the target population by observable selection criteria such as income or education. We argue that this identification strategy is incomplete for programs that require beneficiaries to cooperate and for outcomes that depend on cooperation. We hypothesize that allowing for self selection in group formation means

members that join expect positive net benefits from joining and exhibit short social distances between each other: the blue hair effect. Social distance is unobservable by outsiders but observable to the individual: if you are in then you know who has blue hair. Thus, we argue that social distance helps explain preferences for group formation.

This paper presents and tests an economic theory of group formation. The rest of the paper includes a brief section on relevant literature that analyzes group formation, social distance, and conjoint analysis. Then we present our theory of group formation using social distance in a centers of gravity inspired model. Our research hypotheses and data collection and hypotheses testing strategy is followed by a description of our data and the main results of this paper, which then are summarized in the last section presenting our recommendations for the design and implementation of development programs that target poor rural farmers in Latin America.

Relevant literature

The question of group formation entered the lexicon of development economics in the middle of the last century with Mancur Olson's *Logic of Collective Action*, 1965. Since that time the issue has branched off into directions such as the microcredit area with detailed discussions of the experiences of the Grameen Bank (Stiglitz 1990). Multilateral development organizations have increased their emphasis on group formation as government planned and implemented programs have failed to provide the intended economic boost. That is, there has been a marked increase in the use of the terms like "participatory development" and "people-centered development," which refer to

grassroots, decentralized development. This framework of development stresses the participation of the people in the formulation of development policy.

Consider the following quote from James Wolfensohn, former World Bank President:

> *The lesson is clear: for economic advance, you need social advance, and without social development, economic development cannot take root. … this means that we need to make sure that the programs and projects we support have adequate social foundations,*
> *• by learning more about how the changing dynamics between public institutions, markets, and civil society affect social and economic development.*
> James Wolfensohn, speech at 1996 Annual Meetings."New Paradigm" in Summary Proceedings, 1996. P. 28.

And, in fact, there has been a clear push to broaden the community-driven component of World Bank projects over the past 20 years—from 2% in 1989 to 25% in 2003 (WB2005). Unfortunately, recent studies have shown that encouraging local communities to organize into groups that then have significant input into development programs does not necessarily guarantee the success of the program for the community as a whole. Frequently the "lead" group benefits while other members in the community remain the same or end up even worse off (Walzer 2002). Moreover, there is evidence that the more disadvantaged the individual, the less likely that person is to be a member of a civic group. The causality (whether lack of participation limits progress or whether lack of development prevents group entry) is not clear (Banfield 1958, Glaeser, Ponzetto, and Schleifer 2006) but we do see that simply encouraging poor rural communities to

form groups is not enough to ensure that those communities will experience an across-the-board improvement in living conditions.

What then can be done to broaden the impact of these rural community development programs? Clearly the first step is to understand the dynamics of group formation. This is particularly important when the program requires the participants work together for the duration of the project implementation, not simply in the design and conception phase. For example, Gugerty and Kremer (2006) found that as younger, better-educated people joined the group, the disadvantaged members tended to exit. Moreover, it was the new entrants, either male or educated female, who assumed key leadership positions. In their study there was a two-thirds increase in the exit rate of older women, the most disadvantaged demographic group, and a doubling of the rate at which members left groups due to conflict.

Another way to describe the factors that can bring a group together (or force one apart) is the "social distance" between the members. Striking the right balance in the selection of program participants is conceptually appealing, but not easy to implement in practice. The proper combination of attributes is crucial, and some of the traits may not be readily observed by outsiders—although community members are likely to know (Feder and Savastano 2006).

There is some evidence that microcredit institutions with outstanding repayment records owe these rates to their small size and the effect of peer pressure that result from it (Stiglitz 1990). In the case of PRODERT, however, the loans are individual rather than group based so this effect should largely be mitigated. The conclusion we test is that the

CR will not expand beyond their current sizes due to the costs of entry related to social distance rather than to a desire to remain small. We look to conjoint analysis to demonstrate that no other difference is preferences can explain the barrier to entry.

Conjoint analysis (CA) is commonly used in commercial marketing studies and analysis of consumers' preferences. It evaluates consumer response to program attributes when they are considered jointly. We use conjoint analysis to determine if there are preference differences between members and non-members of the CRs. If so, these differences might explain why the percentage of the community membership is not higher. If there is no significant difference in preferences then another explanation (such as social distance) must apply.

Dufhues, Heidhues, and Buchenreider (2004) conducted a similar test using the same methods but we are working toward a different goal. We are measuring the relevance of social distance in community members' decisions to join the CR while they are looking at ways to modify existing programs. The practical implications that are the foundation of our paper imply that the perfect rural finance program might not appeal to those community members that are not within the "gravity circle" of the existing members. To provide a framework to analyze this issue we propose a theory of group formation.

Theory of group formation

We formulate a simple theory of group formation using the concept of centers of gravity to explain why individuals join a group. According to our theory, prospective members join based on the potential benefits and costs of group membership, and based

on their perception of social distance between themselves and other group members. Social distance is unobservable by outsiders but observable to the individual: if you are in then you know who has blue hair. Thus, we argue that social distance helps explain preferences for group formation.

We use the concept of social distance to account for the effect of "others" on the individual's decision to join a group. We modified the definition of social distance of Hoffman, McCabe, Smith (1996) to read "the degree of reciprocity that subjects believe exist within social space." Hoffman et al uses "the degree of reciprocity that subjects believe exist within a social interaction." The modification is important because in the context of group formation social distance does not depend on the particular social interaction but social distance is inherited. People in social space interact with each other and have definite perceptions about the degree of reciprocity between them. This variation, in line with Akerlof (1997), implies that at any point in time there will be a completely-defined set of social distances from any individual to the rest of people in the community.

We use this initial set of social distances in social space to help explain group formation. When a promoter attempts to form a group then she presents the group's purpose, objectives and characteristics to each individual who is invited to join. The purpose, objectives and characteristics of the group are bundled in package *x* that is defined by the attributes of the group. For example the attributes for the CR include access to loans, extension services, and training; and obligations to contribute fees, save, and participate in meetings. Each individual then analyses the costs and utility derived

from *x* in the context of the inherited set of social distance between the prospective member and the promoters.

