

# **Are Survey measures of Trust Correlated with Experimental Trust?**

## **Empirical Evidence from Cameroon**

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### ABSTRACT

We analyse the correlation between survey-based measures of trust and behaviour in the Trust Game in two villages in Cameroon. Some participants play the Trust Game against people from their own village, with others playing against people from a village other than their own. We ask participants survey questions about trust relevant to who they were paired with in the Trust Game. Our results suggest that several measures of survey-based trust are correlated with experimental trust.

Key words: Trust Game, social capital, surveys

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## 1. INTRODUCTION

Researchers wishing to quantify the extent of trust in a society typically rely either on survey or experimental data. A commonly used survey trust question is the generalised trust question which asks “[g]enerally speaking, would you say that most people can be trusted or that you can’t be too careful in dealing with people?” Experimental trust is typically measured using data from the Trust Game. Survey data have the advantage that they are easier and less costly to collect. Experimental data have the advantage of being based on the observation of people’s actual behaviour in a controlled setting, rather than simply how people say they would behave in certain situations. However, if it could be shown that the survey and experimental measures of trust are highly correlated, this would increase confidence in the reliability of the, easier to collect, survey data.

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. Most studies fail to find a correlation between the survey-based measures of trust and experimental trust. This is probably not surprising as many studies usually analyse the correlation between Trust Game behaviour and responses to the generalised trust question, which asks about trust in “most people”. However, participants are typically not paired to play the Trust Game with “most people.” Rather people often play against a more homogenous group of people, who are likely to be similar to themselves (such as students from the same university or members of the same church congregation).

In this paper we analyse the correlation between survey-based measures of trust and behaviour in the Trust Game in two villages in rural Cameroon. Half of our sample played the Trust Game against people from their own village; the remainder played against someone from a neighbouring village. We asked participants a number of questions about trust, including the generalised trust question, but also asked questions about the degree of trust participants had in those from their own village and those from the other village. This enables us to analyse the correlation between experimental trust, and a question on trust relevant to whom the player was paired with (that is, either trust in someone from their own village or trust in someone from the other village). To the best of our knowledge, ours is the first study to analyse the correlation

between survey and experimental trust in this way. In addition, when analysing these correlations, we test for the possibility that behaviour in the Trust Game is motivated not just by trust, but by unconditional kindness and risk aversion by having participants play a Triple Dictator Game and a Risk Game. In a separate paper (Etang, Fielding and Knowles, 2009), we analyse the same experimental data to quantify the effect of social distance on experimental trust and trustworthiness.

The paper proceeds as follows. Section 2 will briefly review how trust is measured using both surveys and the Trust Game, and the small number of studies that have examined the correlation between survey and experimental trust. Our research methodology will be outlined in Section 3. Section 4 will discuss the descriptive results from the experiment and survey, with our regression results being reported in Section 5. Section 6 will conclude.

## 2. LITERATURE REVIEW

### (a) *Measuring trust using the Trust Game*

In the Trust Game, which was introduced to the literature by Berg *et al.* (1995), participants are divided into two groups: Senders and Recipients. Each Sender is anonymously paired with a Recipient. Senders are then given a sum of money and must decide how much of this money, if any, to transfer to the Recipient. The amount of money transferred is tripled by the experimenter. The Recipient must then decide how much of the money, if any, to return to the Sender. The amount of money sent by the Sender is interpreted as a measure of her trust in the Recipient, while the amount returned by the Recipient is interpreted as a measure of trustworthiness or reciprocity. For a detailed review of results from the Trust Game see Chaudhuri (2009) and Cardenas and Carpenter (2008).

### (b) *Measuring trust using surveys*

As noted in the introduction, the most common survey-based measure of trust is the generalised trust question. Other survey questions typically take two forms: questions about attitude (attitudinal trust) and questions about past trusting behaviour. A commonly used measure of attitudinal trust is the trust index that was first used by Glaeser *et al.* (2000). This trust index is a

normalised average of three questions: (1) the generalised trust question (2) a question asking “do you think most people would try to take advantage of you if they got a chance, or would they try to be fair?” and (3) a question asking “would you say that most of the time people try to be helpful, or that they are mostly just looking out for themselves?” Another attitudinal question that appears in the literature is to ask people if they trust strangers. Glaeser *et al.* also constructed an index of past trusting behaviour, which is a normalised average of three questions: (1) “how often do you lend money to your friends?”, (2) “how often do you lend personal possessions to your friends” and (3) “how often do you intentionally leave your rooming group’s hallway door unlocked when nobody is home?”

