

Survey Trust, Experimental Trust and ROSCA Membership in Rural Cameroon

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Abstract

This paper analyses the relationship between survey and experimental trust in a village in rural Cameroon. Participants are asked a number of questions about trust and reciprocity and also take part in the trust game. The survey questions indicate that villagers have a much higher degree of trust in people they interact with regularly, than they do in people in general. The proportion of money sent in the trust game is found to be positively correlated with a number of survey-based questions about trust, but not with the generalised trust question. The paper also examines the relationship between trust and membership of Rotating Savings and Credit Associations (ROSCAs). The results suggest that the length of membership in ROSCAs is significantly positively correlated with the extent of trust.

Keywords: social capital, trust, reciprocity, economic experiments, ROSCAs

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I Introduction

The proportion of the population who answer in the affirmative to the question “generally speaking do you think most people can be trusted?” is often used as a measure of social capital. This variable, known in the literature as the generalised trust question, has been used as a proxy for social capital to explain differences in income levels and rates of economic growth across countries (see, for example, Knack and Keefer, 1997; Zak and Knack, 2001; La Porta et al, 1997), differences in pollution across countries (Grafton and Knowles, 2004), differences in health and education across countries (La Porta et al, 1997) and differences in financial development across countries (Guiso, Sapienza and Zingales, 2004).

An alternative way to measure trust is to conduct economic experiments, such as the trust game, which is based on Berg et al (1995). Beginning with Glaeser et al (2000), a small number of studies have analysed whether peoples’ responses to questions about trust, including the generalised trust question, are correlated with how they behave in the trust game. In this paper we analyse the correlation between a variety of survey-based questions on trust and behaviour in the trust game in a village in rural Cameroon. This is the first paper to measure trust using either experiments or surveys in Cameroon, and the first to conduct the trust game in West Africa. Our results suggest that trust is high in rural Cameroon, at least with respect to fellow villagers, and that several measures of survey-based trust (but not generalised trust) are positively correlated with how people behave in the trust game. We also analyse the relationship between membership of rotating savings and credit associations (ROSCAs) and experimental trust, and find that the length of time someone has been a member of a ROSCA is positively correlated with trust.

Section II will briefly review the small number of studies that have examined the correlation between survey-based and experimental trust. Our research methodology will be outlined in Section III. Section IV will discuss the results from the experiment and survey, with our regression results being reported in Section V. Section VI will conclude.

II Literature Review

In the trust game, which is based on Berg et al (1995), participants are divided into two groups: senders (Player A) and receivers (Player B). Each sender is paired with a receiver. Depending on the experimental design, the sender and receiver may, or may not, know the identity of the person with whom they are paired. The sender is then given a sum of money and has to decide how much of this money, if any, to transfer to the receiver. The amount of money transferred is then tripled by the experimenter. The receiver then has to decide how much, if any, of the money to return to the sender. The amount of money transferred from the sender to receiver is interpreted as how trusting the sender is of the receiver, while the proportion returned by the receiver is interpreted as a measure of trustworthiness or reciprocity.

The trust experiment has now been carried out in a number of developing countries. The results of these studies are summarised in Table 1, which is an extended and updated version of Table 3 from Cardenas and Carpenter (2007). Table 1 shows the mean proportion of money sent and returned in the trust game, as well as which country the study was carried out in, whether the experiment was carried out on students or non-students, whether the participants knew with whom they were paired, whether the correlation between experimental and survey trust was examined (and, if so, if it was significant) and whether the correlation between experimental trust and group memberships was examined (and, if so, if it was

significant). Our focus is on results from the trust game in developing countries. For the sake of comparison we also include two studies in Table 1 that were conducted in developed countries: Berg et al (1995) and Glaeser et al (2000). Berg et al was the first study to carry out the trust game, with Glaeser et al being the first paper to analyse the correlation between behaviour in the trust game and survey-based measures of trust.

[Table 1 about here]

The existing literature, as summarised in Table 1, shows a large amount of variation in the proportions sent (30 percent to 83 percent) and returned (18 percent to 82 percent) in the trust game. The highest proportion of money sent was in Glaeser et al, which was carried out on a sample of undergraduate economics students at the University of Harvard.¹ For developing countries, the highest proportion sent is 73 percent, found by Buchan et al (2006) for a sample of Chinese students.

Survey questions regarding trust generally take two forms: questions about attitudinal trust and questions about past trusting behaviour. Attitudinal trust questions ask about the person's attitudes and beliefs regarding whether other people in general, or specific groups of people (e.g. strangers), can be trusted. The generalised trust question is one example of a question about attitudinal trust. Questions about past trusting behaviour include questions about whether respondents have lent money to others in the past, or whether they leave their doors unlocked.

¹ Glaeser et al's methodology differs from other studies in that the experimenter only doubled, rather than tripled, the amount of money transferred from the sender to the receiver. Lazzarini et al (2004), who closely follow the methodology of Glaeser et al, also only double, rather than triple, the amount sent.

Some studies have examined the correlation between survey-based and experimental trust. To test whether there is a correlation between experimental and survey trust, the amount of money sent is regressed against survey trust and a range of control variables, which vary by study, but typically include variables such as gender and age. Likewise, whether there is a correlation between trustworthiness (reciprocity) and survey trust can be tested by regressing the proportion of money returned against survey trust and control variables, including the amount sent by the sender (to test whether the receiver's behaviour is affected by how generous the sender was in the first place).

The results obtained by Glaeser et al, for their sample of Harvard economics students, suggested there was no correlation between participants' responses to the generalised trust question and the proportion sent in the trust game. In addition to asking the generalised trust question, they also asked a number of other questions about attitudinal trust and about past trusting behaviour. The only attitudinal questions that were correlated with the amount sent were two questions regarding trust in strangers, whereas an index of past trusting behaviour (which included questions relating to whether people have lent money or possessions to others or whether they leave their doors unlocked) was positively correlated with the proportion sent. By contrast they did find a positive correlation between responses to the generalised trust question (and many of the other questions about attitudinal trust) and the proportion returned. There was no correlation between the index of past trusting behaviour and experimental trustworthiness.

A number of papers have examined the correlation between experimental and survey-based trust in *developing* countries on samples of university students. These studies include Holm and Danielson (2005) (Tanzania), Lazzarini et al (2004) (Brazil), Ashraf et al (2006) (South

Africa) and Haile et al (2004) (South Africa). The only one of these papers to find a positive correlation between the proportion sent and generalised trust is Lazzarini et al. In their study half the experiments were carried with participants knowing the identity of the person with whom they were paired, as in Glaeser et al, but the other half were conducted anonymously. The positive correlation between generalised trust and the proportion sent was only found when the experiment was anonymous.

University students may not be representative of the rest of the population. There are two studies that have focused on the correlation between survey and experimental trust in developing countries on a non-student sample. Johansson-Stenman et al (2006) have examined the correlation between survey trust and experimental behaviour among household heads in rural Bangladesh and found that both the amount sent and the amount returned were significantly positively correlated with the generalised trust question, but not with responses to questions regarding past trusting behaviour. Karlan (2005) carried out the trust game on a sample of members of a group-based lending scheme (FINCA) in Peru and found that there was no correlation between survey-based trust (the sum of the generalised trust question, a question about whether other people are generally fair and a question about whether other people are generally helpful) and the amount sent, but that there was a significant positive correlation between survey-based trust and the proportion returned.