It is important to emphasize that *x* plays a central role in our theory of the impact of social distance on group formation. For example when the cost-related attributes of *x* are relaxed to *x'*, so that benefits increase with respect to costs, then additional prospective members that with *x* had barely negative net benefits may now with *x'* have barely positive benefits, enough for some to join the group with the new attributes. In this example the social distance of the new group members, that would join now with *x'* but not with *x*, with respect to the promoters did not change because the attributes of *x* changed. In other words the composition of the group is a consequence of the attributes of *x* and *x'*.

We now formalize our theory of group formation. When an individual i is invited to join a new group, her decision is influenced by her perceived benefits from joining the group $B_i(x)$, inherited social distance to the center of gravity of the group promoters $(d_i - \bar{d})$, and perception of the costs of membership, $C_i(x)$. Such as Akerlof (1997) we use the concept of gravitational pull to derive the functional form of the net benefits of joining the group as directly proportional to the benefits of joining, and inversely proportional to the square of the social distance to the center of gravity of group promoters. The prospective member utility function of joining the group with bundled *x* attributes is $V_i(x)$:

$$V_i(x) = \frac{B_i(x)}{\left(d_i - \bar{d}\right)^2} - C_i(x) \qquad (1)$$

Where:

x represents the bundled attributes of the group

$\boldsymbol{V_i(x)}$ is the utility function of individual i of joining group defined by attributes *x*

$\boldsymbol{B_i(x)}$ is the expected benefit to individual i of joining the group defined by attributes *x*

$\boldsymbol{(d_i - \bar{d})^2}$ is the square of the social distance of individual i with respect to the center of gravity of the promoters

$\frac{\boldsymbol{B_i(x)}}{\boldsymbol{(d_i - \bar{d})^2}}$ is the formula for the pull force of gravity: the bigger the expected returns the stronger the force is, the longer the social distance the weaker the pull force is to individual i

$\boldsymbol{C_i(x)}$ is i's perceived costs of joining the group

In this context for a group with attributes x individual i will join and j will not join when:

$$V_i(x) \geq 0;\ V_j(x) < 0 \qquad (2)$$

that may happen because:

$$B_i(x), C_i(x) \neq B_j(x), C_j(x)\ \ and - or\ \ (d_i - \bar{d}) < (d_j - \bar{d}) \qquad (3)$$

This is the main result of our theory because we derive a condition for social distance that is "sufficient" for joining a group given benefits and costs of group membership. According to our theory members will join when their social distance to the core of the group is small and when the benefits of joining are high compared to the costs. Note that the first part of equation (3) is referring to differences in utility streams. More people will join when the bundled x changes in a way that either benefits increase—such as offering new non-financial services—or costs decrease—such as

reducing membership fees. Using another example additional supply of loans under current lending terms will not increase membership, however changing lending terms might. The intuition is straightforward, and is summarized Table 1.

Group formation hypotheses, data collection and testing strategy

Hypothesis 1: supply-side of group formation: community members have similar preferences for the attributes of the CR

Hypothesis 2: demand side of group formation: using lab field experiments we elicit a proxy for social distance and test for group formation

To test these 2 hypotheses we collected primary data. With PRODERT we defined selection criteria for 5 CR in the municipalities of Concepcion and San Agustin, Honduras. These 2 municipalities share the main characteristics of the target population of PRODERT: most of the households are poor rural farmers living in relatively isolated communities. In these 2 municipalities we selected 5 communities using the following criteria: (i) communities of less than 200 households; (ii) agriculture is the primary activity; (iii) the CR was the only microcredit institution in the community; and (iv) PRODERT has a map of the community. The selected communities were: Granadillal and Descansaderos in San Agustin, and Las Pavas, Delicias and La Cueva in Concepcion. Next we contacted community leaders and presented a letter of introduction that explained the purpose of the research and requested permission to organize a day-long event in the community. We explained that in each community we would invite 30 people, 15 members of the CR and 15 non-members, all randomly selected. We also explained that their time will be compensated at about the rate of a daily wage—real

compensation was related to the results of the field experiments and on average payments were close to the daily wage during coffee harvesting season, roughly US$4-6. During each event we conducted a short survey to collect data on characteristics of participants and their households; then we executed choice experiments to collect data for conjoint analysis; finally we executed dictator and trust games. This process was cleared by the Internal Review Board at Virginia Tech and field work started in March 7th 2008 and and ended in March 16th 2008. In total we have data for 136 people.

To test the first hypothesis we designed a choice experiment in which we approximated the characteristics of a microcredit institution with 4 attributes: (i) variable MEET=1 if members have to participate in periodic meetings to discuss CR management issues, MEET=0 otherwise; (ii) variable NONFIN=1 if members receive free non-financial services, NONFIN=0 otherwise; (iii) variable COLL=1if loans require collateral, COLL=0 otherwise; and (iv) variable SAVE=1 if members have to save and make contributions to the institution, SAVE=0 otherwise. Note that we did not include interest rates because interest rates are linked to collateral and, therefore, the two variables are not independent. Including interest rates will violate, by design, the IIA condition necessary to estimate a conditional and mixed logit. Figure 1 shows an example of the graphic representation of the attributes of each microcredit institution. We presented the choice experiments in graphic format to ensure that illiterate participants would be able to make informed decisions about their choices. We also decided to keep the number of choice sets and alternatives to a minimum; therefore we selected an orthogonal design from the full factorial that would allow for estimation of

main effects by asking individuals to select from 4 choice sets, each one with only 2 alternatives. Table 2 presents the orthogonal array—note that Figure 1 is the first choice set of the orthogonal array. The null hypothesis that we are testing is H_0: ($\beta_{members}$)= ($\beta_{non\text{-}members}$) where the βs represent the estimates of the conditional logit using data for members and non-members.

To test the second hypothesis we used our theory of group formation but to avoid endogeneity issues related to the previous existence of the CR in all communities—that is we cannot separate individual responses as related to forming a group and their interactions since the group was formed—we applied cluster analysis using education and income/assets characteristics of the individual and defined 2 groups of people within the community. Education and income/assets have been used in the past as key determinants of household livelihood strategies in Central America (Siegel & Alwang 1999 for the theory; and for practical applications Pichon et al 2006, Pichon, Alwang & Siegel 2006, Jansen, Siegel & Alwang 2005).