### *(c) Correlation between Experimental and Survey Trust*

A small number of studies have analysed the correlation between stated trust in a survey and revealed trust from the Trust Game.<sup>1</sup> It is commonly assumed in this literature that the Trust Game is a reliable measure of trust and that if Trust Game behaviour and survey responses are uncorrelated, that it is the survey data that are questionable. To test whether there is a correlation between experimental and survey trust, the amount (or proportion) of money sent in the Trust Game 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 in the Trust Game against survey trust and control variables, including the amount sent by the Sender.

The first study to analyse this correlation was Glaeser *et al.* (2000). 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 experimental trust. 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. Their

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<sup>1</sup> In some studies (e.g. Glaeser *et al.*, 2000; Holm and Danielson, 2005) the primary research focus is on analysing the correlation between survey and experimental trust. In some other studies, analysing this correlation is not central to the paper, but the reported empirical work is informative about this correlation none-the-less.

trust index was insignificant. However, their index of past trusting behaviour was positively correlated with the amount 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. However, there was no correlation between the index of past trusting behaviour and experimental trustworthiness. Glaeser *et al.* concluded that the generalised trust question was more informative about trustworthiness than trust.

Other studies investigating such a correlation among university students include Holm and Danielson (2005, Tanzania and Sweden), Lazzarini *et al.* (2004, Brazil), Ashraf *et al.* (2006, South Africa) and Haile *et al.* (2004, South Africa). Only Lazzarini *et al.* found a positive correlation between experimental trust and the generalised trust question. Turning to the trust indices used by Glaser *et al.*, Holm and Danielson found the trust index to be significant in Sweden, but not in Tanzania, but surprisingly the index of trusting behaviour was negative and significant. In other studies, these indices are insignificant. Ashraf *et al.*, Lazzarini *et al.*, Danielson and Holm and Holm and Danielson all analysed the correlation between trust in strangers and the amount sent in the Trust Game, and failed to find a significant correlation.

University students may not be representative of the wider population. However, results from the few studies using non-student samples are similarly mixed. For example, Johansson-Stenman *et al.* (2006) found a positive correlation of both the amount sent and the amount returned in the Trust Game with responses to the generalised trust question among Bangladeshi household heads, but not with responses to behavioural trust questions. This is consistent with Bellemare and Kröger (2003) and Fehr *et al.* (2002) who found that experimental trust is correlated with the generalised trust question among Dutch and German subjects, respectively. In a different paper, but also with subjects from Bangladesh, Johansson-Stenman *et al.* (2005) found no significant correlation between generalised trust and the amount sent. Karlan (2005), using subjects from a group-based lending scheme (FINCA) in Peru, 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. Danielson and Holm (2007) found no correlation between the amount

sent and responses to the generalised trust question, or other questions about attitudinal trust, for a sample drawn from a Tanzanian church congregation. However, they did find a positive correlation between the trust index 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. This is typically taken to imply that the survey measures are of questionable validity. 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 were 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”.

The generalised trust question is not the only survey question included in studies which analyse the correlation between survey questions and Trust Game behaviour. Hence, we need to consider the extent to which these other questions are specific to whom people are paired with in the Trust Game. The trust index is made up entirely of questions about “most people”, so again participants may not feel they are playing the Trust Game against “most people”. The index of past trusting behaviour is dominated by the two questions about lending money and possessions to friends. Hence, only if participants played the Trust Game against their friends, which in most studies they do not, participants are not playing the game against the same sorts of people the survey questions relate to. Four of the studies summarised above asked about trust in strangers. However, in these studies participants are paired with people from the same university or church congregation. It is likely that these people may not be viewed as strangers. Hence, we hypothesise that one potential reason why the correlation between survey and experimental trust

is typically insignificant, is that the survey questions ask about trust in a different group of people than those participants are actually paired with in the Trust Game.