The majority of studies fail to find a correlation between the generalised trust question and the proportion of money sent in the trust game. However, a question that has to be asked is whether participants in these studies thought they were playing the game against “most people” (in which case a correlation between the generalised trust question and experimental trust would be expected) or whether they are playing the game against a more homogenous

group that is a subset of “most people” (in which case a positive correlation would not be expected). For example, in several studies, participants are playing against other university students, a group they may consider to be only a subset of “most people”. Hence we might expect to find a correlation between questions regarding trust in other university students and experimental trust, but not between the generalised trust question and experimental trust. In other studies, people are playing against members of the same village, or same savings scheme, which again they may consider to be a subset of “most people”.

Table 1 also notes the number of studies who have examined whether there is a correlation between group memberships and the amount of money sent and the proportion returned. The only study to find a positive correlation was Karlan (2005), who found participants were likely to be more trusting of people who attended the same church. There are no studies focusing on the relationship between ROSCA membership and trust, although Karlan considered whether participants being members of the same FINCA lending group affects their behaviour in the trust game, which it did not.

We aim to build on the existing literature in a number of ways. This is the first study to measure the level of trust using the trust game in West Africa. In addition, when asking questions on attitudinal trust the existing literature tends to focus on questions regarding generalised trust, or trust in strangers. We ask a wider range of questions about the radius of trust, from whether people trust those they interact with regularly (people who belong to the same group as them) to whether they trust most people in general. We also analyse whether people who belong to ROSCAs are more trusting and/or trustworthy than those who do not, and whether the amount of trust or trustworthiness increases with the length of ROSCA

membership. Focusing on the duration of ROSCA membership enables us to test if there is a causal relationship from ROSCA membership to trust.

III Survey Design and Methodology

III.1 Background on the Village

The trust experiment and the questionnaire were administered in a village in the South West Province of Cameroon.² The village has a population of approximately 1000 inhabitants. Although Cameroon is a highly ethnically and linguistically diverse country, the village itself is highly homogenous in this regard, with all inhabitants being from the same ethnic group and speaking the same dialect. The main economic activity in the village is agriculture, with coffee and cocoa being the most significant crops. The majority of the population are illiterate. The nearest neighbouring villages are approximately 5 kilometres away, and the nearest large town 40 kilometres away. The village has neither a post office, nor a bank, which may, in part, explain why a high proportion of villagers belong to a ROSCA. The field work was carried out in January 2007, by one of the authors who is a Cameroonian national and speaks the local dialect. However, prior to the field work, he was not known by anyone in the village.

There are 17 ROSCAs operating in the village, with a total of 426 members, which represents the majority of the adult population of the village. Around 60 percent of ROSCA members are female. Groups may consist of men only, women only or both men and women. The ROSCAs in the village range in size from 11 to 45 members, and the average life of a ROSCA is 8 years. The average contribution to the ROSCA is 1000FCFA per meeting, with meetings typically held once a month or every two weeks. As well as having a rotating fund,

² One of the conditions of obtaining ethical approval for the field work was that we do not divulge the name, or the exact location, of the village.

some ROSCAs also include a savings and loan fund and/or an insurance fund, which members can choose to belong to. ROSCA membership in the village has been increasing slowly over time.

A typical organisational structure of a ROSCA constitutes the general assembly and the management committee made up of a president (chair), secretary, bookkeeper, treasurer and advisor. Transactions in these ROSCAs do not require any formal or written contracts - all agreements are monitored and enforced by members of the group. Default rates are very low. An individual who does default, or fail to make a compulsory contribution, is fined.

III.2 The recruitment of subjects

The experimenter was introduced to the villagers, by the village head, at a village feast, which was attended by the majority of villagers. All those who attended the feast were willing to take part in the project, hence the participation rate is very high. From this pool of potential subjects, a random sample of 200 adults were chosen, with the proviso that 140 had to be ROSCA members. The 200 participants were divided into groups of 20, who were scheduled to take part in the experiment, starting the next day and continuing for six days. The groups were organised so that in some experiments ROSCA members would play against members of the same ROSCA, in others ROSCA members would play against non-ROSCA members and in others non-ROSCA members would play against non-ROSCA members.

III.3 The experiment

Experimental sessions were conducted over the following six days in the village hall. At the beginning of every experimental session, information and instructions were provided to participants after the introduction of the experimenter and research assistants by the village

head. The information sheet and consent form were read to the participants and copies provided to those who could read. All participants confirmed their willingness to take part, both verbally and by signing a consent form. To control for experimenter effects, the same experimenter orally presented the instructions during all experimental sessions. The rules of the experiment were thoroughly explained, along with examples of how much money Player A and B would receive under different possible scenarios. Participants were encouraged to ask questions for clarification and were tested, by way of numerical examples, to ensure they had a good comprehension of the game.

In each experimental session, each person in Group A was randomly paired with a person in Group B, but the participants did not know with whom they were paired. The two Groups were kept in two different rooms and a research assistant was assigned to each room to make sure participants did not discuss strategies for among themselves. The game started with group A players being given 1000 FCFA (ten coins, each worth 100 FCFA). 1000 FCFA was roughly equivalent to two US dollars at the time of the experiment, and for most villagers would be approximately half a day's wages. 1000FCFA francs would buy about four kilograms of rice. One at a time, each player was called into a room, where the experimenter was located, and was asked to pass to the experimenter the number of coins they wished to transfer to the person in Group B, with whom they were anonymously paired, and was asked to put the remaining money in their pocket so others could not see how much money they had kept. The amount transferred was recorded by the experimenter. Having each participant reveal their decisions to the experimenter face to face does run the risk that the experimenter's presence may have influenced their decisions. However, it has the advantage that the experimenter was able to make sure each player understood the game. The same methodology was followed by Barr (2003), Karlan (2005) and Schechter (2007).

When all Group A players had made their decisions, Group B players entered the room one at a time and were handed an envelope containing three times the amount of money Player A had chosen to transfer. They were asked to give back to the experimenter whatever sum of money they wished to return to Player A, and this amount was recorded by the experimenter. They were asked to keep any money not returned in their pockets, so other players would not know how they had played the game.

Group A players filled in their survey forms while Group B players were making their transfer decisions. Group B players had already completed their surveys while waiting for Group A players to make their transfers. Given that many villagers are illiterate, the questions were put to all participants by a research assistant and the experimenter, who filled in the questionnaires on their behalf. Players typically spent about an hour taking part in the experiment and filling in the survey.

III.4 The survey

A copy of the survey is given in Appendix One. The survey was designed in English, and then translated into the local dialect. The survey asked 10 questions about peoples' attitudes towards trust and cooperation, one question about whether the participant had been the victim of crime in the previous five years (question 11), and a variety of questions about demographic and personal characteristics. For the first ten questions subjects were read a statement about trust or cooperation and asked whether they agreed with the statement on an A to E scale, with A indicating that they disagreed strongly, and an E that they agreed strongly. The first three questions ask whether the participant trusts people who live in the village, people who live in neighbouring villages and people in general. The tenth question

asks whether people in the same ROSCA or group can be trusted. The third question is very similar to the generalised trust question, but differs in that subjects were given five options, rather than being required to give a simple “Yes” or “No” answer. These four questions enable us to measure the extent to which the radius of trust diminishes from trust in people that subjects interact with regularly, through trust in other villagers, trust in people from other villages and trust in people in general.