We need one more step before we test our second hypothesis: we need to estimate a proxy for social distance. For this purpose we use the results of the Dictator Game (DG) lab field experiments—see Annex I for a description of the DG protocol—combined with the information we collected in the household survey about the observable characteristics of individuals. Note that we executed plain vanilla DG—one person (call her the dictator) receives an endowment M and is faced with the decision of how to split the endowment between herself and an unknown second person—and one-on-one DG—the dictator knows the identity of the second person, while at the same time preserving

the anonymity of the dictator. Because we executed one-on-one DG we have information on what everybody in each CR sent to everyone else, we call this a DG full mapping. The DG provides measures of an individual's altruism, and we propose that it has three components: (i) an indicator of "general" altruism which we link to the DG played with an anonymous member of the community, the plain vanilla DG; (ii) an indicator of the dictator's altruism as relates to the observable characteristics of the receiving individual in the full mapping DG exercise; and (iii) an indicator of the dictator's altruism as relates to the unobservable characteristics of the receiving individual in the full mapping DG exercise. Because we have the plain vanilla DG and the one-on-one DG, then we assume that everything that is not included in (i) and (ii) is in (iii). We propose that the last component has information about how the dictator feels about the other person and is a proxy for the degree of reciprocity that subjects believe exist within social space, that is our proxy for social distance. This last component, (iii), includes a variety of non observable characteristics such as family history, friendship, antipathy, past history, expectations about the future and perhaps many others that we bundle together and use as a proxy for social distance.

Following the previous argument and given the information we collected in the field, we estimate a proxy for social distance using the following procedure. Let DG_{ij} represent the amount that individual i sent to subject j in the DG. Then $(DG_{ij}-DG_{iA})$ reflects the amount that i would have sent to j in addition to what i would have sent to A, an anonymous subject that is the plain vanilla DG, and this relates to our component (i)

explained in the previous paragraph. To identify components (ii) and (iii) from the previous paragraph we run the following OLS regression on all subjects:

$$\left(DG_{ij} - DG_{iA}\right) = \overline{\gamma}' \overline{X}_J + d_{ij} \qquad (4)$$

Where:

$\boldsymbol{X_j}$ is a vector of observable characteristics of individual j's

$\boldsymbol{d_{ij}}$ is the OLS residual and is our measure of social distance from individual i to individual j not due to observable factors

The next step is to test our theory of group formation presented theoretically in equation (1) and in reduced form in equation (5).

$$m_{iG} = \alpha_0 + \alpha_1 d_{ij} + \overline{\alpha_3}\, \overline{C}'_i + u_i \qquad (5)$$

Where:

$\boldsymbol{m_{iG}}$ is 1 if individual i belongs to group 1as defined by results of cluster analysis, 0 otherwise

$\boldsymbol{d_{ij}}$ is our measure of social distance estimated from equation (4) for individual i with respect to individual j for all individuals j that share subject i's status belonging to group G as defined by the results of the cluster analysis

$\boldsymbol{\bar{C}'_i}$ is a vector of observable characteristics of the individual i, note that proxys for benefits of joining the group are embedded in this component of the logistic regression—i.e. more education will allow for identifying/taking advantage of the benefits of membership

Characteristics of participants

Before we show our main results we briefly present the summary statistics of the individuals who participated in the 5 events. In total 136 people, 72 member and 64 non-members of the CR. The vast majority of participants, 106, were male. Only 93 were literate, and only 1 person was not able to answer the choice questions. Despite the large amount of illiterate participants, many that answered that they could not read were capable of recognizing numbers, so the quality of the DG data collected was not affected. Table 3 presents the characteristics of members and non-members, and also of the groups resulting from the cluster analysis.

In general CR members tend to be older, have larger families, have more education and own more land than non-members. An interesting characteristic of our data is that there are no significant differences between members and non-members in the production of the 3 most important agricultural products of the region: coffee, maize and beans. Because we use education and income to process our cluster analysis, the groups defined by the cluster analysis show sharper differences than those between CR members and non-members. The main difference between CR membership and the results of the cluster analysis is the sharper difference in terms of average number of members, education, and size of land holdings, all of which are expected by the design of the analysis. It is interesting to note that group 2 of the cluster analysis includes less educated and wealthy households, yet this group produces more maize and beans than wealthier households included in group 1; the opposite is true for coffee. An explanation may be that the poorest households grow maize and beans for own consumption on land

that is less expensive, whereas wealthier households concentrate on coffee, which is more profitable but requires more expensive land and the capacity of producers to finance their expenses most of the year given that coffee is harvested only once a year.

Finally, members of group 1 are more likely to be members of the CR: 62% of individuals in group 1 are also members of the CR compared to 37% in group 2.

Main results of testing H_0: ($\beta_{members}$)= ($\beta_{non\text{-}members}$)--similar preferences for CR attributes

Table 4 shows the results of estimating, using conditional logit, the main effects of the impact of each one of the attributes—MEET, NONFIN, COLL, AND SAVE—for the following 5 groups: (i) the full sample; (ii) CR members; (iii) CR non-members; (iv) group 1 of the cluster analysis; (v) group 2 of the cluster analysis. Table 5 shows the probability of choosing an alternative for each of the choice sets of our choice experiment—design of the orthogonal array and estimation of parameters using conditional and mixed logit rely heavily on SAS marketing macros and algorithms presented in Kuhfeld 2005[1]

All the estimates from the full sample have the expected sign, but only 2 are significant at 5%: MEET and NONFIN. As expected the provision of non-financial services is an asset of the program and is reflected in our results. These non-financial services include agricultural technical assistance in integrated pest management, composting techniques, and the introduction of new crops such as cabbage. Technical assistance goes beyond and also includes house improvements, education and increasing self esteem. These results show that since the creation of CR in each community all have

come to value the supply of non-financial services. The same conclusion may be reached when analyzing the significance and strength of MEET. Periodical meetings are perceived as positive and constructive as they build social capital in the community. These 2 findings are relevant and point to the need to define programs that have multiple objectives. In this case the CR is not just about lending and borrowing.

