

Trust, Trust Games and Stated Trust: Evidence from Rural Bangladesh

Working paper 166

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Abstract

Levels of trust are measured by asking standard survey questions on trust and by observing the behaviour in a trust game using a random sample in rural Bangladesh. Follow-up questions and correlations between the sent amount in the trust game and stated expectations reveal that the amount sent in the trust game is a weak measure of trust. The fear of future punishment, either within or after this life, for not being sufficiently generous to others, was the most frequently stated motive behind the respondents' behaviour, highlighting the potential importance of motives that cannot be inferred directly from people's behaviour.

Key words: Trust; trust game; social capital; field experiment; Bangladesh.

JEL classification: C93, Z13

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1. Introduction

There is much recent theoretical and empirical evidence that trust between people fosters co-operation and economic activity, hence it is also important for economic and social development; see e.g. Fukuyama (1995), Knack and Keefer (1997) and Bohnet et al. (2005). Not surprisingly, the interest in measuring trust, as well as in explaining how trust itself develops, has therefore also increased. Empirical studies that analyse the concept of trust have tried both to measure and to explain what determines trust per se (e.g. Alesina and Ferrara, 2002; Glaeser et al., 2000) as well as to use measured trust as a variable to explain economic outcomes (e.g. Beugelsdijk et al., 2004, and Knack and Keefer, 1997). The most frequently used question for attitudinal trust is the General Social Survey (GSS) question framed as “Generally speaking, would you say that most people can be trusted, or that you cannot be too careful in dealing with people?”. The results of such studies can be, and frequently has been, criticised since the choices made are non-consequential for the respondents.

On the other hand, the decisions made in a trust game, as introduced by Berg et al. (1995), are consequential since the decisions will have a monetary effect on the participants. Briefly, the trust game involves two stages. The participants in the game act either as a ‘sender’ or as a ‘receiver’. The sender is given a certain amount of money and has to decide how much of this to send to the anonymous receiver, and how much to keep.¹ Any (positive) amount sent by the sender is normally tripled before it is given to the receiver. The receiver must then decide how much of the total

¹ In the original trust game by Berg et al. (1995), the receiver was also given the same initial amount of money. The procedure adopted in this paper follows e.g. Glaeser et al. (2000), where the receiver was not given any initial money in the trust game.

amount of money received, (i.e. how much of the tripled amount of money) to return to the sender, after which the game is over. The theoretical sub-game perfect prediction of this game is that the sender should send nothing to the receiver, since the sender would realize, by using backward induction, that the receiver has no incentive to send anything back. However, a Pareto improvement is possible by sending some or all of the money, if the receiver returns at least one third of the tripled amount received. Thus, the structure of the game allows the sender to use trust in order to achieve an improvement over the sub-game perfect outcome. The amount sent by the sender is typically regarded as an indication of trust, and the amount returned by the receiver as an indication of trustworthiness.

In an innovative paper, Glaeser et al. (2000) combined a trust game with an attitudinal trust survey among undergraduate students at Harvard. They found poor correlation between stated trust and the amount sent in the trust game, while the amount returned was significantly explained by stated trust. One of their conclusions was “that most work using these survey questions needs to be somewhat reinterpreted” (p. 814). This conclusion should be read in the light of their interpretation that the trust game measures trust and trustworthiness.

On the other hand, Cox (2004) discussed and tested whether there are other motives behind the amount sent and returned in a trust game, such as other-regarding preferences. Using three separate sub-samples, he conducted a different experiment in each of them. First he conducted an ordinary trust game, in which the amount sent was tripled and both the sender and the receiver were endowed with the same amount. The same endowment was then used with another sample in a dictator game, which is a game where the receiver cannot send back any of the tripled amounts received from

the sender.² The difference between these two games was considered to reflect pure trust. Although the amount sent was lower in the dictator game compared to the trust game (implying a non-negligible amount of pure trust), the amount sent in the dictator game was found to be non-negligible, implying evidence of unconditional other-regarding preferences. The third game mimics the second stage of a trust game by endowing the sender and the receiver with exactly the same as has been sent by a sender in the first stage of the trust game. However, the individuals in this game were not informed that their endowment was based on the first stage decisions made by another pair, but only that they would be part of a dictator game, where the person who is endowed with the receiver's amount could send any amount to the other individual as in a traditional trust game. The difference between the amount returned in the trust game and the amount sent in the last described game is considered to measure reciprocity. However, less was sent in this dictator game compared to the amount returned in the second stage of the trust game, which implies a non-negligible degree of reciprocity. Moreover, a non-negligible amount was on average sent in this dictator game too, implying further evidence of unconditional other-regarding preferences. Thus, Cox (2004) found that the average amounts sent and returned in the trust game are motivated by factors beyond pure trust and pure reciprocity, respectively. These results are also consistent with a considerable literature on social preferences, which has concluded that other motives beyond pure self interest, such as fairness considerations, are important in explaining observed behaviour (e.g. Fehr and Schmidt, 1999; Bolton and Ockenfels, 2000; and Charness and Rabin, 2002).

² In a standard dictator game the proportion sent is not multiplied by 3. It was done in this case for the results to be comparable with trust game, in order to trace out different motives.

Holm and Danielsson (2005) conducted two experiments using university students in Tanzania and Sweden. In the Tanzanian study both a trust game and a dictator game were conducted, while in the Swedish study the trust game and the dictator game were accomplished with what was called a Trictator game. In the Trictator game, the receivers in the trust game were the senders in the dictator game, while the senders in the trust game were asked to guess the amount sent in the dictator game using an incentive compatible mechanism following the Becker-DeGroot-Marschak approach. The amount sent in the trust game is not explained by the amount sent in the dictator game in the Tanzanian sample, while the amount reported in the Trictator game significantly explained the amount sent. The latter indicates that senders who believe that the receivers have a stronger degree of inequality aversion send more in the trust game. Thus, their results indicate that there are several motives behind the behaviour in a trust game. They also found that survey-trust explains the amount sent better when controlling for donation motives in the trust game.

Bellemare and Kröger (2003) and Fehr et al.(2002), using a representative sample in the Netherlands and in Germany, respectively, found that first mover's expectation about the second mover's transfer is positively correlated with the amount sent by the first mover in the trust game. Ashraf et al. (2002), using South African, Russian and American students, conclude that both senders and receivers are motivated by factors other than trust and reciprocity, while Carter and Castillo (2002), using a non-student sample in South Africa, find that the amount sent in the trust game is related to both trust and altruism. Chaudhuri and Gangadharan (2003) asked the senders whether they expected to get any money back, and how much they thought this might be. They also asked the senders to state their explicit motivations

behind their transfers. They coded the stated motivations into four different groups, and found a strong positive relationship between the amount sent and the amount expected back. They also concluded that the senders sent more money when a stronger degree of trust was expressed as motivation. Taken together, the above evidence is a bit mixed, but most results indicate that motives other than pure trust appear to be important for the observed behaviour in trust games.