Another issue with previous studies analysing the correlation between survey and experimental trust is that they do not consider the possibility that Trust Game behaviour can be motivated partly by unconditional kindness (Carter and Castillo, 2003; Cox, 2004) and risk aversion (Schechter (2007), rather than by trust only. Holm and Danielson (2005) and Ashraf *et al.* (2006) consider this possibility, with the former controlling for unconditional kindness, but not risk aversion. Using both a Triple Dictator Game and a Risk Game, Ashraf *et al.* found that both the amount sent and amount returned in the Trust Game are motivated partly by unconditional kindness, but not by attitudes to risk. This is consistent with Cox (2004) who compared behaviour in a Trust Game and transfers in a Triple Dictator Game among university students in the US and found that a large proportion of the amount sent and amount returned can be explained partially by altruism.<sup>2</sup>

Our paper adds to the literature by analysing the correlation between survey-based measures and the experimental measure of trust, while controlling for unconditional kindness and attitudes to risk. Ashraf *et al.* (2006) is the only previous study that does this, but only on university students who may not be representative of the wider population. More importantly, we add to the literature by having some participants play the Trust Game against someone from their own village, with other participants playing against someone from a neighbouring village, and then analysing the correlation between players' behaviour in the Trust Game and survey questions specific to the group they were paired with for the Trust Game.

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<sup>2</sup> One issue with Ashraf *et al.* is that the Risk Game and the Trust Game were designed differently. The US\$300 endowment in the Risk Game was relatively high compared with the US\$100 in the Trust Game. In their Trust Game, the Sender had to choose between eleven possible amounts to be passed on to the Recipient. In their Risk Game, subjects could choose to bet on a 50% chance of winning US\$300 or nothing or to accept a certain amount that varied between US\$40 and US\$140 in six risky choice tasks. Thus, the results from these two experiments may not be directly comparable. Further, one person (in a group of about 30 subjects) was randomly paid according to his or her choice in the Risk Game. This might have affected people's decisions, if they believed that their decisions had very slim chances of being rewarded.

### 3. RESEARCH METHODOLOGY

This section of the paper briefly discusses the villages where the field work was conducted, and the experimental and survey methodology. A more detailed discussion can be found in Etang, Fielding and Knowles (2009), a paper in which we present a detailed analysis of the experimental results.

#### (a) *The villages and participants*

The experiments and survey were administered in two villages in the South West Province of Cameroon in November 2008. Henceforth, we refer to the two villages as Village 1 and Village 2.<sup>3</sup> Village 1 has about 1000 inhabitants and Village 2 about 1500 inhabitants. The distance between the two villages is about 10km. Almost every home in the villages owns a bicycle, which is the most common means of transport in the two villages. However, travel to other villages, and to the nearest town, is facilitated by private buses and smaller vehicles. A total of 280 people, recruited at meetings in each of the two study villages, participated in the study, with half from each village. Table 1 reports summary statistics for the sample. Note that all participants had visited the other village at least once in their life; however, 84.6% rarely went there. Thus, for most people social interactions between the two villages are limited. This means participants playing with someone from the other village knew that the chances of being paired with someone they knew were very small.

[Table 1 about here]

#### (b) *The experiments*

We implemented the Trust Game discussed earlier. As noted in Section 2, the amount of money sent in the Trust Game may depend not only on pure trust, but also on unconditional kindness and/or the extent of risk aversion. To control for this possibility, we had Senders in the Trust Game (A Players) also play a Triple Dictator Game and a Risk Game. The amount returned in the Trust Game may also depend on unconditional kindness, but not on risk, as the Recipient

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<sup>3</sup> The anonymity of the villages was a condition for university ethical approval of this research.

already knows what the Sender's decision is. Hence, we had Recipients in the Trust Game (B Players) play a Standard Dictator Game, but not a Risk Game.

The Triple Dictator Game is identical to the Trust Game, except that the Recipient cannot return any money to the Sender. This rules out trust as a motive for sending money. The Standard Dictator Game is the same as the Triple Dictator Game, except that the experimenter does not triple the amount sent. Our Risk Game, played by A Players only, is based on Schechter (2007). In this game each A Player is given the option of investing all, some or none of an initial endowment in a hypothetical risky project, the payoff from which is determined by the roll of a dice. If the experimenter rolls a one then the player loses her investment; if a two is rolled then the Player receives back half of the money invested; if a three is rolled then the player receives the amount invested; if a four is rolled then the payoff is 1.5 times the amount invested; if a five is rolled then the payoff is double the investment; if a six is rolled then the payoff is three times the investment. Any money not invested is kept by the player. The maximum and minimum possible returns are therefore the same as for the Trust Game.