The comparison between the estimates of members and non-members conveys 4 messages. First, obligatory meetings are significant and their estimate is larger for members than for non-members. Second non-financial services are significant for both groups, however members value them more. Third, both samples would prefer to borrow without pledging collateral, although the estimates are not significant for either group. Fourth, there is sharp contrast between the preferences for saving: members want to save, non-members do not want to save; however this result is inconclusive because these estimates are not statistically significant. These results show some differences between the preferences for members and non-members, however we cannot draw from these results any conclusion about group formation because we executed choice experiments when the CR had been formed and working for 2-3 years. Using Chow test we tested the hypothesis that the estimates are the same. Our test statistic is 9.1057 and the p-value for a χ^2 distribution with 4 degrees of freedom is 0.0585 therefore we cannot reject the null hypothesis of equal estimates for members and non-members at 5%. We will see that when we use clusters instead of CR membership the test statistic provides much clearer and conclusive results.

When grouping individuals by the results of the cluster analysis we find that members of group 2, those with less education, income and assets, have a strong preference against pledging their fixed assets as collateral when borrowing. This group also exhibits strong preferences for non-financial services. This result shows that in the case of CR, that require collateral and also provide non-financial services, individuals that have less education and income struggle as they decide to join the CR: on one hand they recognize the value of technical assistance—in fact they value it more than members of group 2 that have more education and income, on the other hand they do not want to borrow if they have to pledge their land. This result may indicate that there is room for increasing coverage if this issue is properly addressed, maybe by the inclusion of group lending as an alternative. Finally, the Chow test of the hypothesis that the estimates are the same, our test statistic is 11.826 and the p-value for a χ^2 distribution with 4 degrees of freedom is 0.568 therefore we cannot reject, with confidence!, the null hypothesis of equal estimates for members and non-members at 5%. Note the difference compared to the same test using CR membership. This result is interesting because one would expect that people that share more observable characteristics would also have similar preferences. Therefore the sharper contrasts in wealth and education would result in sharper differences in preferences. This is not the case. In our opinion this result validates the selection of education and income as key determinants for defining homogeneous groups using cluster analysis. Although this is only an incomplete story that lacks the wealth of information that can be collected, as we will show later, from unobservable characteristics of individuals, the message that it sends is strong: education

and income can be powerful indicators to identify people with similar preferences in rural Honduras.

We then added 3 variables to the analysis: PCTLIT, the percentage of household members that are literate, AVGINCOME, total income divided by total number of household members, and HHLANDSIZE, the size of landholdings of the household. We interacted these 3 variables with all the attributes of the microcredit institution and using a mixed logit we derived estimates that are presented in Table 6. Table 7 shows the probability of choosing an alternative for each of the choice sets of our choice experiment now that we are also estimating the interactions.

The additional information provides some interesting insights into the differences between the groups. First, we confirm that education helps explain preferences for attending meetings but not for all, only for those groups that are characterized by being less educated and have less income and assets--note that the estimates for MEET change sign and become not significant. Second we confirm that collateral, especially for less educated and poor people, is an important deterrent to CR participation. Note that the estimate for collateral in cluster group 2 decreases to -0.72 from -.046.

Main results of testing for effect of social distance on group formation

Using equation (4) we created 3 versions of our proxy for social distance. First we ran equation (4) once for the full dataset and saved the residuals to use as our first proxy for social distance and called it SOCDISALL, Table 8 presents the results of this OLS regression. Second, we ran equation (4) 5 times, one per CR, and saved the residuals as another proxy for social distance and called it SOCDISCR. Third, we ran

equation (4) 136 times and saved the residuals as SOCDIS136. We will use these 3 proxy measures for social distance in our estimation of the group formation equation (5).

We now estimate equation (5) using a logistic regression on our 3 measures of social distance and for the individuals grouped by the result of the cluster analysis. Table 9 shows the results using SOCDISALL, Table 10 with SOCDISCR, and Table 11 with SOCDIS136. Note that our 3 estimates of social distance are statistically significant and positive. Also notice that we chose to report the odds ratio and not the beta estimate. Although the results are the same, we prefer this presentation because we present the impact on group membership by changing 1 unit of the independent variable,with intuition comparable to the elasticity concept. Finally we will present our results focusing on Table 11 that uses SOCDIS136. We do it for theoretical reasons: this estimate is the one that reflects how much each individual decided to send to every other individual participating in her meeting. As such this measure is "pure" from the point of view of zero noise and avoiding the possibility that errors may be correlated within CR or by CR. It is rewarding to report that this is the regression that offers the best fit—Pseudo R^2=0.7 compared against 0.6 for both alternative measures of social distance SOCDISALL and SOCDISCR. The analysis in the following paragraphs of this section refers to Table 11.

First: social distance matters for group formation. A key consideration for group formation, in the context of bottom-up development programs, is to attempt to understand the complex unobservable relationships that exist between people in communities. Free from endogeneity issues, because our groups are based on cluster analysis, our results

show that the probability of membership increases when people are close. It is tempting to run a regression of social distance on observable variables, however, this will be misleading. Development practitioners have to make difficult decisions when designing programs: either they prioritize strong social ties within the program, or they prioritize program coverage. It may be the case, particularly in poor rural communities, that practitioners cannot accomplish both objectives jointly because social distance "is" and is inherited.

Second: it is easy to be misled by partial results. There are only 3 variables in addition to social distance that point to increased inclusion: (i) households that have horses; (ii) and (iii) households that grow beans and maize. Only the rich own a truck or a car in rural western Honduras, however owning a horse reflects status and this may be the reason why this dummy variable is so relevant for group formation. Additional research may go into this arena, for this paper, however, we hypothesize that this finding is consistent with our previous findings of the impact of education and income. A simple status symbol, such as owning a horse, may reflect non-observable relevant characteristics of individuals that merit attention by development practitioners. Beans and maize are a puzzle because we concluded previously that maize and bean producers were producing for self-consumption, and are over-represented in cluster group 2. Because group 2 has less people belonging to CR than group 1 and therefore are less educated and wealthy than group 1 people, we can only suggest that those maize and bean producers in group 2 are members of the CR and are also big producers. The message here to development practitioners is of caution about the observable

characteristics of potential participants because without a deep understanding of the underlying foundations of group formation it is easy to be mislead by partial results.

Third: it is easy to be misled by partial results … again. Throughout this paper we have repeatedly emphasized the role of household education and income/assets in determining preferences and, implicitly, group formation. Look again at Table 11. Gender, literacy, age, titling, and production diversification do not add much to group formation. For this reason we emphasize again that unobservable variables are exactly unobservable. We believe that proxy measures, such as those proposed by us in this paper, have the potential to help us understand the complex human interactions when deciding group membership.