The main objective of this paper is to contribute to the discussion about what trust games and trust surveys actually measure. In addition to analysing the outcome of the trust game *per se* by using both descriptive and regression approaches, we asked what the senders' expectations were about how much they would eventually get back from the receivers. Moreover, we asked the participants to state what their motives were for sending and returning the amounts they sent and returned using follow-up questions after the trust game. It is unconventional within economics to ask about expectations, and it is even more unconventional and controversial to ask about motives. Of course, we do not doubt that there are non-negligible potential problems with interpreting stated motives, of which some will be discussed below. Still, as argued by Babcock and Loewenstein (1997), focusing solely on revealed behaviour in markets and experiments often implies rather coarse tests of hypotheses since there are often many theories consistent with observed behaviour. Moreover, we agree with Sen (1973, p.258) that "we have been too prone, on the one hand, to overstate the difficulties of introspection and communication and, on the other, to underestimate the problems of studying preferences revealed by observed behaviour."

The analysis in this paper is based on a combined attitudinal trust survey and trust game conducted in the field among household heads in rural Bangladesh. There

are at least three advantages from using this sample, compared to the more frequently used choice of a student sample in a western country:³ (i) We can afford to use high financial stakes compared to their normal wages, implying that the participants have strong incentives to treat the game seriously, and to think carefully about how to act, (ii) We obtain more variation in the socio-economic background variables and (iii) Bangladesh is a particularly interesting country in itself for the study of trust because of its top rank in the Transparency International's corruption perception index⁴ implying the highest measure of corruption of public officials four years in a row (2001-2004). Given that the individuals associated with these institutions are perceived to be corrupt, this may affect lower levels in the society, and as argued e.g. by Alesina and Ferrara (2002), trust in existing institutions may affect trust in other people. In communities, where laws are well established and enforced, people may be relatively trusting because they feel well protected from non-co-operative behaviour. Rothstein and Stolle (2001) hypothesised that the development of institutional characteristics, such as corruption, is the most important factor for the spread of distrust and general suspicion in a society. This top-down perspective is different from the bottom-up perspective put forward by Putnam (1993), who argued that trust

³ Needless to say, there are disadvantages too, including lower education levels among the respondents, which may induce more cognitive errors, and is the expense and logistical difficulty of setting up a large-scale field experiment.

⁴ Based on several polls and surveys, the Transparency International's CPI ranks countries in terms of the degree to which corruption is perceived to exist among public officials and politicians, which also relates to the abuse of public office for private gain, e.g. bribe-taking by public officials in public procurement. It is a composite index, which reflects the views of business people and analysts from around the world, including experts who are resident in the respective country. However, its sources do not distinguish between administrative and political corruption or between petty and grand corruption (Transparency International 2003, 2004).

develops largely through people's interactions in local voluntary organisations. We found in our study that stated trust in terms of the most frequently used General Social Survey (GSS) question framed as "Generally speaking, would you say that most people can be trusted, or that you cannot be too careful in dealing with people?" results in a strikingly low fraction, only around 3%, answered that most people can be trusted. This is consistent with the hypothesis that corruption creates distrust between people at grass-root level. On the other hand, the fraction sent in the trust game is of a similar order of magnitude as in most previous studies and thus does not provide any support for this hypothesis.

Overall, our results support and extend the recent conclusions by e.g. Cox (2004) and Holm and Danielsson (2005), that the motives behind the observed behaviour in the trust games are much more complicated and mixed than often believed. For example, in our case we found that what might seem to be altruism may sometimes reflect long-term self-interest, since an important stated motive for both sending and returning money was that people believed that they would be punished, either in this life or in the after life, if they acted too selfishly in the trust game. This type of information, we believe, would have been impossible to obtain based on revealed behaviour in various experiments.

The rest of this paper is organised as follows. Section 2 presents our survey and experimental design. Section 3 presents the main descriptive results from both the attitudinal trust survey and the trust game, followed by a discussion around the issue of what trust games actually measure. Section 4 provides econometric analysis while Section 5 summarises and concludes the paper.

2. The survey and the trust game

Our survey and experiment were conducted in five districts of the Dhaka division⁵; Netrokona, Mymensingh, Manikganj, Gazipur and Narayanganj. The trust game was conducted at the end of a rather extensive household survey. The participants were paid Taka 100 to complete the whole survey and the trust game. Although one can never rule out that this survey might have affected subsequent behaviour in the trust game, we have no such indications. Since the amount of money was substantial, people clearly concentrated very hard to make good decisions. To avoid the risk of self-selection, and a possible over-representation of relatively trusting and trustworthy participants in the experiment (Holm and Danielsson, 2005), we chose a random sample strategy to match the senders and receives in the trust game. Using ex-ante matching of first and second mover, we ran the experiment among household heads in rural Bangladesh, where senders and receivers come from different but nearby villages and this information is common knowledge to all participants. The enumerators were allocated to different parts of the village to start with and were then asked to perform the interviews for the household survey and to run the experiment in every fourth household.⁶ If the household head was not around, the enumerators were

⁵ Bangladesh consists of six divisions, and each division is made up of several districts. In total, Bangladesh has 64 districts, 16 of which are located in the Dhaka division. The sample is of course not representative of the total Bangladesh population.