As argued by Guinnane (2005) the generalised trust question does not make clear how much trust subjects are being asked to place in others. This criticism applies to all of our first three questions. Hence we include questions that specifically state how much trust is being placed in others. Question 4 asks whether you would lend your bicycle or hoe (assets owned by almost everyone in the village) to someone else in the village, with question five asking if subjects would lend their bicycle or hoe to a fellow ROSCA member. Question 9 asks whether participants would expect to have their wallet or purse returned if they lost it in the nearest large town. Question 8 focuses on whether subjects think other people would trust them by asking whether they think their neighbours would lend them a bucket. Questions 6 and 7 focus more on cooperative norms, rather than trust, asking whether subjects would help others during the cocoa or coffee harvest, and whether this would be reciprocated.

The demographic variables ask questions about gender, age, marital status, occupation, whether the subject lives alone or with others, how many children they have, how long they have lived in the village, whether they have ever lived in an urban area, whether they belong to a ROSCA, and if so, for how long, income (within certain bands) and highest academic qualification.

IV The Experiment and Survey Results

IV.1 Results of the experiment

The average amount of money sent by all senders in the experiment was 86.5 percent of the initial endowment, which is high compared to other studies in developing countries, but is not out of line with the 83 percent sent in Glaeser et al on a sample of Harvard economics students. No one chose to send less than 50 percent. The average amount sent was higher for ROSCA members (89.4 percent) than non-ROSCA members (75 percent). These averages do not take account of whether the *recipients* were ROSCA members or not. When both senders and recipients were ROSCA members the mean amount sent was 92 percent, when ROSCA members were senders and non-ROSCA members recipients the average amount sent was 81.5 percent. The distributions are summarised in Table 2. The fact that mean transfers are higher when the sender and receiver are members of the same ROSCA is consistent with the view that trust will be higher between people who interact frequently with each other. This is especially likely to be the case for members of the same ROSCA, who need to build trust in each other in order for the ROSCA to be able to effectively function. It could, of course be that more trusting people are likely to join ROSCAs in the first place. We attempt to deal with this question of causality in the regressions estimated in Section V of the paper.

[Table 2 about here]

Turning to the behaviour of recipients, the mean amount of money returned was 46.72 percent for the full sample, with 29 percent returning exactly half. This mean return is very similar to that found in a number of other studies, for example 45 percent found in the USA (Glaeser et al, 2000), 46 percent in Bangladesh (Johansson-Stenman et al, 2006), 51 percent in Peru (Karlan, 2005), 43 percent in Zimbabwe (Barr, 2003) and 42 percent in South Africa

(Carter and Castillo, 2003). However, it is somewhat higher than the 35 percent found in Tanzania by Holm and Danielson (2005) and the 33 percent found in Uganda by Mosley and Verschoor (2005). ROSCA members in our study returned an average of 49.28 percent, with non-ROSCA members returning 42.88 percent. When non-ROSCA members were Group B players they returned an average of 44.35 percent if the Group A players were ROSCA members and 41.40 percent if they were not. The full distributions for each of these scenarios are reported in Table 3. These results suggest that ROSCA members tend to be more trustworthy than are non-ROSCA members.

[Table 3 about here]

IV.2 Results of the survey

We begin by examining the extent to which trust diminishes, from trust in members of the same ROSCA or group, to trust in fellow villagers, to trust in people from neighbouring villages, to trust in people in general. The results for these questions are summarised in Table 4. The A to E scale is converted to a 1-5 scale, for the purposes of calculating summary statistics. It is no surprise that people are more likely to trust people in the same ROSCA or group, with 80 percent of subjects agreeing strongly that people in this category could be trusted.³ Next came trust in other people from the same village, with 54 percent agreeing strongly, followed by trust in people from neighbouring villages at 32.5 percent, and trust in people in general at 14.5 percent.⁴ Note, however, that over half of respondents agreed either strongly, or simply agreed, that most people could be trusted. Hence the degree of trust falls quite dramatically as the radius becomes wider. This is an important finding. Although trust

³ Not all participants belonged to a ROSCA, but the question asked about membership of any group, including ROSCAs.

⁴ A large proportion of subjects indicated that they were unclear who was meant by people in general. In these cases, it was explained that this included both people they knew and people they did not know.

in fellow villagers will be important in facilitating trades, and resolving collective action problems, within the village, it is trust in people in general that is required in for the market to expand beyond the village boundaries. Economic development ultimately requires a high degree of generalised trust, rather than a more limited radius of trust.

[Table 4 about here]

The results for the remaining six questions on trust and cooperation are summarised in Table 5. Turning first to the two questions about lending a bicycle or hoe, 74 percent agreed strongly that they would lend a bicycle or hoe to a fellow ROSCA or group member, while 54.5 percent would lend a bicycle or hoe to someone from the same village. This provides further evidence of the declining radius of trust. 76.5 percent of the sample agreed strongly that they would help neighbours with their harvest, while 57.5 percent believed this assistance would be reciprocated. A similar number (52 percent) agreed strongly that their neighbours would lend them a bucket. Only three percent thought their wallet or purse would be returned, if lost in the nearest town, although note that 38.5 agreed with this statement. Not reported in either of these tables is that 7.5 percent of the sample had been the victim of crime in the past five years.

[Table 5 about here]

V Empirical Results

Following the methodology discussed in the literature review, we regress the amount of money sent against each of our survey questions in turn, plus a number of control variables. We measure each of our trust variables as a dummy variable, taking on a value of 1 if

subjects strongly agreed with the relevant statement (that is, gave it an E in the questionnaire), and zero otherwise. Included among the control variables are dummy variables that take on the value of 1 if the subject is male, divorced, has ever lived in an urban area or holds a first school leaving certificate and zero otherwise. Household size, the number of children, the number of years subjects had lived in the village and the number of years in a ROSCA (which takes the value of zero if the subject does not belong to a ROSCA) are included as continuous control variables. Data on age and income were both collected in bands, so these are measured at the midpoint of the relevant band. We also experimented with including age-squared, the gender dummy interacted with the divorce dummy and dummies for the day the experiment was conducted. None of these variables were significant in any specifications, so were not included in the regressions reported below.

The coefficients we are most interested in are those on the survey questions and on the length of time in a ROSCA. Finding a positive correlation between ROSCA membership and experimental trust could be the result of either ROSCA membership making people more trusting, or that more trusting people join ROSCAs in the first place. To try and test whether or not ROSCA membership makes people more trusting, we use the number of years of ROSCA membership, rather than whether someone belongs to a ROSCA or not, as our explanatory variable, arguing that if ROSCA membership makes someone more trusting, the extent of trust should be an increasing function of the length of membership. However, a positive correlation between years of membership and experimental trust could be driven by the fact that non-ROSCA members are included in the sample and given a value of zero. To test for this possibility, we also report our results for a sub-sample of ROSCA members only.