Concluding remarks and policy recommendations.

We have attempted to solve the puzzle of group formation in the PRODERT program. We show that differences in preferences for attributes of the program did not explain group formation, an expected result given that these communities are relatively homogenous. A closer look at the individual characteristics of participants, grouped by CR membership and more by the results of the cluster analysis, shows significant differences in their education, income, assets, and other factors. An even closer look at individuals shows that they differentiate between members of the community, and they send more money to the people they like more. Using this information we find that social distance is central to explaining group formation in 5 communities in western Honduras.

We believe that this program has many lessons to teach in terms of rural and regional development. We now turn to some final suggestions for development practitioners.

What can a development practitioner learn from this paper?

First: it is not easy to find the balance between performance and coverage of financial institutions. Effective programs require managing potential risks throughout the project cycle. Excessive risk aversion on the part of CR may result in good performance at the cost of low coverage. Beneficiaries self-selection may result in small strong groups if the attributes of the program, the x, require strong commitments. Combining self-selection and great commitment by beneficiaries may result in good programs that work but that exhibit low coverage. Relaxing the demands imposed by program attributes may increase coverage, but will also lower the cohesiveness of the group. Using what we learned from analyzing PRODERT, then we suggest that if they want to increase coverage then they may consider reviewing the lending terms offered by CR. Our results show that the poorest of the poor do not like the idea of pledging collateral but recognize the benefits of non-financial services. The introduction of lending terms that allow for collateral-free loans at higher interest rates may be an interesting option for CR. Conversely the inclusion of additional non-financial services may also induce people to join the CR.

Second: eliciting preferences and proxy measures for social distance is not that difficult. The identification of beneficiaries' preferences for attributes of programs provides relevant information that could be used during the design process of

development programs. Our field work included the execution of a survey with choice experiments. It took about 20-30 minutes to execute the survey and choice experiments, note that we were in the field, usually using a school for the meeting and that the participants had on average 1.8 years of education. Eliciting information about social distance is significantly more difficult and the results are less useful for the design of programs. It takes great care and attention to detail to execute lab field experiments. We spent twice as much time executing dictator and trust games as we spent executing the survey. Moreover, this activity cannot be delegated to trained teams given the complexity of the execution of this activity. However, social distance can be extremely useful for the analysis of program results. In our paper we use social distance to analyze group formation. In a different context, for example trying to determine the underlying factors of failure/success of a program, social distance may provide key insights and add a metric to unobservable characteristics of beneficiaries. In other words, our approach to elicit a proxy for social distance may be used in different contexts and may provide a measurable estimate being the alternative a subjective and non-testable approach to talking about social distance.

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Table 1: Main results from our condition of sufficient social distance		
Ceteris paribus: A change from x to x' that	Impact on social distance	Explanation
Increases benefits	None, but now people that were far will consider joining if V(x) is now ≥0	For people that before were "too far" to join with x, now join with increased benefit related to x'
Decreases costs	None, but now people that were far will consider joining if V(x) is now ≥0	For people that before were "too far" to join with x, now join with decreased cost related to x'

	Table 2: Choice experiments orthogonal array				
		MEET	NONFIN	COLL	SAVE
SET 1	ALT 1	-1	-1	-1	1
	ALT 2	1	1	1	-1
SET 2	ALT 1	1	1	-1	1
	ALT 2	-1	-1	1	-1
SET 3	ALT 1	-1	1	1	1
	ALT 2	1	-1	-1	-1
SET 4	ALT 1	1	-1	1	1
	ALT 2	-1	1	-1	-1

Table 3: Group characteristics, all averages except count				
	Member	Non-member	G-1	G-2
Count	72	64	87	49
Gender, 1=Female	1.78	1.78	1.79	1.76
Head of HH literate, 1=Yes	1.26	1.38	1.15	1.61
Head of HH AGE	40.54	36.19	40.00	35.82
HH number of members	6.26	5.17	6.24	4.88
HH literate members, number	3.68	2.63	3.91	1.90
HH AGES (total years)	126.58	111.64	129.78	101.39
HH members years of ED (total years)	12.93	8.38	13.41	6.12
HH CHILDREN under 8 years	1.67	1.50	1.59	1.59
HH LANDSIZE	5.44	3.58	6.03	1.97
HH COFFEE production	18.13	16.92	23.76	6.55
HH MAIZE production	10.58	11.14	9.03	14.06
HH BEANS production	2.15	2.08	1.61	3.02

Table 4: Results of estimating parameters of conjoint analysis, conditional logit

	FULL	MEMBERS	NON MEMBERS	CLUSTER 14-1	CLUSTER 14-2
MEET					
Estimate	**.21934**	**.24393**	.19413	**.24041**	0.18981
Standard error	**.08893**	**.12360**	.12984	**.11024**	0.15473
Chi-Square	**6.0828**	**3.8947**	2.2355	**4.7561**	1.5050
Pr>ChiSq	**.0137**	**.0484**	.1349	**.0292**	0.2199
NONFIN					
Estimate	**.44329**	**.52441**	.35923	**.40177**	**.54235**
Standard error	**.08893**	**.12360**	.12984	**.11024**	**.15473**
Chi-Square	**24.8448**	**18.005**	7.6553	**13.2825**	**12.2868**
Pr>ChiSq	**<.001**	**<.001**	.0057	**.0003**	**.0005**
COLLATERAL					
Estimate	-.12608	-.07204	-.19413	.04857	**-.45839**
Standard error	.08893	.12360	.12984	.11024	**.15473**
Chi-Square	2.0099	.3397	2.2355	.1941	**8.7768**
Pr>ChiSq	.1563	.56	.1349	.6595	**.0031**
SAVE					
Estimate	.00593	.18547	-.19413	-.00228	.02247
Standard error	.08893	.12360	.12984	.11024	.15473
Chi-Square	.0045	2.2516	2.2355	.0004	.0211

Pr>ChiSq	.9468	.1335	.1349	.983535	.8846

Note: Bold shaded indicates significant at 5%.