⁶ We actually used four different samples based on religion with intention to test for effects of social distance. By using a split sample technique, we match Muslim senders with either a Muslim or a Hindu receiver and in the same way with the Hindu senders. In each case, senders and receivers were informed about the religious identity of their matched partner. However, as explored in Johansson-Stenman et al. (2005), we found no significant differences between the amount sent and sent back in the different sub-samples. Therefore, we do not analyse these effects in this paper. Still, this implies that Hindus are over-represented in our sample.

instructed to go back later and then, if still unsuccessful, to use a replacement household.⁷

At the end of the household survey, the senders and receivers were informed of the trust game. We start by describing the procedure in the sender's household. The respondents in these households were explicitly requested for a private environment, free from interruption by others, during the experiment. The enumerator then read the instructions to the sender, who was assured perfect confidentiality of the responses. The enumerator then presented the outcomes of different decisions to the sender, both related to the amount sent by the sender, and the amount returned to him by the receiver. The senders were then given two envelopes. One of the envelopes contained the original endowment and the other one was empty. The senders used the empty envelope to put the amount of money that they wanted to send to the receiver, and they were assured that the enumerator would not know what their decision was. In the experiment, we used thick envelopes in order to prevent enumerators guessing by eye how much had been sent for the receiver, and thus implicitly the amount kept. The senders were informed that they would be paid within three days.⁸ The enumerator ensured that the decision was private by turning his back to the sender while the money was being put into the envelope. The enumerator waited until the sender was

⁷ We have approximately 23 percent replacement households in our final sample, which was almost solely because of lack of availability. Only 2% of those being available did not want to participate in the survey. In the villages, people from the same family chain normally live in a cluster of 4-5 households. Thus a replacement from the next household, or the next to next household should not bias our results for this reason.

⁸ There is always a potential risk of participants distrusting the people running the experiment. In order to minimise this, university students were used as enumerators. Furthermore, it was specifically mentioned that this was a joint research project being run by a local and a Swedish university.

ready, after which the sender was asked to close the envelope that was to be sent to the receiver, and seal it with a stamp provided before returning it to the enumerator. The sender was instructed to do so even if he/she had decided to send nothing.

After returning the envelopes, the senders were asked about their expectations regarding how much they believed they would eventually get back. The senders were given a piece of paper with three boxes numbered one to three, and an empty envelope into which they were to put the paper back after privately choosing the appropriate box indicating their expectation regarding the back transfer. The alternatives read to them, which were repeated if needed, were: (i) tick the first box if you expect back less than what you sent, (ii) tick the second box if you expect about the same back as the amount you sent and (iii) tick the third box if you expect more back than the amount you sent. In the event that they did not send any money, they were asked to tick the second box. Then the sender was asked to close the envelope, and seal it with a stamp provided, before returning it to the enumerator.

The enumerator then moved on to a discussion about the motives behind the amount chosen to send to the receiver. The senders were given a piece of paper with four boxes numbered from one to four, and an empty envelope into which they were to put their answers to the motive questions. It could of course be argued that more groups should have been used when eliciting the motives. However, the number of alternatives had to be balanced against our desire to maintain complete anonymity among the senders and enumerators, while working with a population where a large fraction is either illiterate or has a very low level of formal education. Therefore, we decided to use four broad groups only. The following alternatives were read to them, and repeated if needed, (i) it would be unfair not to send anything (fairness motive),

(ii) the receiver probably needs the money more than you do (need motive), (iii) you believe that you would get punished either during your lifetime or in an afterlife if you are not generous to others (punishment motive) and (iv) you believe that you would gain from sending the money (trust motive), where the fourth alternative is consistent with the conventional trust interpretation of the game. They were told that they could fill in more than one box if they wanted; the exact wordings are presented in Appendix 1. The punishment motive relates to effects beyond the trust game per se. In both Muslim and Hindu religions, people believe that they will be judged after death. In Muslim religion, on the day of judgement, every human being will be assessed and a decision will be made about whether he or she will go to heaven or hell. In Hindu religion, beliefs in rebirth and reincarnation of souls are essential, and the decision about what will happen in the next life largely depends on the actions in this life.

Finally, they were explicitly asked not to discuss the experiment with anyone else, because people who did not have this opportunity might envy them, which might cause future problems both for them as well as for the organisers. At the end of the day, the enumerator handed the envelopes to the principal researcher, who opened them and put the tripled amount into new envelopes with a household code.

The following day, the enumerators were given these new envelopes ready to be delivered to the assigned receiver. At the end of the household survey, the receivers were informed of the trust game. After ensuring a private environment, they were given the instructions for the experiment, including the same examples that were given to the sender. Then they received an envelope containing the tripled amount from the sender as well as an empty envelope. The enumerator then turned his back to the receiver who had been instructed to use the empty envelope to put the amount of

money that he/she wanted to return to the sender. After putting the chosen amount in the envelope, he/she was to close it and seal it with a stamp provided by the enumerator before returning the envelope.

Then the receiver was asked about his/her motives to send back money. The senders were given a piece of paper with three boxes numbered one to three, and an empty envelope into which they were to put the paper back after privately choosing the appropriate box(es) regarding their motives. He/she was then given an empty envelope into which he/she was to put the privately made answers to the motive questions and seal it. The alternatives presented to them were the same as for the senders, except for the alternative stating that they would gain financially from sending back any money (which is impossible). Thus, they were presented with the following alternatives: (i) it would be unfair not to send anything (fairness motive), (ii) the sender probably needs the money more than you do (need motive), (iii) you believe that you would get punished either during your lifetime or in an afterlife if you are not generous to others (punishment motive). At the end of the day the enumerators returned the envelopes to the principal researcher who checked and wrote down the amount to be transferred back. During the following day, i.e. on the third day, the envelopes were delivered back to the senders with the amount that the receiver had decided to return. .

3. Results

This section contains our results from the part of the survey on the attitudinal trust as well as on the other social capital variables, in addition to the trust game. The average

amount sent is 92.5 Bangladesh Taka (TK)⁹, corresponding to 46 percent of their initial endowment of 200 TK. As compared to the comprehensive overview of trust games conducted in developing countries and countries undergoing transition in Carpenter and Cardenas (2004), the fraction sent is a little bit lower than the average, but on the other hand many of these other studies were conducted with more homogenous respondents, typically students. Out of 256 senders who participated in the experiment 18 senders (7%) sent nothing while 46 senders (18%) sent everything. Out of the 237 receivers¹⁰, 11 receivers (5%) sent back nothing to the senders while 9 receivers (4%) sent back everything to the senders. The average amount returned was 134.6 TK. Thus, it was on average profitable for the senders to send money in this trust game. The results in the literature are otherwise mixed on this point; Cardenas and Carpenter (2004) found that senders have benefited from trusting in 17 out of the 25 trust games reported.

We asked the senders about how much they expected to get back from the receivers. Since this is a rather difficult question to answer concisely, and since most respondents probably had some kind of subjective probability distribution regarding the receivers' behaviour rather than a point estimate, we only asked them to choose between three alternatives. We asked them whether they expected less, the same or more than the amount that they had sent.¹¹ As can be seen from Table 1, slightly less than one third of the senders believed they would gain from sending money, and slightly less than one third believed they would lose, but still sent their money.

⁹ 57.88 TK=1 USD, at the time of the trust game (October, 2003).