It is standard in the literature to estimate these equations using OLS, despite the fact that the dependent variable is not continuously distributed. Karlan (2005) uses OLS for a data set in which the amount sent is distributed over four possible integer values. In other studies in which participants are given the money at the start of the game (including Johansson-Stenman *et al.*, 2006; Barr, 2003; Schechter, 2007) it is unclear how divisible the initial endowment is, but nevertheless it is unlikely the amount sent is a continuous variable.

Similarly, our dependent variable is distributed across 11 non-negative integer values, both in the empirical sample and in the corresponding statistical population. It is therefore impossible for the error term in our regression to be normally distributed: a normal distribution requires that all values on the real line are observed with a strictly positive probability, not just a finite set of integers. Thus, we violate one of the basic assumptions needed to demonstrate that OLS is unbiased.

An alternative – and more realistic – assumption regarding the distribution of our data is that it is described by a Poisson model.⁵ In this model, the predicted value of the dependent variable for the i^{th} observation (conditional on the values of the regressors x_{ij} , $j = 1, \dots, N$) is the mean of a Poisson distribution. A Poisson distribution has the form $f(k) = \exp(-\lambda) \cdot \lambda^k / k!$, where the single parameter λ is equal to both its mean and its variance. Denoting the conditional mean (and variance) as λ_i and its empirical estimate as $\hat{\lambda}_i$, the empirical model is of the form:

$$\hat{\lambda}_i = \exp(\beta_0 + \sum_j \beta_j \cdot x_{ij}) \quad (1)$$

⁵ As the mean of a Poisson distribution increases, its skewness decreases and it approximates more closely to a Normal distribution. However, the empirical distribution of our dependent variable is highly skewed, suggesting that the Normal distribution would not be a good approximation in our case.

In many applications, it is not possible to assume *a priori* that the restriction equating the mean with the variance is valid. A standard generalisation of the Poisson is the Negative Binomial distribution $f(k) = \{\Gamma(k + 1 / \alpha) / [\Gamma(1 / \alpha) \cdot (\lambda + 1 / \alpha)^k]\} \{[1 + \lambda \cdot \alpha]^{-\alpha}\} \cdot \lambda^k / k!$, which has a mean of λ and a variance of $[\lambda + \lambda^2 \cdot \alpha]$, converging to a Poisson distribution as $\alpha \rightarrow 0$. We will fit both a Poisson and a Negative Binomial model to the data. The tables below report estimates of $\ln(\alpha)$ and LM tests for the restriction that $\alpha = 0$. Generally, we find that α is significantly greater than zero but quite small, so the extra restriction embodied in the Poisson model makes no substantial difference to the regression coefficients β_j .

The regression results for the amount of money sent are reported in Tables 6 and 7, with the results for ROSCA members only reported in Tables 8 and 9. We focus on the results for the negative binomial regressions, although, as a generalisation, the results for the Poisson and negative binomial regressions are qualitatively similar.

[Tables 6, 7, 8 and 9 about here]

The survey questions regarding trust in fellow group members, fellow villagers and those in neighbouring villages are significant in all specifications, for the full sample. The coefficients are also economically significant. For example, someone who strongly agrees that fellow villagers can be trusted will, on average, transfer 10 percent more money than someone who does not strongly agree with the statement. Turning to the sample of ROSCA members only, out of these three questions, only the question regarding trust in fellow villagers is significant. This may well be because once non-ROSCA members are excluded, there is less variation in the data with regard to the survey questions. The generalised trust question is insignificant in both samples. These results are in line with other studies, such as Glaeser et al (2000) and

Karlan (2005), that have found no correlation between generalised trust and the amount of money sent in the trust game. Note, however, that we would not necessarily expect the generalised trust question to be correlated with how trusting people are in the trust game, because the trust game was played against fellow villagers, not against a group which included strangers. Hence, we do not interpret the lack of correlation between the generalised trust question and experimental trust as evidence that the generalised trust question is invalid.

The question about lending your neighbour a bicycle or hoe is significant for both samples, whereas the question about lending fellow group members a bicycle or hoe is only significant in the full sample. Interestingly, the questions regarding whether you would help your neighbour harvest their crops, and whether this would likely be reciprocated, are insignificant in both samples, as is the question about whether your neighbour would trust you enough to lend you a bucket. People who believe their wallet would be returned if lost in the nearest town transfer less money on average, for both samples. Those who have been the victim of crime in the last five years transfer less money on average, for both samples.

The length of ROSCA membership is significantly positively correlated with the amount of money sent in the experiment across all specifications for both the full sample and the ROSCA member only sub-sample. As argued above, this significant positive correlation for the full sample could be due to more trusting people joining ROSCAs in the first place, but this possibility is ruled out when we focus on the ROSCA members only sub-sample. Note, however, that the point estimates are slightly smaller for the ROSCA members only sub-sample.

Turning out attention to the other control variables, the gender, age, household size, number of children and income variables are insignificant in all, or nearly all, specifications. People who are divorced tend to send less money *ceteris paribus*, while those with a first school leaving certificate transfer more.

[Table 10 about here]

We are also interested in whether the same set of explanatory variables are correlated with the proportion of money returned. These results are reported in Table 10. Note that we do not report any results with the survey questions included as explanatory variables, as when these were included, none were significantly correlated with the proportion returned. The only significant variables in Table 10 are the amount of money received, and whether or not the subject holds a first school certificate.

VI Conclusions

This paper obtains measures of the level trust using both the trust game and questions about attitudinal trust and trusting behaviour in a village in rural Cameroon. This is the first study, of which we are aware, to obtain measures of trust in West Africa. The results from both the trust game, and the survey, suggest that levels of trust are high in the survey village. However, the level of stated trust diminishes rapidly as the radius of trust widens. The highest level of trust is in fellow group members, then other villagers, then people from neighbouring villages, then people in general. Although the high level of trust in fellow villagers is likely to promote trade and help resolve collective action problems within the village, the lower level of generalised trust may hinder the expansion of the market significantly beyond the village.

We also analysed the correlation between survey trust and behaviour in the trust game. Our results suggest that there is a positive correlation between the amount sent in the trust game and a range of questions regarding attitudinal trust (but not the generalised trust question), but no significant correlation between any of our trust questions and the proportion of money returned, holding other variables constant. This is in contrast to several previous studies (for example, Glaeser et al (2000); Ashraf et al (2006) that have found no correlation between survey-based trust and the proportion sent, but have found a significant positive correlation between survey-based trust and the proportion returned.

We also analysed whether the number of years someone has belonged to a ROSCA makes them more trusting, and find that it does. Focusing on duration of ROSCA membership, rather than whether people belong to a ROSCA, enables us to conclude that the positive correlation is not simply due to the fact that more trusting people join ROSCAs in the first place. It would seem joining a ROSCA does make people more trusting over time. This is consistent with the view that trust is built up by frequent interactions with others.