Table 5: PROBABILITY (%) OF CHOOSING AN ALTERNATIVE FROM A CHOICE SET

	FULL MEMBERS	NON MEMBERS	CLUSTER 14-1	CLUSTER 14-2
CHOICE SET 1				
2-2-2-1	37.037	37.500	36.509	33.336	43.750
1-1-1-2	62.963	62.500	63.491	66.664	56.250
CHOICE SET 2				
1-1-2-1	68.883	73.611	63.491	64.367	77.083
2-2-1-2	31.117	26.389	36.509	35.633	22.917
CHOICE SET 3				
2-1-1-1	52.593	59.722	44.444	55.172	47.917
1-2-2-2	47.407	40.278	55.556	44.828	52.083
CHOICE SET 4				
1-2-1-1	41.482	45.833	36.509	47.126	31.250
2-1-2-2	58.518	54.167	63.491	52.874	68.750

Table 6: Results of estimating parameters of conjoint analysis, mixed logit

	FULL	MEMBERS	NON MEMBERS	CLUSTER 14-1	CLUSTER 14-2
MEET					
Estimate	-.26940	-.01839	-.38022	-0.28017	-0.1985
Standard error	.21952	.35441	.29837	0.35902	0.33615
Chi-Square	1.5061	.0027	1.6239	0.609	0.3487
Pr>ChiSq	.2197	.9586	.2026	0.4352	0.5549
NONFIN					
Estimate	.23605	.26517	.30831	0.18727	0.02454
Standard error	.21952	.35441	.29837	0.35902	0.33615
Chi-Square	1.1563	.5598	1.0677	0.2721	0.0053
Pr>ChiSq	.2822	.4543	.3015	0.6019	0.9418
COLLATERAL					
Estimate	**-.64641**	**-.84627**	-.5406	-0.28828	**-0.71977**
Standard error	**.21952**	**.35441**	.29837	0.35902	**0.33615**
Chi-Square	**8.6712**	**5.7019**	3.2827	0.6448	**4.5848**
Pr>ChiSq	**.0032**	**.0169**	.07	0.422	**0.0323**
SAVE					
Estimate	-.00576	.20784	-.06425	0.03741	0.17835
Standard error	.21952	.35441	.29837	0.35902	0.33615
Chi-Square	.0007	.3439	.0464	0.0109	0.2815
Pr>ChiSq	.9791	.5576	.8395	0.917	0.5957

PCTLIT*MEET					
Estimate	**.87390**	.37678	**1.18744**	0.73204	**2.04359**
Standard error	**.38455**	.61582	**.52678**	0.55708	**0.77771**
Chi-Square	**5.1644**	.3743	**5.0811**	1.7268	**6.9048**
Pr>ChiSq	**.0231**	.5406	**.0242**	0.1888	**0.0086**
PCTLIT*NONFIN					
Estimate	.39327	.40623	.21736	0.34928	1.05867
Standard error	.38455	.61582	.52678	0.55708	0.77771
Chi-Square	1.0458	.4352	.1703	0.3931	1.853
Pr>ChiSq	.3065	.5095	.6799	0.5307	0.1734
PCTLIT*COLL					
Estimate	**1.05578**	1.19363	.96444	0.61779	0.85293
Standard error	**.38455**	.61582	.52678	0.55708	0.77771
Chi-Square	**7.5378**	3.7570	3.3518	1.2298	1.2028
Pr>ChiSq	**.0060**	.0526	.0671	0.2674	0.2728
PCTLIT*SAVE					
Estimate	.21816	-.05572	.14396	0.0725	1.1321
Standard error	.38455	.61582	.52678	0.55708	0.77771
Chi-Square	.3218	.0082	.0747	0.0169	2.119
Pr>ChiSq	.5705	.9279	.7846	0.8965	0.1455
AVGINCOME*MEET					
Estimate	.0000447	.0000101	.0001371	0.000095	-0.00069
Standard error	.0001368	.0002334	.0002157	0.000143	0.000505

Chi-Square	.1068	.0019	.4037	0.4398	1.8417
Pr>ChiSq	.7438	.9654	.5252	0.5072	0.1747
AVGINCOME *NONFIN					
Estimate	.0000555	.0000608	.0001118	3.64E-05	0.000386
Standard error	.0001368	.0002334	.0002157	0.000143	0.000505
Chi-Square	.1648	.0678	.2687	0.0645	0.5841
Pr>ChiSq	.6848	.7946	.6042	0.7996	0.4447
AVGINCOME *COLL					
Estimate	-.0000834	.0001719	-.0002968	-6.9E-05	-0.00036
Standard error	.0001368	.0002334	.0002157	0.000143	0.000505
Chi-Square	.3715	.542	1.8926	0.233	0.5187
Pr>ChiSq	.5422	.4616	.1689	0.6293	0.4714
AVGINCOME *SAVE					
Estimate	-.0001892	-.0000419	-.0002307	-0.00015	-0.00088
Standard error	.0001368	.0002334	.0002157	0.000143	0.000505
Chi-Square	1.9135	.0322	1.1436	1.1375	3.0302
Pr>ChiSq	.1666	.8576	.2849	0.2862	0.0817
HHLANDSIZE*MEET					
Estimate	-.0001376	.00929	-0.02824	0.000772	-0.0055
Standard error	.0089	.01258	0.02509	0.00898	0.05188
Chi-Square	.0002	.5448	1.267	0.0074	0.0112
Pr>ChiSq	.9877	.4605	0.2603	0.9315	0.9156

HHLANDSIZE *NONFIN					
Estimate	-.00498	.00106	-0.0327	-0.00353	0.00652
Standard error	.0089	.01258	0.02509	0.00898	0.05188
Chi-Square	.3126	.0071	1.6986	0.1543	0.0158
Pr>ChiSq	.5761	.9328	0.1925	0.6944	0.8999
HHLANDSIZE *COLL					
Estimate	.00276	.0000435	0.0187	0.000777	0.03268
Standard error	.0089	.01258	0.02509	0.00898	0.05188
Chi-Square	.0958	.0071	0.5557	0.0075	0.3968
Pr>ChiSq	.7569	.9328	0.456	0.9311	0.5287
HHLANDSIZE *SAVE					
Estimate	-.0000311	.00555	-0.02365	0.00227	-0.07061
Standard error	.0089	.01258	0.02509	0.00898	0.05188
Chi-Square	0	.1946	0.8888	0.0641	1.8523
Pr>ChiSq	.9972	.6591	0.3458	0.8001	0.1735

Note: Bold shaded indicates significant at 5%.