¹⁰ One of the pre-assigned receivers refused to take part.

¹¹ One respondent chose all three responses; therefore we drop this observation when analysing senders' expectations.

Hence, already these results provide some indication that the first stage of a trust game may not measure pure trust alone. Furthermore, as can be seen from the table, the pattern regarding the proportion of endowment sent for the three different expectations is reversed from what one would expect if pure trust was the only influence, since the senders who on average expect less sent more and vice versa. This is in sharp contrast to Bellemare and Kröger (2003), Chaudhuri and Gangadharan (2003) and Fehr et al. (2002), who all found a positive correlation between the amount sent and the expectations. One possible reason for this discrepancy is of course that, for whatever reason, the result here may be flawed. However, another possible reason is due to the fact that we did not ask the respondents to state a number when expressing their expectations and thus the amount they just sent will not obviously work as an “anchor.” The other studies reported, on the other hand, asked the respondents to state the amount of money they expected the receiver would send back, after they had decided how much to send. It is well known from psychological research that respondents can be extremely sensitive to provided anchors, even in situations where it is obvious that the anchors carry no relevant information at all, such as the random number coming up from a spinning wheel (Tversky and Kahneman 1974). In the case of a trust game, the most straightforward anchor is the amount they have just sent. Thus, the positive correlation found in several studies may, at least partly, be due to anchoring.¹²

>>> TABLE 1

>>> TABLE 2

¹² See Selten and Ockenfels (1998) for other reasons why the causality may go from the sent amount to expectations, instead of the other way around.

To test more formally whether the proportions of money sent by the senders come from populations with similar distributions when separated according to their expectations, we conduct a series of pair-wise group comparisons using the Wilcoxon-Mann-Whitney test.¹³ At 5% significance level, we can reject the null hypotheses that the proportions sent in the pair-wise comparisons come from the same distributions, except for the comparison of the proportions sent when the senders expect less and about the same, respectively. Moreover, we also reject the null hypothesis that all three samples come from populations with the same distribution at 5% significance level using the Kruskal-Wallis test (see Appendix 2 for detailed results of the tests).

The senders were then free to select one or several of the four available alternatives explaining their motives behind their behaviour, while the receivers had three alternatives (since the alternative that they would gain financially is of course not applicable). 75 senders and 62 receivers chose more than one motive to describe their behaviour in the trust game.¹⁴ Perhaps surprisingly, as already indicated in Table 1, only 23% of those sending money stated that they thought that they would actually gain from sending the money, i.e. the motive that is typically seen to reflect trust. A strong driving force for both the senders and the receivers seems to be the fear of

¹³ For a more detailed description of the tests used, see e.g. Siegel and Castellan (2000).

¹⁴ Three senders chose all four alternatives while the other combinations chosen were; fairness, need and punishment (5), fairness, punishment and trust (4), need, punishment and trust (3), trust and need (8) trust and fairness (4), fairness and punishment (17) and fairness and need (11), need and punishment (12), punishment and trust (8). Twelve receivers chose all three motives, the other contributions picked are: fairness and need (13), fairness and punishment (19) and need and punishment (18). It should be noted that five receivers did not indicate any motive i.e. they returned a blank answer sheet.

punishment, either in this life or after this life, and this alternative is chosen by about half of the senders as well as receivers. It would not have been possible to identify this type of motivation if we had restricted our interpretation to revealed behaviour. Hrungr (2004) provides evidence, based on the time pattern of religious and non-religious charitable giving, that the behaviour of Americans may also be influenced by expected after-life consequences; thus, our results may not be unique to Bangladesh society or even to the Muslim and Hindu world, even if it appears likely that the strength of this motive varies culturally.

Table 1 and Table 2 also present the proportion sent and returned, respectively, for the different sub-samples classified by their motives. Remarkably, we find that the proportion sent is actually lowest for those who reported that they sent the money because they believed that they would gain from sending money, i.e. the pure trust motive. At 5 % significance level, we can reject the null hypothesis that the proportion sent in cases where need or trust are the motivations arise from similar distributions, and similarly for the null hypothesis that the proportions sent are equal for punishment and trust motivations (see Appendix 2 for detailed results and histograms). From Table 2, it seems that what might be denoted as punishment considerations influence the amount returned by the receivers, but in pair-wise tests we cannot reject the null hypothesis that the proportion returned arises from the same distribution for these two sub-groups (see Appendix 2 for detailed results and histograms). The results we report here support that suggestion that there are other motives behind actions in a trust game, not just pure trust and reciprocity/trustworthiness, thus supporting e.g. Cox (2004) and Holm and Danielsson (2005). These findings are also extended by showing the importance of motives that

are not possible to deduct from observed behaviour, such as a fear of subsequent punishment.

Based on the most frequently used standard GSS question: “Generally speaking, would you say that most people can be trusted or that you cannot be too careful in dealing with people”?, only 3 percent answered that most people can be trusted, which seems to indicate a very low level of trust. Since this measure, for obvious reasons, is very crude, we also asked a similar question by allowing answers along a six-point scale ranging from “strongly disagree that most people can be trusted” to “strongly agree that most people can be trusted” as presented in Table 1 and Table 2.¹⁵ Although less extreme responses, this question also reflects rather low levels of general trust.¹⁶ We can also see that there is no strong relation between stated trust and the amount sent, even though a visual inspection indicates a weak positive relation suggesting that behaviour observed in a trust game may be influenced by motives other than trust. There is a clearer pattern between stated trust and the amount sent back, which is similar to the reported results in Glaeser et al. (2000).

4. Econometric analysis

Table 3 defines the explanatory variables used in the econometric analysis together with their mean values.

>>> Table 3

In Table 4, we present the estimates from the OLS regressions to explain factors that may influence the fraction sent by the senders, as well as the fraction

¹⁵ However, meanings of intermediate points in the scale were not mentioned to the respondents.

returned by the receiver.¹⁷ Since we used several enumerators to run the trust experiment, we tested if there was an enumerator effect. However, we cannot reject the hypothesis of no enumerator effect in the trust game regressions in Table 4 (p-value 0.82, 0.86, 0.41, respectively, for Model 1, 2 and 3), based on joint F-tests. However, for Model 4, the stated trust regressions, we can reject the hypothesis of no enumerator effect at 1% significance level, and hence we include dummy variables for the enumerators to control for enumerator effect.