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Table 1: Trust Game Studies in Developing Countries

Author (s)	Country	Survey	Students	Proportion Sent (%)	Proportion Returned (%)	Anonymous	Correlation with Survey Questions	Correlation with Group Memberships
Ashraf et al. (2006)	USA Russia South Africa	Yes Yes Yes	Yes Yes Yes	41 49 43	23 29 27	Yes	Question about trust in strangers was positively correlated with the proportion returned but not correlated with the proportion sent.	Memberships of any organizations was insignificant
Berg et al. (1995)	USA	No	Yes	52	46	Yes	Not Examined	Not Examined
Barr (2003)	Zimbabwe	No	No	43	43	Yes	Not Examined	Not Examined
Bouma et al. (2005)	India	Yes	No	49	33	Yes	Not Examined	Not Examined
Buchan and Croson (2004)	USA China	Yes Yes	Yes Yes	50 66	22 35	Yes	Not Examined	Not Examined
Buchan et al. (2006)	USA China Japan South Korea	Yes Yes Yes Yes	Yes Yes Yes Yes	65 73 68 64	45 50 50 49	Yes	Not Examined	Not Examined
Burns (2004)	South Africa	Yes	Yes	33	23	No	Not Examined	Not Examined
Carter and Castillo (2003)	South Africa	No	No	53	38	Yes	Not Examined	Memberships of any social group was insignificant
Castillo and Carter (2007)	Honduras	No	No	49	42	Yes	Not Examined	Not Examined
Ensminger (2000)	Kenya	No	No	44	18	Yes	Not Examined	Not Examined
Glaeser et al. (2000)	USA	Yes	Yes	83	45	No	Questions about past trusting behaviour were positively correlated with the proportion sent. Many attitudinal trust questions (including the generalized trust question) were positively correlated with the proportion returned.	Not Examined
Greig and Bohnet (2005)	Kenya	Yes	No	30	82	Yes	Not Examined	Not Examined
Haile et al. (2004)	South Africa	Yes	Yes	55	28	Yes	Positively correlated with trustworthiness but not with trust.	Not Examined

Holm and Danielson (2005)	Tanzania Sweden	Yes Yes	Yes Yes	53 51	37 35	Yes Yes	In Tanzania, attitudinal trust questions were insignificant in predicting either the amount sent or proportion returned. In Sweden, attitudinal trust questions (except the generalized trust question) were positively correlated with the amount sent. Past trusting behaviour negatively correlated with the proportion returned in Tanzania but not Sweden. All attitudinal trust questions were positively correlated with the proportion returned in Sweden but not in Tanzania.	Not Examined
Johansson-Stenman et al. (2006)	Bangladesh	Yes	No	46	46	Yes	The generalized trust question was positively correlated with both trust and trustworthiness. Questions about past trusting behaviour and past experience (victim of crime) are insignificant.	Memberships of voluntary groups was insignificant
Karlan (2005)	Peru	Yes	No	46	43	No	Survey trust questions were positively correlated with trustworthiness but not with trusting behaviour.	Being in the same lending group was insignificant but attending the same church was positively correlated with trusting behaviour
Lazzarini et al. (2004)	Brazil	Yes	Yes	56	34	Yes	Positively correlated with trust and trustworthiness.	Not Examined
Mosley and Verschoor (2005)	Uganda	Yes	No	49	33	Yes	Not Examined	Memberships of a self-help group was insignificant
Schechter (2007)	Paraguay	Yes	No	47	44	Yes	Not Examined	Not Examined

Notes: “Country” denotes the country the study was carried out in. “Survey” is assigned a “yes” if the study asked survey questions about trust, and a “no” otherwise. “Students” is coded “yes” if subjects were students and “no” if subjects were not students. “Proportion Sent” is the mean proportion of the endowment sent and “Proportion Returned” represents the mean proportion returned. “Anonymous” is given a “yes” if subjects did not know the identity of their counterparts and a “no” otherwise. The column “correlation with survey questions” provides information on whether or not the correlation between survey and experimental trust was analysed and the column “Correlation with group memberships” provides information on whether the correlation between experimental trust and group memberships was analysed.

Table 2: Proportion sent (Trust) in different combinations of subjects

	ROSCA members (senders) vs. members of the same ROSCA (receivers)	ROSCA members (senders) vs. Non- members of ROSCAs (receivers)	Non-members (senders) vs. Non-members of ROSCAs (receivers)
Mean	92%	81.5%	75%
Std. Dev.	9.35%	16.63%	16.38%
Mode	100%	100%	60%
Min	70%	50%	50%
Max	100%	100%	100%
N	60	20	20

Table 3: Proportion returned (Trustworthiness) in different combinations of subjects

	ROSCA members (senders) vs. members of the same ROSCA (receivers)	Non-members of ROSCAs (senders) vs. members of ROSCAs (receivers)	Non-members of ROSCAs (senders) vs. Non-members of ROSCAs (receivers)
Mean	49.28%	44.35%	41.40%
Std. Dev.	5.15%	6.05%	7.13%
Mode	50%	50%	44%
Min	37%	33%	27%
Max	67%	53%	50%
N	60	20	20

Table 4: Responses to survey questions about trust

Response	Trust in fellow ROSCA/group members (%)	Trust in fellow village members (%)	Trust in people from neighbouring villages (%)	General trust (%)
1	0	1.00	5.00	16.00
2	0.50	8.50	16.00	19.50
3	1.50	0.00	1.50	4.00
4	18.00	36.50	45.00	46.00
5	80.00	54.00	32.50	14.50
Mean	4.78	4.34	3.84	3.24
Standard Dev.	0.49	0.93	1.19	1.35
Min	2	1	1	1
Max	5	5	5	5
N	200	200	200	200

Table 5: Responses to survey questions about cooperation and trust

Response	Lending a bicycle/hoe to fellow ROSCA members (%)	Lending a bicycle/hoe to fellow village members (%)	Helping neighbours with harvest(%)	Expect help from neighbours during harvest (%)	Expect neighbours to lend their buckets (%)	Getting back a lost wallet/purse with items intact (%)
1	0	0	0	0	0	17.50
2	1.00	0	0	0	0	26.00
3	0	0.50	0	2.00	1.00	15.00
4	25.00	45.00	23.50	40.50	47.00	38.50
5	74.00	54.50	76.50	57.50	52.00	3.00
Mean	4.72	4.54	4.77	4.56	4.51	2.84
Standard Dev.	0.51	0.51	0.43	0.54	0.52	1.20
Min	2	3	4	3	3	1
Max	5	5	5	5	5	5
N	200	200	200	200	200	200

Table 6: Determinants of the proportion sent by all senders (100 observations)