Table 7: PROBABILITY (%) OF CHOOSING AN ALTERNATIVE FROM A CHOICE SET

	FULL	MEMBERS	NON MEMBERS	CLUSTER 14-1	CLUSTER 14-2
CHOICE SET 1					
2-2-2-1	45.542	33.587	42.525	43.706	37.296
1-1-1-2	54.458	66.413	57.475	56.294	62.704
CHOICE SET 2					
1-1-2-1	67.847	70.663	61.569	60.986	86.093
2-2-1-2	32.153	29.337	38.431	39.014	13.907
CHOICE SET 3					
2-1-1-1	51.435	62.652	48.152	55.832	51.394
1-2-2-2	48.565	37.348	51.848	44.168	48.606
CHOICE SET 4					
1-2-1-1	35.983	45.239	33.533	41.278	29.145
2-1-2-2	64.017	54.761	66.467	58.722	70.855

Table 8: OLS results of equation 4 on all the observations

				Number of obs		3449
				F(10, 3438)		32.24
				Prob > F		0
				R-squared		0.0857
				Adj R-squared		0.0831
				Root MSE		35.624
moneyclean	Coef.	Std. Err.	t	P>t	95% Conf.	Interval
hhhage	-0.14	0.05	-2.85	0.00	-0.23	-0.04
dhhown	-7.04	2.21	-3.19	0.00	-11.37	-2.71
dhhelec	-21.72	1.54	-14.08	0.00	-24.74	-18.69
avgincome	0.00	0.00	-3.82	0.00	-0.01	0.00
dhhlandown	4.60	1.86	2.47	0.01	0.95	8.25
hhmaize	0.20	0.06	3.30	0.00	0.08	0.32
hhbeans	-0.71	0.25	-2.89	0.00	-1.19	-0.23
dhhhorse	-5.05	1.43	-3.52	0.00	-7.86	-2.24
dhhyegua	4.98	1.90	2.62	0.01	1.25	8.71
_cons	21.78	2.84	7.66	0.00	16.20	27.35

Table 9: Logistic results of equation 5 on all SOCDISALL

Logistic regression	Number of obs	1896
	LR chi2(11)	1253.09
	Prob > chi2	0
Log likelihood = -423.98549	Pseudo R2	0.5964

CSen	Odds Ratio	Std. Err.	z	P>z	[95% Conf.	Interval
socdisALL	1.02	0.01	2.26	0.02	1.00	1.05
dgender	0.31	0.08	-4.70	0.00	0.19	0.51
dhhhlit	0.01	0.00	-15.84	0.00	0.00	0.01
hhmem	0.53	0.03	-10.53	0.00	0.48	0.60
dhhtitle	0.07	0.02	-11.50	0.00	0.05	0.11
hhcoffee	0.92	0.01	-8.61	0.00	0.90	0.94
hhmaize	1.06	0.01	5.66	0.00	1.04	1.08
hhbeans	1.84	0.09	11.95	0.00	1.67	2.04
ddiversified	0.43	0.11	-3.33	0.00	0.26	0.70
dhhmulas	0.03	0.02	-7.30	0.00	0.01	0.08
dhhyegua	0.15	0.05	-5.96	0.00	0.08	0.28

Table 10: Logistic results of equation 5 on all SOCDISCR

Logistic regression	Number of obs	1896
	LR chi2(11)	1277.56
	Prob > chi2	0
Log likelihood = -411.7489	Pseudo R2	0.6081

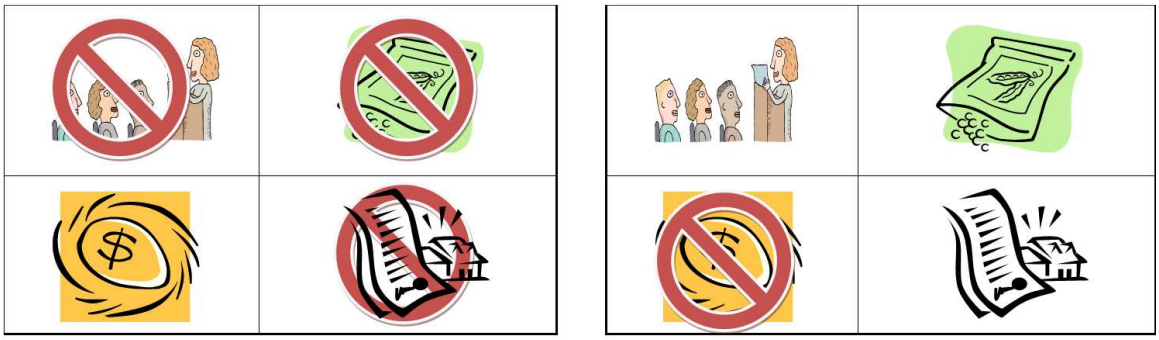
CSen	Odds Ratio	Std. Err.	z	P>z	[95% Conf. Interval]	
socdisCR	1.19	0.04	5.30	0.00	1.11	1.27
dgender	0.42	0.10	-3.72	0.00	0.26	0.66
dhhhlit	0.01	0.00	-16.28	0.00	0.00	0.01
hhmem	0.53	0.03	-10.71	0.00	0.47	0.59
dhhtitle	0.07	0.02	-11.57	0.00	0.04	0.11
hhcoffee	0.92	0.01	-8.64	0.00	0.90	0.94
hhmaize	1.06	0.01	5.23	0.00	1.03	1.08
hhbeans	1.81	0.09	11.74	0.00	1.64	1.99
ddiversified	0.44	0.11	-3.24	0.00	0.26	0.72
dhhmulas	0.03	0.01	-7.63	0.00	0.01	0.07
dhhyegua	0.15	0.05	-5.90	0.00	0.08	0.28

Table 11: Logistic results of equation 5 on all SOCDIS136

Logistic regression	Number of obs	1896	
	LR chi2(13)	1464.09	
	Prob > chi2	0	
Log likelihood = -318.48424	Pseudo R2	0.6968	