>>> Table 4

In Model 1 in Table 4, we use dummy variables for senders' expectations¹⁸ finding a significant *negative* relation, implying that a significantly lower amount (or fraction) is sent when the sender expects more in return, which is in line with our descriptive results reported in Section 3. The age profile of the amount sent is consistent with Bellemare and Kröger (2003) and Gleaser et al. (2002), as well as the age pattern of stated trust reported in Putnam (2000). Kocher and Sutter (2003), on the other hand, report an age pattern where the amount sent increases from childhood to early adulthood, but stays almost constant afterwards, whereas Fehr et al. (2002) found that older people send significantly less.

¹⁶ We also asked the same question on trust (not reported) in a situation with either low or high stakes. Perhaps not surprisingly, people trust others more at low stake events.

¹⁷ In the trust game, there are four different types of matching between Hindu and Muslim participants. Based on a joint test, we cannot reject the null hypothesis that the same amounts are sent in the four groups (p-value=0.46), nor can we reject the hypothesis that the same fractions are returned in the four groups (p-value=0.56). Therefore we do not include the corresponding dummy variables in the proceeding analysis.

¹⁸ We also include a dummy variable for sending a positive amount, since we want to measure the influence of motives conditional on having sent a positive amount.

We also find that the amount sent increases with income, and weakly with stated trust. Glaeser et al. (2000) found no significant effect of stated trust on the amount sent, whereas Holm and Nystedt (2005) found that the correlations between stated trust and the amount sent in the trust game increased significantly when monetary incentives were taken away from the trust game, i.e. the correlation is stronger with a hypothetical trust game.

In Model 2, we also include motivational dummy variables, but none of the associated parameters are significant.¹⁹ Stated trust significantly explains the fraction returned (Model 3 in Table 4), which is similar to Glaeser et al. (2000) who also found that stated trust better explains the fraction returned than the fraction sent. Finally, we attempt to explain stated trust measured on a 6-point scale using the same control variables. Contrary to the findings in the trust game, we find that stated trust is significantly and positively affected by confidence in institutions and significantly and negatively affected by the occurrence of a recent misfortune. Also, past trusting behaviour (frequency of lending money) weakly predicts stated trust in the survey. The positive relationship of stated trust and trusting behaviour is consistent with the findings in Bellemare and Kröger (2003) and Fehr et al. (2002). We also find that illiterate people have a higher level of stated trust for which we do not have any adequate explanation.

¹⁹ One would expect that the sender's expectation and motive might be correlated. We estimated a separate model excluding expectation dummies. The results are roughly the same. Hence, we present the results controlling for both expectations and motives in Model 2. Moreover, we estimated a model by interacting respondents' religion with the stated motives, to see whether certain motives are linked

5. Discussion and conclusion

Although an extremely high level of corruption has been observed in Bangladesh, our results from the trust game, having fractions being sent and returned that are comparable to most other studies, do not support the hypothesis that corruption has been transferred to the individual level and developed into a general low level of trust in others. However, our survey responses do indeed reflect very low levels of stated trust. The obvious question, then, is: Which measure should we trust? The answer is far from straightforward. As economists, we might have a bias towards relying on observed behaviour with monetary incentives. For example, the fact that Glaeser et al. (2000) discovered a poor correlation between stated trust and the amount sent in the trust game was seen as an indication that stated trust does not measure real trust, not the other way around. As somewhat provocatively expressed by McCloskey (1985, 181): “Economists are so impressed by the confusions that might possibly arise from questionnaires that they have turned away from them entirely, and prefer the confusions resulting from external observation.” In our view, pros and cons of each method should be discussed without prejudices.

Evidence put forward in favour of stated-trust questions is the strong measured correlation between the fraction agreeing that most people can be trusted and the number of wallets that were returned in a lost-wallet experiment in these cities, reported in Knack and Keefer (1997). They also found a rather strong correlation between measured stated trust and economic growth. Hence, one may argue that whatever stated trust measures, it appears to be something important, and something

to religion or not. We do not find any significant effect (p-value 0.56), based on F-test, and hence we do not include these interaction terms in the model presented.

that is overall good for society. On the other hand, the fractions of wallets coming back is not really a measure of trust, but rather a measure of a particular social norm, which seems, if anything, to be more closely related with trustworthiness than with trust.²⁰ This is consistent with the finding in Glaeser (2000), and this paper too, that stated trust is a better predictor of the amount sent back by the receivers, than of the amount sent by the senders in the trust game.

Trust, as measured by the fraction sent in a trust game, has the clear advantage of relying on real monetary incentives, implying that it is costly for the participants to deviate from their true preferences and perceptions. This implies, for example that trust as measured by the amount sent in a trust game is less likely to be vulnerable to self-serving bias, in terms of self-signalling (cf. e.g. Benabou and Tirole 2003, 2004) and possible self-presentation effects, compared to survey questions. As discussed, there is also empirical evidence, e.g. when comparing the behaviour in trust games with the behaviour in dictator games, that the sent amount, to some extent, does measure trust. What is less clear is the extent to which different motives affect the behaviour. Some seem to conclude, implicitly or explicitly, that even though other motives may also matter, they are probably relatively small, implying that they might be ignored. On the other hand, the results here, as well as the recent evidence by e.g. Cox (2004), indicate that this is too strong a conclusion. In this study, we show, for example, that the fear of subsequent punishment if behaving too selfishly seems to be a very important motive for both senders and receivers. Even though survey questions have their inherent problems, we cannot see how we could have obtained this kind of

²⁰ This may possibly also be a reflection of the trust in the police authorities. If people believe that a handed in wallet will just benefit the local policemen then they may find it meaningless to hand it in.

result if we were restricted to observing people's actual behaviour in the game. At the end of the day, our conclusion is somewhat negative, suggesting that neither stated trust nor the fraction sent in trust games may be particularly good measures of trust, as we normally think about the word. This is, of course, not a reason to stop analysing and trying to measure trust, just as the obvious fact that, just because welfare is difficult to measure, we should not be prevented from doing welfare analysis. We believe, however, that our findings provide further arguments for trying to find other, better, measures of the important phenomenon of trust.