Dependent Variable: Proportion Sent

Independent Variables	(1)		(2)		(3)		(4)		(5)		(6)	
	Poisson	NBREG	Poisson	NBREG	Poisson	NBREG	Poisson	NBREG	Poisson	NBREG	Poisson	NBREG
Male	0.006 (0.023)	0.005 (0.026)	0.019 (0.023)	0.018 (0.028)	0.018 (0.023)	0.017 (0.028)	0.040* (0.023)	0.039 (0.027)	0.028 (0.023)	0.027 (0.027)	0.019 (0.023)	0.018 (0.028)
Age	0.001 (0.001)	0.001 (0.001)	0.002 (0.001)	0.002 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
Divorced	-0.116** (0.056)	-0.117* (0.064)	-0.164*** (0.055)	-0.165** (0.065)	-0.177*** (0.054)	-0.180*** (0.065)	-0.158*** (0.054)	-0.161*** (0.062)	-0.163*** (0.054)	-0.166*** (0.063)	-0.182*** (0.054)	-0.184*** (0.065)
Household size	0.008 (0.006)	0.008 (0.007)	0.007 (0.006)	0.008 (0.007)	0.006 (0.006)	0.007 (0.007)	0.005 (0.006)	0.005 (0.007)	0.003 (0.006)	0.003 (0.007)	0.007 (0.006)	0.007 (0.007)
Number of Children	-0.005 (0.007)	-0.005 (0.008)	-0.005 (0.007)	-0.005 (0.008)	-0.006 (0.007)	-0.006 (0.009)	-0.006 (0.007)	-0.006 (0.008)	-0.006 (0.007)	-0.006 (0.008)	-0.005 (0.007)	-0.005 (0.009)
Years lived in village	-0.003*** (0.001)	-0.003** (0.001)	-0.003*** (0.001)	-0.003** (0.001)	-0.002** (0.001)	-0.002** (0.001)	-0.002* (0.001)	-0.002 (0.001)	-0.002** (0.001)	-0.002** (0.001)	-0.002** (0.001)	-0.002** (0.001)
Lived in an urban area	-0.104*** (0.029)	-0.104*** (0.033)	-0.110*** (0.029)	-0.111*** (0.036)	-0.103*** (0.029)	-0.103*** (0.035)	-0.104*** (0.029)	-0.104*** (0.033)	-0.107*** (0.029)	-0.107*** (0.034)	-0.101*** (0.029)	-0.101*** (0.036)
Duration in a ROSCA	0.016*** (0.003)	0.016*** (0.003)	0.016*** (0.003)	0.016*** (0.003)	0.015*** (0.003)	0.015*** (0.003)	0.013*** (0.003)	0.014*** (0.003)	0.012*** (0.003)	0.012*** (0.004)	0.015*** (0.003)	0.015*** (0.003)
Log (income)	0.041 (0.063)	0.042 (0.072)	0.016 (0.064)	0.015 (0.078)	0.035 (0.063)	0.036 (0.077)	0.028 (0.063)	0.029 (0.072)	-0.002 (0.064)	-0.003 (0.075)	0.040 (0.063)	0.041 (0.077)
First school certificate	0.076*** (0.024)	0.077*** (0.028)	0.082*** (0.024)	0.082*** (0.029)	0.089*** (0.024)	0.090*** (0.029)	0.077*** (0.024)	0.077*** (0.028)	0.073*** (0.024)	0.074*** (0.029)	0.093*** (0.024)	0.093*** (0.030)
Survey (strongly agree)	0.106*** (0.024)	0.108*** (0.028)	0.052** (0.025)	0.055* (0.030)	0.044 (0.027)	0.045 (0.034)	0.113*** (0.027)	0.113*** (0.031)	0.143*** (0.040)	0.143*** (0.047)	-0.023 (0.041)	-0.023 (0.051)
Constant	4.060	4.049	4.253	4.251	4.157	4.151	4.141	4.135	4.304	4.305	4.157	4.151
LR Chi2	113.02	61.84	97.97	51.02	96.09	49.59	111.69	60.64	106.46	56.83	93.80	47.99
Pseudo R2	0.129	0.075	0.111	0.062	0.109	0.060	0.127	0.074	0.121	0.069	0.107	0.058
ln alpha	-	-5.534	-	-5.151	-	-5.117	-	-5.510	-	-5.358	-	-5.072
Chibar2 (01)	-	4.27	-	8.50	-	8.96	-	4.40	-	5.82	-	9.65
Log likelihood	-383.402	-381.265	-390.923	-386.672	-391.867	-387.389	-384.066	-381.866	-386.679	-383.767	-393.012	-388.188

NBREG = Negative Binomial Regression. Standard errors in parentheses. Columns 1 to 6 are controls for survey questions 1 to 6, respectively.

*** The coefficient is significant at the 1% level, ** significant at the 5% level, *significant at the 10% level.

Table 7: Determinants of the proportion sent by all senders (100 observations)

Dependent Variable: Proportion Sent

Independent Variables	(7)		(8)		(9)		(10)		(11)	
	Poisson	NBREG	Poisson	NBREG	Poisson	NBREG	Poisson	NBREG	Poisson	NBREG
Male	0.021 (0.023)	0.020 (0.028)	0.019 (0.023)	0.018 (0.028)	0.021 (0.023)	0.020 (0.027)	0.022 (0.023)	0.021 (0.026)	0.021 (0.023)	0.020 (0.028)
Age	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.002 (0.001)	0.002 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
Divorced	-0.179*** (0.054)	-0.182*** (0.065)	-0.183*** (0.054)	-0.186*** (0.065)	-0.189*** (0.054)	-0.191*** (0.063)	-0.184*** (0.054)	-0.186*** (0.061)	-0.180*** (0.054)	-0.183*** (0.065)
Household size	0.007 (0.006)	0.007 (0.007)	0.007 (0.006)	0.007 (0.008)	0.010* (0.006)	0.011 (0.007)	0.003 (0.006)	0.003 (0.007)	0.007 (0.006)	0.007 (0.007)
Number of Children	-0.006 (0.007)	-0.006 (0.008)	-0.006 (0.007)	-0.006 (0.009)	-0.007 (0.007)	-0.008 (0.008)	-0.005 (0.007)	-0.006 (0.008)	-0.007 (0.007)	-0.007 (0.009)
Years lived in village	-0.002** (0.001)	-0.002* (0.001)	-0.002** (0.001)	-0.002** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.002** (0.001)	-0.002** (0.001)	-0.002** (0.001)	-0.002** (0.001)
Lived in an urban area	-0.101*** (0.029)	-0.101*** (0.035)	-0.103*** (0.029)	-0.103*** (0.036)	-0.107*** (0.029)	-0.108*** (0.035)	-0.090*** (0.029)	-0.090*** (0.034)	-0.093*** (0.029)	-0.093*** (0.036)
Duration in a ROSCA	0.016*** (0.003)	0.016*** (0.003)	0.015*** (0.003)	0.015*** (0.004)	0.017*** (0.003)	0.017*** (0.003)	0.007** (0.003)	0.007* (0.004)	0.015*** (0.003)	0.016*** (0.003)
Log (income)	0.040 (0.063)	0.042 (0.076)	0.039 (0.063)	0.040 (0.077)	0.042 (0.063)	0.044 (0.075)	0.025 (0.064)	0.024 (0.073)	0.037 (0.063)	0.038 (0.076)
First school certificate	0.088*** (0.024)	0.089*** (0.029)	0.089*** (0.024)	0.089*** (0.030)	0.092*** (0.024)	0.092*** (0.029)	0.070*** (0.024)	0.071** (0.028)	0.086*** (0.024)	0.087*** (0.029)
Survey (strongly agree)	0.042* (0.025)	0.042 (0.031)	0.008 (0.027)	0.009 (0.034)	-0.163*** (0.053)	-0.164*** (0.064)	0.165*** (0.039)	0.164*** (0.045)	-0.081* (0.044)	-0.082 (0.053)
Constant	4.100	4.089	4.139	4.132	4.110	4.098	4.167	4.173	4.154	4.151
LR Chi2	96.40	49.62	93.57	47.86	103.19	54.28	111.22	60.21	96.89	50.17
Pseudo R2	0.120	0.060	0.106	0.058	0.117	0.066	0.126	0.073	0.110	0.061
ln alpha	-	-5.129	-	-5.067	-	-5.286	-	-5.502	-	-5.132
Chibar2 (01)	-	8.67	-	9.75	-	6.54	-	4.45	-	8.73
Log likelihood	-391.709	-387.373	-393.126	-388.252	-388.314	-385.043	-384.301	-382.077	-391.466	-387.100

Columns 7 to 11 are controls for survey questions 7 to 11 respectively. See also notes to Table 6.