(c) *The survey*

The survey was designed in English, and then translated into the local language (Ejagham). The survey asked a variety of questions about people's attitudes towards trust, kindness and trustworthiness. Participants were read a statement about trust, kindness or trustworthiness and asked whether they agreed with the statement on a 1 to 5 scale; 1 indicating that they disagreed strongly, 2 that they disagreed, 3 that they neither agreed nor disagreed, 4 that they agreed and 5 that they agreed strongly. The first three questions asked whether the participant trusted people from their own village, people from the other study village and people in general. The third question is very similar to the standard generalised trust question; however, our respondents had five options, not just "Yes" or "No". These three questions enable us to measure the extent to which the radius of trust diminishes from trust in fellow villagers, trust in people from other villages and trust in people in general (Etang, 2010).

Guinnane (2005) points out that the generalised trust question does not make clear how much trust subjects are being asked to place in others. This criticism also applies to the questions above. To counter this, our survey therefore includes six other questions framed in the context of everyday practical examples familiar to the villagers. The first two questions (whether respondents would be prepared to lend their bicycle to someone in their own village and whether they would lend their bicycle to someone from the neighbouring village) were designed to measure trust in a specific context. The next two questions (would you be willing to help other villagers harvest their crops and would you expect that they would help you if you needed it) were designed to measure the extent of cooperation in a specific context. The next question asked whether respondents thought their neighbour would be prepared to lend them a bucket. This question measures the extent to which people think their neighbours trust them. The sixth question asked whether people thought they would have their wallet returned (with nothing missing) if they lost it in the nearest town. This question measures trust in a context that is likely to mean trust in strangers. The precise wording of these different questions can be found in the appendix.

The survey also asked how often participants visited the other study village, how many friends and/or relatives they had in the other village, whether they had ever lived in the other study village, whether their parents were divorced and whether they had been the victim of crime in the previous five years. A separate section of the survey asked a variety of questions about demographic and personal characteristics, the summary statistics for which were reported in Table 1.

#### *(d) Experimental Procedures and Protocol*

Participants completed the experiments and survey in their own village, and were told whether they were paired with someone from their own village or someone from the other village. Participants were told the name of the other village. The field work began in Village 1. The same pairings were used for both the Trust Game and the Triple Dictator Game. The experimenter explained the rules of the Trust, Dictator and Risk Games, and explained that all payouts would be made in seven days time, when the experimenter would return to the village (the rules were

explained to the participants in a group). Players were told that their initial endowment for each game was 800 CFA francs. This amount was approximately US\$2 or about half a day's wage for most villagers, at the time of the experiment. Transfers could be made in 100 CFA franc units only.

Once the rules of the different games had been explained, each participant met privately with the experimenter and communicated their transfer decisions for each game. The experimenter then rolled a dice so the player could learn how much money they earned in the Risk Game. Note that no payouts were made for any of the games at this point. After participants had made their decisions in each of the games, they completed the survey outlined above.<sup>4</sup> Once all A Players in Village 1 had taken part in the experiments, the field work moved to Village 2 where the A Players made their decisions. The B Players in Village 2 (including those paired with A Players from Village 1) then made their decisions. The experimenter then returned to Village 1 where the B Players from that village (including those paired with A Players from Village 2) made their decisions.

#### 4. THE EXPERIMENTAL AND SURVEY RESULTS

##### *(a) Results of the experiments*

For a detailed discussion of the experimental results, we refer the interested reader to Etang, Fielding and Knowles (2009), a paper focusing exclusively on the experimental results. The focus of the current paper is to summarise the survey results and analyse the correlation between survey and experimental trust. The average amount sent by all A Players in the Trust Game was 68.6%. A Players paired with someone from their own village sent an average of 74.1%, with A Players paired with someone from the other village sending an average of 63.2%. The average transfer in the Triple Dictator Game was 43.6% (45.7% when paired with someone from the same village and 41.4% when paired with someone from the other village). The average

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<sup>4</sup> It could be argued that having people answer the survey immediately after playing the games may frame their responses to the survey questions (alternatively, doing the survey before the experiments may have framed behaviour in the experiments). To the extent that this is a concern, it also applies to the majority of other studies analysing the correlation between survey and experimental trust. Two exceptions are Glaeser *et al.* (2000) who had participants answer the survey several weeks before taking part in the Trust Game and Lazzarini *et al.* (2004) who had participants answer the survey one week before playing the Trust Game.

investment in the Risk Game was 65.4%. Turning to the behaviour of B Players, the average amount returned in the Trust Game was 47.4% (48.1% when paired with someone from the same village and 46.7% when paired with someone from the other village) and the average amount transferred in the Standard Dictator Game was 44.4% (45.7% when paired with someone from the same village and 43% when paired with someone from the other village).