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Table 1. Average proportion sent in the trust game for different sub-samples of senders

| | Share of respondents | Mean proportion sent |
|---|----------------------|----------------------|
| Whole sample (n=256) | 100% | 46% |
| Senders' expectations on sending a non-zero amount to the receiver (n=237) ^a | | |
| Expects to get back less than the amount sent | 29% | 55% |
| Expects to get back about the same as amount sent | 42% | 51% |
| Expects to get back more than the amount sent | 29% | 44% |
| Motivations for sending non-zero amounts to the receiver (n=238) | | |
| It would be unfair not to send anything (fairness motive) | 21% | 49% |
| The receiver probably needs this money more than you do (need motive) | 26% | 56% |
| You will get punished, either during your lifetime or afterwards, if you are not generous to others (punishment motive) | 50% | 51% |
| You believe you will gain from sending the money (trust motive) | 23% | 41% |
| Stated trust as the level of agreement with the statement "most people can be trusted" (n=256) | | |
| Strongly disagree | 15% | 43% |
| Disagree | 22% | 40% |
| Partly disagree | 31% | 46% |
| Partly agree | 14% | 53% |
| Agree | 7% | 57% |
| Strongly agree | 11% | 49% |

^a Eighteen senders did not send anything. The expectation of one sender, with positive transfer, is not analysed for choosing all three expectations.

Table 2. Average proportion returned in the trust game for different sub-samples of receivers.

| | Share of respondents | Mean proportion returned |
|---|----------------------|--------------------------|
| Whole sample (n=237) | 100% | 46% |
| Motivations for returning non-zero amounts to the sender (n=221) ^a | | |
| It would be unfair not to send anything back (fairness motive) | 30% | 44% |
| The sender probably needs this money more than you do (need motive) | 32% | 43% |
| You will get punished, either during your lifetime or afterwards, if you are not generous to others (punishment motive) | 54% | 50% |
| Stated trust as the level of agreement with the statement "most people can be trusted" (n=237) | | |
| Strongly disagree | 11% | 31% |
| Disagree | 30% | 43% |
| Partly disagree | 30% | 49% |
| Partly agree | 14% | 47% |
| Agree | 8% | 52% |
| Strongly agree | 7% | 60% |

^a Eleven receivers sent back nothing. Among those who sent back positive amounts, five receivers did not express any motive behind the transfer.

Table 3. Sample statistics

| Variable | Definition | Mean | Minimum | Maximum | N |
|---------------------------------|---|---------|---------|---------|-----|
| Age | Age of the respondent | 44.7 | 19 | 87 | 512 |
| Illiterate | Cannot read and write | 0.28 | 0 | 1 | 512 |
| Low education | Not illiterate and /or education up to high school level | 0.57 | 0 | 1 | 512 |
| High education | Education above high school level | 0.15 | 0 | 1 | 512 |
| Household equivalent income | Annual household income (in 100000 Taka) adjusted with equivalence and economies of scale. Total yearly household income was divided by [(number of adults + 0.5× number of children) ^{0.75}] | 0.23932 | 0.010 | 3.64 | 511 |
| Stated trust | Level of agreement with the statement that most people can be trusted (1= strongly disagree, 2= disagree, 3=partly disagree, 4=partly agree, 5=agree, and 6 = strongly agree). | 3.05 | 1 | 6 | 512 |
| Trusting behaviour | Frequency of lending money to friends and neighbours: 1=once a year or less, 2= about once every other month, 3= about once a month, 4= about once a week, 5= more than once a week. | 1.81 | 1 | 5 | 512 |
| Confidence index | Arithmetic sum of confidence on 10 institutions [Banks, NGOs, Military, Police, Judiciary, Local government, Executive Government, Political parties, Rural power elites, Educational institutions] : great deal of confidence=2, only some confidence=1, and hardly any confidence at all=0. | 14.56 | 2 | 20 | 508 |
| Recent misfortune | The respondent has been a victim of any of the following incidents in the last one year: robbery /theft, mugging, personal assault, home attack, land fraud, false criminal accusation, and political harassment. | 0.232 | 0 | 1 | 511 |
| Member of voluntary association | Has membership in voluntary groups and/ or association | 0.291 | 0 | 1 | 509 |

Table 4. Regression analysis of proportion sent, proportion returned and stated trust

| Dependent variable | Proportion sent Model 1 | Proportion sent Model 2 | Proportion returned Model 3 | Stated trust ^a |
|---|----------------------------|----------------------------|-----------------------------------|---------------------------|
| Regression type | Least square | Least square | Least square | |
| Non-zero amount sent by the sender | 0.535*** (0.073) | 0.531*** (0.087) | | |
| Proportion sent by sender | | | -0.034 (0.073) | |
| Non-zero amount returned by the receiver | | | 0.534*** (0.110) | |
| Sender expects about the same back as sent | -0.043 (0.042) | -0.039 (0.043) | | |
| Sender expects a higher amount back than sent | -0.100** (0.048) | -0.081 (0.051) | | |
| Fairness motive | | -0.022 (0.047) | -0.038 (0.054) | |
| Need motive | | 0.056 (0.048) | -0.060 (0.053) | |
| Punishment motive | | 0.003 (0.047) | -0.019 (0.053) | |
| Trust motive | | -0.048 (0.056) | | |
| Age | 0.019** (0.008) | 0.016* (0.010) | -0.005 (0.010) | -0.027 (0.231) |
| Age squared | -0.0002** (0.0001) | -0.0002* (0.0001) | 0.0001 (0.0001) | 0.0003 (0.0002) |
| Illiterate | -0.037 (0.063) | -0.052 (0.063) | -0.154** (0.068) | 0.380** (0.170) |
| Low education | -0.048 (0.056) | -0.064 (0.057) | -0.010* (0.061) | -0.047 (0.147) |
| Household equivalent income | 0.158** (0.063) | 0.143** (0.064) | 0.010 (0.058) | 0.055 (0.152) |
| Stated trust | 0.021* (0.012) | 0.020 (0.012) | 0.057*** (0.016) | |
| Trusting behaviour | 0.022 (0.016) | 0.017 (0.017) | -0.006 (0.020) | 0.079* (0.045) |
| Confidence index | -0.001 (0.005) | -0.001 (0.010) | 0.004 (0.006) | 0.039*** (0.015) |
| Member of voluntary association | 0.038 (0.038) | 0.036 (0.038) | -0.025 (0.046) | 0.001 (0.107) |
| Recent misfortune | -0.047 (0.039) | -0.044 (0.040) | 0.061 (0.0510) | -0.310*** (0.114) |
| Constant | -0.505** (0.242) | -0.429* (0.251) | -0.101 (0.273) | |
| R ² (Pseudo-R ² in Model 4) | 0.270 | 0.271 | 0.204 | 0.051 |
| No. of observation | 250 | 249 | 227 | 503 |

Standard errors are in parentheses. Superscripts *, **, *** denote statistical significance at 10%, 5%, and 1% level.

^a We control for enumerator effects, but the parameter estimates for enumerators are omitted from the presentation.