Table 8: Determinants of the proportion sent by ROSCA members (80 observations)

Dependent Variable: Proportion Sent

Independent Variables	(1)		(2)		(3)		(4)		(5)		(6)	
	Poisson	NBREG	Poisson	NBREG	Poisson	NBREG	Poisson	NBREG	Poisson	NBREG	Poisson	NBREG
Male	0.020 (0.025)	0.020 (0.026)	0.026 (0.025)	0.026 (0.027)	0.027 (0.025)	0.026 (0.027)	0.044* (0.026)	0.044 (0.027)	0.028 (0.026)	0.028 (0.027)	0.032 (0.026)	0.032 (0.027)
Age	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
Divorced	-0.082 (0.066)	-0.082 (0.069)	-0.119* (0.064)	-0.120* (0.068)	-0.118* (0.063)	-0.119* (0.068)	-0.121* (0.063)	-0.121* (0.065)	-0.124* (0.063)	-0.125* (0.067)	-0.116* (0.063)	-0.117* (0.067)
Household size	0.003 (0.006)	0.003 (0.007)	0.002 (0.006)	0.002 (0.007)	0.002 (0.006)	0.002 (0.007)	0.001 (0.006)	0.000 (0.007)	0.001 (0.006)	0.001 (0.007)	0.001 (0.006)	0.001 (0.007)
Number of Children	-0.006 (0.007)	-0.006 (0.001)	-0.007 (0.007)	-0.007 (0.008)	-0.007 (0.007)	-0.008 (0.008)	-0.007 (0.007)	-0.007 (0.008)	-0.007 (0.007)	-0.007 (0.008)	-0.006 (0.007)	-0.006 (0.008)
Years lived in village	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003** (0.001)	-0.003** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)
Lived in an urban area	-0.118*** (0.031)	-0.118*** (0.032)	-0.119*** (0.031)	-0.120*** (0.033)	-0.119*** (0.031)	-0.119*** (0.033)	-0.118*** (0.031)	-0.119*** (0.032)	-0.118*** (0.031)	-0.118*** (0.033)	-0.112*** (0.031)	-0.112*** (0.033)
Duration in a ROSCA	0.013*** (0.004)	0.013*** (0.004)	0.012*** (0.004)	0.012*** (0.005)	0.012*** (0.004)	0.012*** (0.004)	0.010** (0.004)	0.010** (0.004)	0.012*** (0.004)	0.012*** (0.005)	0.012*** (0.004)	0.012*** (0.004)
Log (income)	0.021 (0.091)	0.021 (0.095)	0.028 (0.093)	0.027 (0.099)	0.026 (0.091)	0.026 (0.098)	0.014 (0.091)	0.014 (0.094)	-0.009 (0.098)	-0.010 (0.105)	0.027 (0.091)	0.027 (0.096)
First school certificate	0.072** (0.030)	0.072** (0.032)	0.079** (0.031)	0.080** (0.033)	0.081*** (0.030)	0.081** (0.032)	0.068** (0.030)	0.068** (0.031)	0.077** (0.031)	0.077** (0.033)	0.087*** (0.030)	0.087*** (0.032)
Survey (strongly agree)	0.058** (0.027)	0.058** (0.028)	0.007 (0.028)	0.008 (0.033)	0.016 (0.030)	0.016 (0.032)	0.075** (0.031)	0.075** (0.031)	0.037 (0.060)	0.037 (0.064)	-0.069 (0.048)	-0.069 (0.050)
Constant	4.281	4.281	4.293	4.293	4.297	4.297	4.333	4.333	4.369	4.367	4.367	4.366
LR Chi2	52.03	37.85	47.68	33.83	47.91	34.03	53.70	39.29	47.99	34.09	49.68	35.61
Pseudo R2	0.080	0.060	0.074	0.053	0.074	0.054	0.083	0.062	0.074	0.054	0.077	0.056
ln alpha	-	- 6.941	-	-6.430	-	-6.454	-	-7.308	-	-6.466	-	-6.631
Chibar2 (01)	-	0.25	-	0.68	-	0.65	-	0.12	-	0.63	-	0.46
Log likelihood	-298.499	-298.372	-300.723	-300.383	-300.611	-300.286	-297.715	-297.653	-300.569	-300.252	-299.726	-299.495

See notes to Table 6.

Table 9: Determinants of the proportion sent by ROSCA members (80 observations)
 Dependent Variable: Proportion Sent

Independent Variables	(7)		(8)		(9)		(10)		(11)	
	Poisson	NBREG	Poisson	NBREG	Poisson	NBREG	Poisson	NBREG	Poisson	NBREG
Male	0.027 (0.025)	0.027 (0.027)	0.028 (0.026)	0.027 (0.028)	0.029 (0.025)	0.029 (0.026)	0.027 (0.025)	0.027 (0.027)	0.032 (0.025)	0.032 (0.026)
Age	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.002 (0.001)	0.002 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)
Divorced	-0.115* (0.064)	-0.116* (0.067)	-0.122* (0.063)	-0.123* (0.067)	-0.128** (0.063)	-0.128** (0.064)	-0.124* (0.063)	-0.125* (0.067)	-0.112* (0.064)	-0.112* (0.066)
Household size	0.002 (0.006)	0.002 (0.007)	0.001 (0.007)	0.001 (0.007)	0.005 (0.006)	0.005 (0.007)	0.001 (0.006)	0.002 (0.007)	0.001 (0.006)	0.001 (0.007)
Number of Children	-0.008 (0.007)	-0.008 (0.008)	-0.007 (0.007)	-0.007 (0.008)	-0.009 (0.007)	-0.010 (0.007)	-0.008 (0.007)	-0.008 (0.008)	-0.008 (0.007)	-0.008 (0.008)
Years lived in village	-0.003** (0.001)	-0.003** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.003** (0.001)	-0.003** (0.001)
Lived in an urban area	-0.118*** (0.031)	-0.118*** (0.033)	-0.118*** (0.031)	-0.119*** (0.033)	-0.121*** (0.031)	-0.121*** (0.031)	-0.116*** (0.031)	-0.117*** (0.033)	-0.107*** (0.031)	-0.107*** (0.032)
Duration in a ROSCA	0.012*** (0.004)	0.012*** (0.004)	0.012*** (0.004)	0.012*** (0.004)	0.014*** (0.004)	0.014*** (0.004)	0.012*** (0.004)	0.012*** (0.005)	0.012*** (0.004)	0.012*** (0.004)
Log (income)	0.030 (0.091)	0.030 (0.096)	0.031 (0.091)	0.031 (0.097)	0.038 (0.091)	0.038 (0.092)	0.027 (0.093)	0.027 (0.099)	0.014 (0.091)	0.014 (0.095)
First school certificate	0.080*** (0.030)	0.080** (0.032)	0.080*** (0.030)	0.081** (0.032)	0.087*** (0.030)	0.087*** (0.031)	0.080*** (0.030)	0.081** (0.032)	0.072** (0.030)	0.072** (0.032)
Survey (strongly agree)	0.025 (0.028)	0.025 (0.030)	0.010 (0.033)	0.011 (0.035)	-0.152*** (0.054)	-0.152*** (0.054)	0.024 (0.083)	0.024 (0.088)	-0.105** (0.047)	-0.106** (0.049)
Constant	4.259	4.257	4.273	4.271	4.210	4.209	4.279	4.277	4.387	4.388
LR Chi2	48.41	34.44	47.72	33.86	55.90	41.40	47.70	33.84	52.66	38.39
Pseudo R2	0.075	0.054	0.074	0.053	0.086	0.065	0.074	0.053	0.081	0.061
ln alpha	-	-6.526	-	-6.431	-	-7.986	-	-6.439	-	-6.934
Chibar2 (01)	-	0.56	-	0.68	-	0.03	-	0.67	-	0.26
Log likelihood	-300.357	-300.076	-300.706	-300.366	-296.615	-296.599	-300.713	-300.378	-298.234	-298.103

Columns 7 to 11 are controls for survey questions 7 to 11 respectively. See also notes to Table 6.