*(b) Results of the survey*

This section presents the results from a descriptive statistical analysis of the survey. We begin by examining the extent to which trust diminishes, from trust in fellow villagers, to trust in people from a different village, to trust in people in general. The results for these questions are summarised in Table 2. The number of subjects indicating agreement (strongly or otherwise) with the statement that people can be trusted declines sharply as the radius of trust widens, and the number indicating disagreement (strongly or otherwise) increases rapidly.

[Table 2 about here]

Trust in fellow villagers was high, with 43.9% of the subjects indicating strong agreement (hereafter “strong trust”) and 49.3% simply agreeing (hereafter “mild trust”), that fellow villagers could be trusted. Hence, 92% of the sample thought their fellow villagers could be trusted to some extent (we will use the term “trust to some extent” to mean those who indicated either strong or mild trust, when referring to the survey questions). The next question is about trust in people from the other study village, with 27% stating strong trust. The number stating mild trust (48.6%) is very similar to responses to the question about trust in fellow villagers. This means 76.9% of respondents trust those from the other village to some extent. Turning to the generalised trust question, only 2.9% of the subjects stated strong trust, with 31.8% stating mild trust. The modal response (47.1%) was to neither trust nor distrust people in general. These results tend to suggest that the degree of trust falls as the radius of trust becomes wider.

The results for the remaining questions are summarised in Table 3. With respect to lending a bicycle to fellow village members, nearly everyone said they would be prepared to lend a bicycle to a fellow village member (strong trust = 60%; mild trust = 38.2%). In terms of preparedness to

lend a bicycle to someone from the other village, most people would be prepared to do so, but only 21.8% stated strong trust in this regard. For the questions about helping with harvests, all the respondents except two agreed that they would help fellow villagers during harvest time, with 74.3% strongly agreeing with the statement. Over 94.6% of the sample believed this assistance would be reciprocated (44.6% strong agreement; 50% mild agreement). Most participants thought (26.8% strong agreement; 43.6% mild agreement) their neighbour would lend them a bucket. People were not so confident that if they lost their wallet in the nearest town that it would be returned. No-one strongly agreed with this statement and only 8.2% mildly agreed.

[Table 3 about here]

## 5. EMPIRICAL RESULTS

We now analyse whether there is a significant correlation between experimental trust and responses to the survey questions, conditional on behaviour in the Triple Dictator Game and the Risk Game, as well as observable individual characteristics. This is the key focus of the paper. The results are presented in Table 4. Each of the survey questions is measured discretely on a 1-5 scale. Given that each possible integer relates to a different response to each survey question, we cannot assume that the difference between an answer of 4 and an answer of 5, is the same as the difference between an answer of 3 and an answer of 4, for example. Hence, we include a dummy variable for each of the possible survey answers from 2 to 5, with 1 being the omitted category. In cases where the number of responses to a specific survey question was zero, this dummy is automatically dropped from the regression. In some cases where the number of observations is very small, STATA dropped these dummies due to problems with collinearity.

Reported in Table 4 are coefficients for the relevant survey question (for each of the dummy variables), Triple Dictator Game donations and Risk Game investments. For each regression, we also controlled for a number of demographic characteristics, but the results for these control variables are not reported in the table for the sake of brevity. The variables controlled for were gender, age, marital status, household size, number of children, years lived in the village, whether the participant has ever lived in an urban area, whether the participant is a member of a

Rotating Savings and Credit Association (ROSCA), income, education, the number of friends or relatives in the other village, and whether the participant has ever lived in the other village. The sample size for each regression is 70. For survey questions regarding trust in fellow villagers the sample is those who played the Trust Game against fellow villagers. For survey questions regarding trust in people from the other village, the sample is those who played against those from the other village. For questions about trust in people in general, we ran two separate regressions: one for those paired with someone from their own village and one for those paired with someone from the other village. Because the dependent variable is both left- and right-censored, and takes discrete values, the results are based on a censored interval regression (Long and Freese, 2006). Broadly speaking, these coefficients can be interpreted in the same way as OLS coefficients.