CSen	Odds Ratio	Std. Err.	z	P>z	[95% Conf. Interval]	
socdis136	1.02	0.01	2.73	0.01	1.01	1.04
dgender	0.28	0.07	-4.84	0.00	0.16	0.46
dhhhlit	0.00	0.00	-12.56	0.00	0.00	0.01
hhmem	0.45	0.04	-9.36	0.00	0.38	0.53
hhavged	0.21	0.03	-10.95	0.00	0.16	0.27
dhhhorse	3.53	1.30	3.44	0.00	1.72	7.25
dhhtitle	0.09	0.02	-9.01	0.00	0.06	0.16
hhcoffee	0.86	0.01	-8.97	0.00	0.83	0.89
hhmaize	1.09	0.01	6.73	0.00	1.07	1.12
hhbeans	2.26	0.16	11.15	0.00	1.96	2.60
ddiversified	0.18	0.06	-4.88	0.00	0.09	0.36
dhhmulas	0.01	0.01	-6.56	0.00	0.00	0.04
dhhyegua	0.08	0.04	-5.07	0.00	0.03	0.21

Figure 1: Choice set 1 of conjoint questions



CHOICE SET A

CHOICE SET B

CHOICE SET 1

Annex I—Dictator Game protocol

The traditional dictator game

To capture measures of altruism we employ the commonly play dictator game, which is a simple decision game void of strategic interaction. In the decision game one person (call her the dictator) receives an endowment M and is faced with the decision of how to split the endowment between herself and a second person. The money 'sent' to the second person is sometimes multiplied by some factor greater than one. For example, in our experiment we multiply the amount the dictator sends to the second person by a factor of two. The dictator's identity is usually not observed by the second person so that the amount the dictator sends to the second person is considered a measure of altruism. If the dictator does not know the identity of the second person then we consider the amount sent by the dictator to the second person as a measure of generic altruism.

However, one may devise the experiment so that the dictator knows the identity of the second person, while at the same time preserving the anonymity of the dictator. When an anonymous dictator knows the identity of the second person, we consider the amount sent by the dictator to be a measure of directed altruism. If we assume social preferences over the second person's monetary payout (rather than the second person's utility) then directed altruism may be considered a measure of social distance. This interpretation relies on the intuitive notion that the closer I am to you socially, then the more weight I put on your monetary payout in my utility function. Having said that, if social preferences are over others' utilities then directed altruism is a combination of social distance and the dictator's distributional preferences. That is, assuming social

preferences over others' utilities rather than others' monetary payouts recognizes the fact that I may be socially closer to my wealthy brother than a homeless person, but I may, in fact, give more to a homeless person than my wealthy brother.

Description of dictator game protocol

Detailed oral instructions were provided at the beginning of the experiment session. We also developed several examples of how to play the game. We explained the directed dictator game first (the dictator game in which the identity of the second person was revealed to the dictator). Once everyone understood the game we randomly assigned each person to a seat so that a large circle was formed. In order to maintain the privacy of decision-making throughout the experiment, each person was given a privacy box that sat on their lap. Next we picked a random person's name from the circle and asked them to go to the center of the circle. Those participants remaining in their seats each played the role of the dictator in the dictator game while the person in the center played the role of the "second person" in the dictator game. Everyone except the person in the center of the circle was given an empty envelope and a ticket (see ticket below) with their personal identification code on the back of the ticket. We asked each person to mark an 'X' in the row corresponding to their own desires for distributing money between them and the second person in the center of the room. Once each person made their decision, they were instructed to put their ticket in the envelope and place the envelope on top of their privacy box. We explicitly reminded them to mark an 'X' in only one row on the ticket. Next someone collected the envelopes and mixed the envelopes in random order. The envelopes were put in a bag and mixed again, and then

the “second person” in the center of the room randomly picked one of the envelopes. This randomly selected envelope went into the center person’s yellow compensation folder. The person in the center was reminded that at the end of the day that their yellow compensation folder would have six such envelopes. Each person would randomly pick one of the six envelopes from their yellow compensation envelope and this would be their compensation for the day. Next, the person in the center of the room returned to their seat and a new person from the circle was randomly called to the center. We repeated this process until everyone had passed to the center of the circle. In this way we were able to obtain a full mapping of directed altruism measures between all participants in the experiment. That is, for each individual i in the experiment we were able to obtain a measure of directed altruism towards each participant j (j not equal to i) in the experiment.

After this directed dictator game was completed we had the participants play a generic dictator game. In this version no one passed to the center of the circle. This signified that as dictator they would not know the identity of the second person in the dictator game (the person with whom they were splitting the money). That is, each person would make a decision and then we would randomly assign the envelopes to a second person, and these envelopes would go in each second person’s yellow [prize] folder. In this way we were able to obtain a measure of generic altruism.

Next we played two final rounds of generic dictator games, each with a slight variation. In one dictator game we informed the participants that they would play a generic dictator game where they knew the second person was a member of the CR. That

is, after everyone made their decision as dictator, we mixed up the envelopes, put them in a bag and then had each participant who was a member of the caja rural randomly select an envelope. When they selected their envelope they put it in their yellow compensation folder. In this way we were able to obtain measures of generic altruism towards members of the CR.

In the final generic dictator game we informed the participants that they would play a generic dictator game where they knew the second person was a not a member of the CR. That is, after everyone made their decision as dictator, we mixed up the envelopes, put them in a bag and then had each participant who was not a member of the caja rural randomly select an envelope. When they selected their envelope they put it in their yellow compensation folder. In this way we were able to obtain measures of generic altruism towards non-members of the caja rural.

To summarize, the experiments we used allowed us to collect four measures of altruism for each individual: 1) a measure of directed altruism towards a specific individual; 2) a measure of generic altruism towards community members; 3) a measure of generic altruism towards community members in the CR; and 4) a measure of generic altruism towards community members not in the CR.

You	Other Person	Mark one'X'
50	0	
45	10	
40	20	
35	30	

30	40	
25	50	
20	60	
15	70	
10	80	
5	90	
0	100	

[1] This is the only endnote in this paper and is intended to reflect our deep appreciation for Warren Kuhfeld of SAS Institute. During the design process of the conjoint choice sets we ran into some issues: we wanted a small yet main effects design that would minimize the number of choice sets and alternatives within sets. Being stuck, we sent an email to Dr. Kuhfeld, someone that we have not met in person nor, until that point, had we exchanged any correspondence. He responded with a complete answer within minutes, including suggestions to improve the design. Such disinterested commitment to science is remarkable and we use this unique footnote to thank him for his support. We hope students and practitioners read papers thoroughly, footnotes included. All errors in the paper are, as they should be, ours.