Appendix 1. Eliciting subjects' motives in the trust game

Senders' motive

There are four boxes on this piece of paper. By putting a tick mark in any of the boxes you can indicate why you sent money. You may put tick marks in more than one box.

- Tick the first box if you think it would be unfair not to send anything.
- Tick the second box if you think the receiver probably needs this money more than you do.
- Tick the third box if you believe that you will get punished, either during your lifetime or afterwards, if you are not generous to others.
- Tick the fourth box if you believe that you will gain from sending the money

After you tick a box, please put the paper in the envelope, seal it with the stamp and return it to me.

Receivers' motive

There are three boxes on this piece of paper. By putting a tick mark in any of the boxes you can indicate why you sent back money. You may put tick marks in more than one box. You can put tick marks in any of the boxes even if you did not send back any money.

- Tick the first box if you think it would be unfair not to send anything back.
- Tick the second box if you think the sender probably needs this money more than you do.
- Tick the third box if you believe that you will get punished, either during your lifetime or afterwards, if you are not generous to others.

After you tick a box, please put the paper in the envelope, seal it with the stamp and return it to me.

Appendix 2. Detailed test statistics of proportions sent and returned

A.2.1

Wilcoxon and Mann-Whitney rank test and Kruskal- Wallis test of difference of proportion sent when motivations are different

| Hypothesis | p- value |
|--|----------|
| Proportion sent when sender expects less than amount sent = Proportion sent when sender expects about the same amount sent | 0.89 |
| Proportion sent when sender expects less than the amount sent = Proportion sent when sender expects more than the amount sent | 0.025 |
| Proportion sent when sender expects about the same amount sent= Proportion sent when sender expects more than the amount sent | 0.002 |
| Proportion sent when sender expects less than the amount sent= proportion sent when sender expects about the same amount sent= proportion sent when sender expects more than the amount sent | 0.009 |

A.2.2

Wilcoxon and Mann-Whitney rank test and Kruskal- Wallis test of difference of proportion sent when motivations are different

| Hypothesis | p- value |
|--|----------|
| Proportion sent when fairness motive is involved = Proportion sent when need motive is involved | 0.649 |
| Proportion sent when fairness motive is involved = Proportion sent when punishment motive is involved | 0.752 |
| Proportion sent when fairness motive is involved = Proportion sent when trust motive is involved | 0.133 |
| Proportion sent when need motive is involved = Proportion sent when punishment motive is involved | 0.736 |
| Proportion sent when need motive is involved = Proportion sent when trust motive is involved | 0.043 |
| Proportion sent when punishment motive is involved = Proportion sent when trust motive is involved | 0.019 |
| Proportion sent when fairness motive is involved = Proportion sent when need motive is involved = Proportion sent when punishment motive is involved = Proportion sent trust motive is involved | 0.085 |

A.2.3.

Wilcoxon and Mann-Whitney rank test and Kruskal- Wallis test of difference of proportion sent back when motivations are different

| Hypothesis | p- value |
|--|-----------------|
| Proportion returned when fairness motive is involved = Proportion returned when need motive is involved | 0.995 |
| Proportion returned when fairness motive is involved = Proportion returned when punishment motive is involved | 0.373 |
| Proportion returned when need motive is involved = Proportion returned when punishment motive is involved | 0.402 |
| Proportion returned when fairness motive is involved = Proportion returned when need motive is involved = Proportion returned when punishment motive is involved | 0.564 |