We begin by analysing whether there is a significant correlation between the survey question “trust in fellow villagers” and experimental trust, for the 70 A Players who were paired with a B Player from their own village. The results are presented in Column (1) of the table. The dummy variable for 5 is statistically significant, showing that those who expressed strong trust in fellow villagers sent an average of nearly 17 percentage points more in the Trust Game than those who expressed only mild trust in fellow villagers. Triple Dictator Game donations are positively correlated with experimental trust. This implies that some part of the money sent in the Trust Game is due to altruistic motives, rather than pure trust. This is consistent with previous findings in Ashraf *et al.* (2006), Carter and Castillo (2003) and Cox (2004), for example. The amount of money invested in the Risk Game is uncorrelated with the percentage sent in the Trust Game, suggesting that attitudes to risk play no part in explaining Trust Game behaviour. These results regarding the coefficients on the Triple Dictator and Risk Games hold for all the survey questions.

In Column (2) we analyse whether there is a correlation between the survey question regarding trust in people from the other village and experimental trust. All of the dummy variables for this survey question are statistically significant, and the magnitudes of the coefficients increase with the level of stated survey trust. This is consistent with more money being sent the higher the

level of stated trust. Those expressing strong trust in those from the other village send an average of nearly 68 percentage points more than those stating no trust.

In Column (3) we turn our attention to analysing the correlation between generalised trust and experimental behaviour. Separate regressions are presented for the inter-village and intra-village samples. Looking first at intra-village trust, there is a surprising negative correlation on dummy variable 2. This implies that those expressing weak distrust send less money than those expressing strong distrust. The next dummy variable is statistically insignificant. However, the remaining two dummy variables are statistically significant, with the expected signs. The results for the inter-village trust are more-straight forward, with all coefficients being positive and significant, with the coefficients increasing in magnitude with the level of trust. We have argued earlier that one reason why other studies may have failed to find a significant correlation between experimental and survey trust is that in the Trust Game participants are paired with a different group of people to whom the survey questions relate to. In Columns (1) and (2) we had participants play the Trust Game against similar people to whom the survey question relates to, and found a positive correlation. However, we find the same holds when participants are asked the generalised trust question, about trust in “most people”. This would seem to rule out the possibility that the reason we have found a positive correlation, when previous studies have often found a negative correlation, is due to what sort of players participants are matched with.

Columns (4) and (5) present the inter-village and intra-village trust results respectively, for the question about whether participants would lend their bicycle to someone from their own, or the other, village. These questions are more specific than those from Columns (1) and (2) as they indicate how much trust participants are being asked to place in the other person. This question is statistically insignificant for the intra-village sample, for all dummy variables, but significant for the inter-village sample. Assuming that the Trust Game is considered the more reliable measure, these results would imply that if you want to find out how much someone trusts someone known to them, the generalised trust question will illicit more accurate responses than asking a more context specific question.

Columns (6) and (7) focus on cooperation, rather than trust, by analysing the questions asking whether people would help with their fellow villagers harvest their crops, and whether they thought this help would be reciprocated. Both questions are uncorrelated with the amount sent in the Trust Game. This is, perhaps, unsurprising, as the survey questions are not asking about the extent to which the respondent trusts other people.<sup>5</sup> In Column (8), we find a negative correlation between the amount sent and whether people think others would lend them a bucket. Again, this question doesn't really measure trust, but whether people believe others trust them. However, in Column (9), which is more closely related to trust: for both the inter- and intra-village samples, there is a positive correlation between experimental trust and whether participants would expect to get back a wallet lost in the nearest town.

We also obtained estimates for equations explaining the proportion returned in the Trust Game and found that in the vast majority of cases all dummy variables for the survey questions were insignificant. For no survey question were the majority of the dummy variables for each possible survey response significant. Hence, we conclude that the survey questions are generally uncorrelated with the proportion of money returned. This contrasts with Glaeser et al (2000), who found the generalised trust question to be correlated with the proportion returned in the Trust Game, but not the proportion sent. We also obtained estimates for equations explaining Triple Dictator Game donations, but again the survey questions were generally insignificant. Hence, to the extent that the survey questions were correlated with the amount sent in the Trust Game, it would seem these questions are measuring trust rather than altruism. Given that the survey questions were generally insignificant, we do not report these results.