Table 10: Determinants of the proportion returned by all recipients (100 observations)
 Dependent Variable: Proportion Returned

Independent Variables	Poisson Regression	Negative Binomial Reg.
Amount received	0.015*** (0.004)	0.015*** (0.004)
Male	0.032 (0.032)	0.032 (0.032)
Age	0.000 (0.002)	0.000 (0.002)
Divorced	0.014 (0.073)	0.014 (0.073)
Household size	-0.004 (0.008)	-0.004 (0.008)
Number of Children	-0.001 (0.010)	-0.001 (0.010)
Years lived in village	0.003 (0.002)	0.003 (0.002)
Lived in an urban area	0.058 (0.047)	0.058 (0.047)
ROSCA membership	0.123 (0.075)	0.123 (0.075)
Duration in a ROSCA	-0.003 (0.007)	-0.003 (0.007)
Log (income)	0.000 (0.050)	0.000 (0.050)
First school certificate	0.058* (0.034)	0.058* (0.034)
Constant	3.261	3.261
LR Chi2	46.77	46.77
Pseudo R2	0.071	0.071
ln alpha	-	-59.442
Chibar2 (01)	-	0.00
Log likelihood	-307.896	-307.896

See notes to Table 6.

Appendix 1: The Questionnaire

This set of questions is designed to provide some information on trust, cooperation and decision making in this village. Any information you provide will be held as strictly confidential and used for study purposes only.

Please circle the most appropriate response A, B, C, D or E, for questions 1 to 10.

A = Disagree Strongly

B = Disagree

C = Neither Agree nor Disagree

D = Agree

E = Agree Strongly

How much would you agree or disagree with the following statements about this village?

1. People who live in this village can be trusted. A B C D E
2. Most people who live in your neighbouring villages can be trusted. A B C D E
3. Generally speaking, most people can be trusted. A B C D E
4. You would be willing to lend your bicycle or hoe to someone else in this village. A B C D E
5. You would be willing to lend your bicycle or hoe to someone in the same ROSCA as you (or to someone close to you – for non-members of ROCSAs) A B C D E
6. If your neighbours need your help during cocoa or coffee harvest seasons, you would be willing to help them. A B C D E
7. Assuming that you help other people harvest their crops, they would help you harvest your crops when you need help. A B C D E
8. Suppose your bucket got broken and you need to fetch water before the next market day. Your neighbour would be willing to lend you theirs. A B C D E
9. You would expect to get your wallet/purse returned (with nothing missing) if you lost it in the street in town X.⁶ A B C D E
10. People in the same ROSCA (group) as you can be trusted. A B C D E
11. Have you been a victim of crime in the past five years?
Yes No (if yes, how many times? where? what happened?)

.....
.....

⁶ The town was named in the survey, but is not named here to protect the anonymity of the village. The town is the nearest large town to the village, and is approximately 40 kilometres away.

Demographics

1. Gender: Male Female
2. Age: 16-20 21-30 31-40 41-50 51-60 61-70 71 +
3. Marital Status: Single Married Divorced Widow/Widower
4. Occupation: Farming Business Other
5. Who do you live with?
Alone Partner Children Partner and Children Friends
Extended family Household size.....
6. How many children do you have?.....
7. How long have you lived in this village?years
8. Have you ever lived in an urban area? Yes No
9. Do you belong to a ROSCA? Yes No
10. If yes, for how long have you been a member?.....years
11. Annual income of household from occupation (last year's income).
 - a) < CFA 300,000
 - b) CFA 300,000 - CFA 500,000
 - c) CFA 500,000 - CFA 750,000
 - d) CFA 750,000 - CFA 1,000,000
 - e) CFA 1,000,000 - CFA 1,500,000
 - f) CFA 1,500,000 +
12. Academic qualifications:
 - a) None
 - b) First School Leaving Certificate (F.S.L.C.)
 - c) GCE O-Level (or equivalent)
 - d) GCE A-Level (or equivalent)
 - e) Degree

Appendix Two: Decision Making Sheet

1000CFA Initial Endowment

A has to complete this part of the form:

Initial endowment of A: **10** units of money (worth 1000 CFA)

I transfer the following amount of units to B: (please tick one)

- | | | | |
|----------------------------------|----------------------------------|-----------------------------------|----------------------------------|
| <input type="checkbox"/> 0 unit | <input type="checkbox"/> 1 unit | <input type="checkbox"/> 2 units | <input type="checkbox"/> 3 units |
| <input type="checkbox"/> 4 units | <input type="checkbox"/> 5 units | <input type="checkbox"/> 6 units | <input type="checkbox"/> 7 units |
| <input type="checkbox"/> 8 units | <input type="checkbox"/> 9 units | <input type="checkbox"/> 10 units | |

B has to complete this part of the form:

I have received the following amount of units from A (see above):.....units

Three times the above amount is the following amount:.....units

I transfer the following amount of units to A: (please tick one)

- | | | | |
|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| <input type="checkbox"/> 0 unit | <input type="checkbox"/> 1 unit | <input type="checkbox"/> 2 units | <input type="checkbox"/> 3 units |
| <input type="checkbox"/> 4 units | <input type="checkbox"/> 5 units | <input type="checkbox"/> 6 units | <input type="checkbox"/> 7 units |
| <input type="checkbox"/> 8 units | <input type="checkbox"/> 9 units | <input type="checkbox"/> 10 units | <input type="checkbox"/> 11 units |
| <input type="checkbox"/> 12 units | <input type="checkbox"/> 13 units | <input type="checkbox"/> 14 units | <input type="checkbox"/> 15 units |
| <input type="checkbox"/> 16 units | <input type="checkbox"/> 17 units | <input type="checkbox"/> 18units | <input type="checkbox"/> 19 units |
| <input type="checkbox"/> 20 units | <input type="checkbox"/> 21 units | <input type="checkbox"/> 22 units | <input type="checkbox"/> 23 units |
| <input type="checkbox"/> 24 units | <input type="checkbox"/> 25 units | <input type="checkbox"/> 26 units | <input type="checkbox"/> 27 units |
| <input type="checkbox"/> 28 units | <input type="checkbox"/> 29 units | <input type="checkbox"/> 30 units | |

* Each unit of money = 100 CFA