Appendix 3. Histograms of proportions sent and returned

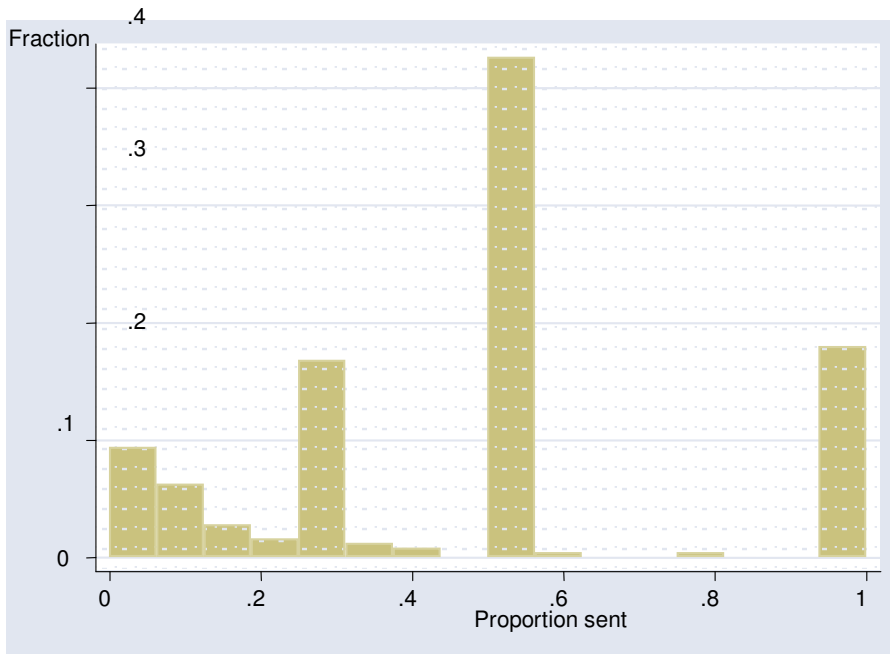


Figure 1. Proportion of money sent by the senders in the trust game

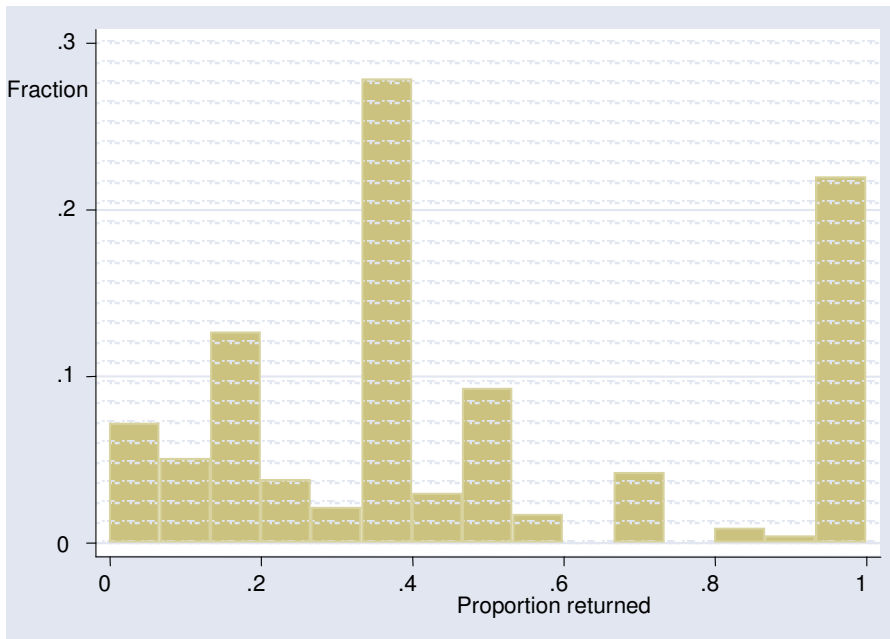


Figure 2 Proportion of money returned by the receivers in the trust game

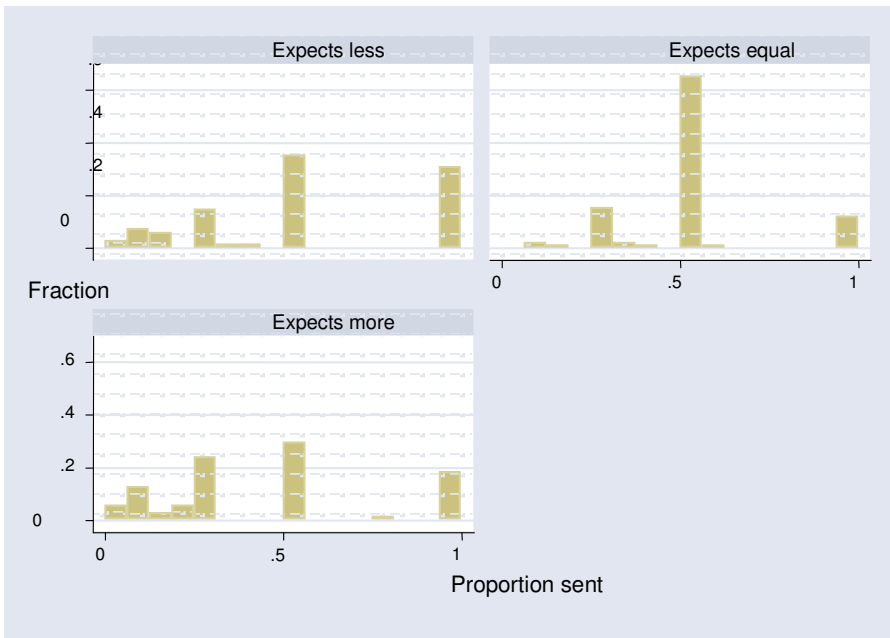


Figure 3 Proportion of money sent by the senders with different stated expectations

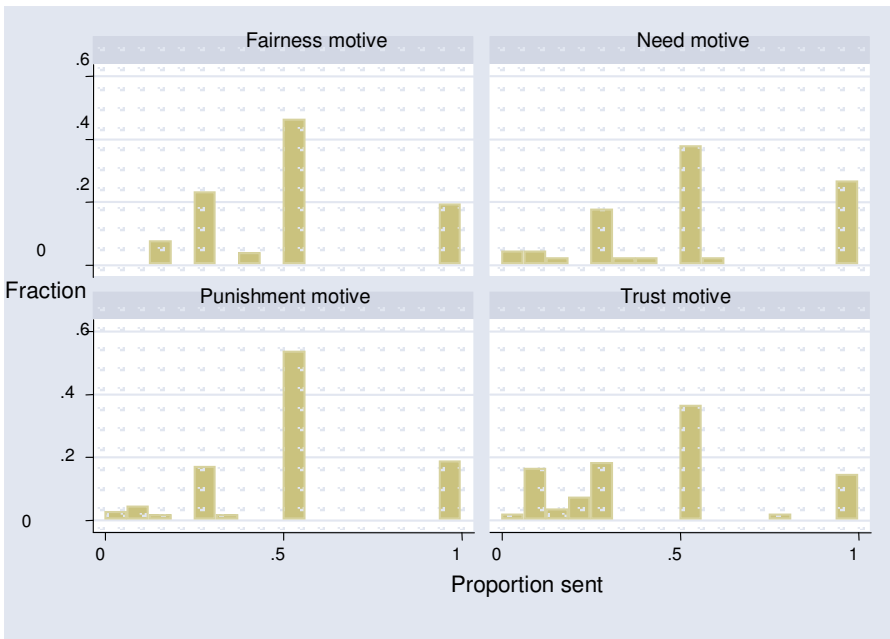


Figure 4 proportion sent by senders with different stated motives

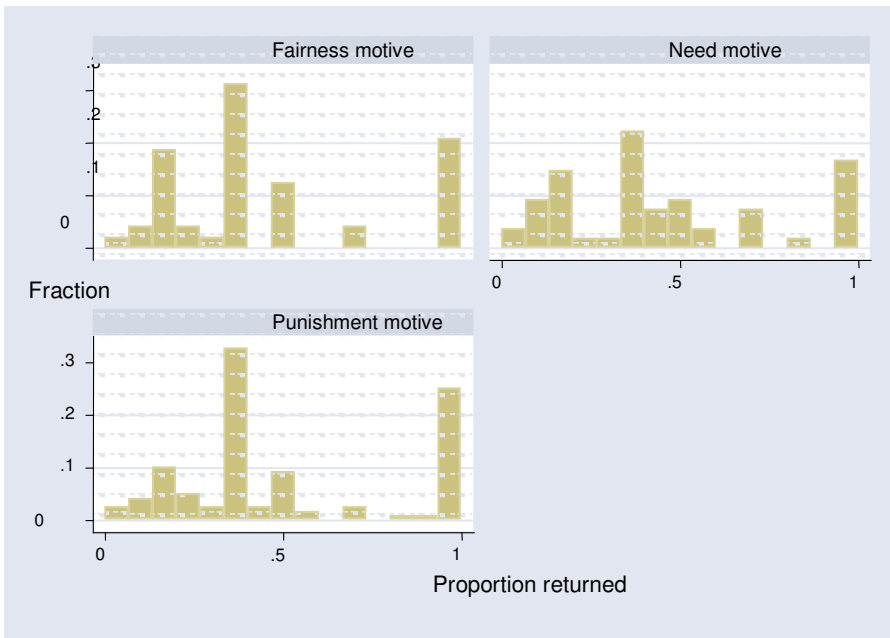


Figure 5. Proportion returned by the receivers with different stated motives