## 6. CONCLUSION

Are survey measures of trust reliable? It is often argued that because survey measures of trust are not correlated with the amount sent in the Trust Game that their reliability is questionable. However, in this paper, we have shown that some survey measures of trust are significantly correlated with the amount sent in the Trust Game, for a sample of villagers in rural Cameroon. Whereas many previous studies ask survey questions about trust in “most people”, and then have

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<sup>5</sup> These questions were included in the survey to test whether they were correlated with Triple Dictator donations and/or the amount returned in the Trust Game, rather than the amount sent in the Trust Game.

participants play the Trust Game against people who are like themselves, rather than “most people”, we had participants play the Trust Game either against someone from their own village, or someone from another village, and then asked survey questions relevant to who they had been paired with for the experiment.

In terms of trust in people from one’s own village, we found there was a significant correlation between the amount sent and a question asking people whether they trusted their fellow villagers. However, there wasn’t a significant correlation between experimental trust and a context specific question (would you lend your bicycle to fellow villagers?) The results for the generalised trust question were somewhat mixed. Hence, these results suggest that if you want to know about trust in people from the same village, it is best to simply ask “do you trust people from this village?” With respect to trust in people from the other village, all the survey questions were significantly correlated with the amount sent in the Trust Game.

We tentatively conclude that if you want to know how much trust someone has in others, the best thing to do is to simply ask if they trust people from that group. Of course, this result applies to villagers in rural Cameroon, and may not necessarily apply in other settings. Testing this hypothesis in different settings would be a useful avenue for future research.

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**Table 1: Summary statistics for the sample**

	Mean	Std. Dev.	Range
Male (percent)	51.8		
Age (years)	40.6	9.3	[23, 67]
Never married (percent)	5.7		
Married (percent)	87.5		
Divorced (percent)	3.2		
Widow/widower (percent)	3.6		
Household size	5.3	2.1	[1, 14]
Number of children	3.5	2.2	[0, 21]
Years lived in the village	34.5	12.4	[6, 66]
Lived in an urban area (percent)	19.6		
ROSCA membership (percent)	45.0		
Income (CFA francs)	659696.4	422925.5	[75000, 2000000]
Education (percent)	67.1		
Number of friends and/or relatives in the other village	0.3	1.0	[0, 10]
Lived in the other village (percent)	4.3		
Parents divorced (percent)	3.2		
Victim of crime (percent)	2.1		
How often people visited the other village:			
Very often (percent)	1.1		
Often (percent)	14.3		
Rarely (percent)	84.6		
Never (percent)	0		

**Table 2: Responses to non-context specific questions about trust**

	Trust in fellow village members	Trust in people from a different village	Trust in people in general
Strongly disagree	0 %	0.4%	6.8%
Disagree	0 %	1.1%	11.4%
Neither agree nor disagree	6.8%	22.1%	47.1%
Agree	49.3%	48.6%	31.8%
Strongly agree	43.9%	27.9%	2.9%
Observations	280	280	280

**Table 3: Responses to context-specific questions about trust**

	Would lend bicycle to fellow village members	Would lend bicycle to people from a different village	Would help fellow villagers at harvest	Would expect help from fellow villagers at harvest	Would expect neighbour to lend a bucket	Lost wallet would be returned intact
Strongly disagree	0 %	0 %	0 %	0 %	0 %	8.9%
Disagree	0 %	0.7%	0 %	0 %	1.1%	34.6%
Neither agree nor disagree	1.8%	13.2%	0.7%	5.4%	28.6%	48.2%
Agree	38.2%	64.3%	25%	50%	43.6%	8.2%
Strongly agree	60%	21.8%	74.3%	44.6%	26.8%	0 %
Observations	280	280	280	280	280	280

**Table 4: Determinants of the percentage sent conditional on survey responses, Triple Dictator Game donations and Risk Game investment**

	(1) Trust in fellow villagers	(2) Trust in people from the other village	(3) Trust in people in general		(4) Lend bicycle to fellow villagers	(5) Lend bicycle to the other village	(6) Would help during harvest	(7) Help would be reciprocated	(8) Others would lend their bucket	(9) Expect to get back a wallet lost in the nearest town	
<i>B Player from...</i>	<i>Same village</i>	<i>Other village</i>	<i>Same village</i>	<i>Other village</i>	<i>Same village</i>	<i>Other village</i>	<i>Same village</i>	<i>Same village</i>	<i>Same village</i>	<i>Same village</i>	<i>Other village</i>
Survey dummy (2)		41.484*** (5.62)	-11.506** (-2.55)	18.151*** (2.65)					-28.415** (-2.16)	0.689 (0.17)	9.416* (1.75)
(3)		43.169*** (5.14)	5.976 (1.34)	21.542*** (3.06)		47.920*** (6.88)			-29.312*** (-3.00)	10.269*** (2.62)	26.229*** (4.40)
(4)	3.081 (0.56)	57.692*** (7.51)	18.261*** (3.30)	34.703*** (4.81)	-18.745 (-1.54)	63.538*** (8.66)	-3.025 (-0.62)	3.215 (0.32)	-25.297*** (-2.74)	20.869* (1.92)	86.648*** (4.70)
(5)	16.841** (2.45)	67.899*** (9.66)	55.870*** (6.01)	52.960*** (3.01)	-12.789 (-1.13)	80.399*** (9.59)		5.126 (0.52)			
Triple Dictator Game donations	0.862*** (5.78)	0.781*** (6.02)	0.877*** (6.57)	0.903*** (5.20)	0.962*** (5.13)	0.788*** (5.29)	0.890*** (5.27)	0.878*** (5.10)	0.619*** (3.40)	0.861*** (4.74)	0.657*** (4.47)
Risk Game investment	0.060 (0.85)	0.157 (1.64)	-0.040 (-0.58)	0.090 (0.80)	0.036 (0.00)	0.196 (0.00)	0.021 (0.29)	0.021 (0.29)	0.024 (0.33)	-0.006 (-0.09)	0.087 (0.78)
ln( $\sigma$ )	2.581	2.619	2.408	2.718	2.643	2.595	2.651	2.650	2.579	2.594	2.734

Notes: The dependent variable is the percentage sent in the Trust Game by the A Player. The coefficients are estimated using censored interval regressions. \*, \*\*, \*\*\* denote statistical significance at the 10%, 5%, and 1% level, respectively. Heteroskedasticity-robust t-ratios are shown in parentheses. The sample size for all regressions is 70. Survey question dummy (2) = disagree, (3) = neither agree nor disagree, (4) = agree, and (5) = strongly agree, with “strongly disagree” being the omitted category. All four dummy variables were included in all regressions, but STATA dropped some of them in some regressions.

## Appendix 1: The Survey

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. For questions 1-9, please indicate to what extent you agree or disagree with the following statements? (Where 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, and 5 = strongly agree)

1. People who live in this village can be trusted. 1 2 3 4 5
2. People who live in village Z can be trusted\* . 1 2 3 4 5
3. Generally speaking, most people can be trusted. 1 2 3 4 5
4. You would be willing to lend your bicycle to someone else in this village. 1 2 3 4 5
5. You would be willing to lend your bicycle to someone from village Z. 1 2 3 4 5
6. If other villagers need your help during cocoa or coffee harvest seasons, you would be willing to help them. 1 2 3 4 5
7. Assuming that you help others harvest their crops, they would help you harvest your crops when you need help. 1 2 3 4 5
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. 1 2 3 4 5
9. You would expect to get your wallet/purse returned (with nothing missing) if you lost it in the street in the nearest town† . 1 2 3 4 5
10. How often do you visit village Z?  
Very often  often  rarely  never
11. How many friends and/or relatives do you have in village Z? \_\_\_\_\_
12. Have you ever lived in village Z? Yes  No
13. Are (were) your parents divorced? Yes  No
14. Have you been a victim of crime in the past five years?  
Yes  No  (if yes, how many times? where? what happened?)

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\* The interviewer will say the name of village Z (the other village of study)

† The interviewer will say the name of the nearest town to the village.

## Demographics

1. Gender: Male  Female
2. Age: .....years
3. Marital Status: Never married  Married  Divorced  Widow/Widower
4. Household size \_\_\_\_\_
5. How many children do you have? \_\_\_\_\_
6. How long have you lived in this village? .....years
7. Have you ever lived in an urban area? Yes  No
8. Are you a member of a ROSCA? Yes  No
9. If yes, for how long have you been a member? \_\_\_\_\_years
10. Your annual income \_\_\_\_\_ CFA francs
11. Have you completed primary education? Yes  No