

Measuring trust in institutions

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Abstract

In empirical studies, trust is typically measured using survey questions except for interpersonal trust where also trust games are used. In this paper, we measure trust in different institutions by using both trust games and survey questions. We find that generalized trust is only weakly correlated with trust in specific institutions, both when elicited using a trust game and using survey questions. However, the correlation between trust elicited from a trust game in a specific institution and stated trust for the same institution is stronger and statistically significant. Thus, our findings suggest that generalized trust is not an appropriate measure of institutional trust, and that more specific institutional trust measures should be used.

Keywords: Experiment; institutional trust; generalized trust.

JEL Classification: C90; D01; D02; O43.

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“Trust is an important lubricant of a social system. It is extremely efficient; it saves a lot of trouble to have a fair degree of reliance on other people's word. Unfortunately, this is not a commodity which can be bought very easily. If you have to buy it, you already have some doubts about what you have bought.”
Arrow, (1974, p.23)

1. Introduction

Trust is a key component for economic activities and it is by many economists seen as an important factor for economic growth (Beugelsdijk et al., 2004; Fehr, 2009; Knack and Keefer, 1997a; La Porta et al., 1997; Zak and Knack, 2001) and institutional development (John F Helliwell and Putnam, 1995; La Porta et al., 1999). Investigations of how trust affects different economic outcomes, such as economic growth, has traditionally been based on responses to survey questions of trust such as the World Values Survey trust question: “Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?”. Trust in institutions is an important channel explaining why trust has a positive impact on economic growth; typically explained by reduced transaction costs (Fukuyama, 1995). Thus, it is important to understand how people trust institutions per se since this is a key factor to understand the role of trust for economic prosperity. To accomplish this successfully, there are indeed methodological challenges in the measurement of trust in institutions. One important question is how well self-reported trust in institutions and self-reported generalized trust measures correlate with the actual trust, in particular compared with trust elicited in monetarily incentivized trust experiments to employees of institutions. This paper contributes both on how to investigate trust in institutions and to our understanding of trust in institutions. We elicit trust both with a novel institutional trust experiment between entrepreneurs and people working at different institutions, and with survey questions on how entrepreneurs trust institutions per se as well as their employees. As a comparison, we also elicit interpersonal trust using both a standard trust experiment as well as generalized trust questions.

One definition of trust is “*....as a particular level of the subjective probability with which an agent assess that another agent or group of agents will perform a particular action, both before he can monitor such action....and in a context in which it affects his own action.*”(Gambetta, 2000, p. 217) In other words, when we say we trust someone, we implicitly mean that the probability that he will perform an action that is beneficial or at least not detrimental to us is high enough for us to consider

engaging in some form of cooperation with him (Gambetta, 2000).¹ While this definition is given in an interpersonal relationship setup most of the elements could be extended to trust in institutions. Put differently, trust in institutions is related to the trust in the individuals at the institution, but not only. There is, however, not one unique definition of institutional trust. Our starting point is an institutional theory of trust, where trust means a rational evaluation and expectation that the institution will perform satisfactorily (Coleman, 1990; Dasgupta, 1988; Mishler and Rose, 2001). Furthermore, our emphasis is on how individuals trust might be institutional specific, which means that we will take a micro perspective. To what extent an individual trusts a particular institution will depend on preferences and experiences, in particular with own personal experiences with the institutions. These experiences can be general, but also very interaction based.

Institutional trust is also related to the concept of linking social capital. Szreter and Woolcock (2004) distinguish between three different types of social capital: bonding, bridging and linking. Bonding social capital refers to relationship to other people similar to oneself, while bridging to more distant people such as people of different age or social class. Linking social capital defines relationships to others who are in a different power position such as working for institutions. While trust and social capital are usually used interchangeably in the economic literature, distinctions exist between the two, as the former is a subset of the latter (Knack and Keefer, 1997; Loury, 1977; Putnam, 1995). It should be noted that trust experiments and most of survey questions on trust relate either to bonding or bridging. On the other hand, linking trust has not been as extensively studied.

Trust has primarily been elicited using two different approaches: (i) survey questions and (ii) trust experiments (for a general discussion on using survey questions and experiments see e.g., Falk and Heckman, 2009). One of the most commonly used survey question is the World Values Survey trust question: “Generally speaking, would you say that most people can be trusted or that you can’t be too careful in dealing with people?” Other survey elicits trust on a scale typically from not trusting at all to completely trusting commonly using other people as the group to trust.

¹ For a discussion on how risk affects trust in trust experiments see e.g., Eckel and Wilson (2004), Schechter (2007) and Houser et al. (2010).

Measures of institutional trust have solely been based on stated measures of trust, and, as far as we are aware of, there have not been any experimental measures. In surveys such as the World Value Survey and Gallup World Poll, trust in different government institutions is measured through questions such as "Could you tell me how much *confidence* you have in different institutions listed below: quite a lot of confidence, not very much confidence or none at all?". However, it has been argued that such measures rather might be measuring how well the institutions are functioning rather than how much they are trusted (Beugelsdijk et al., 2004; Luhmann, 2000). Therefore, in this study we specifically ask how much entrepreneurs *trust* institutions instead of using the word *confidence*. More importantly, unlike what is common when measuring stated trust in institutions, we not only ask about the trust in the institutions but also their trust in the employees of the institutions. When individuals are asked to state how much they trust a given institution, it is not clear what they think off. Do they evaluate the employees working in the institution, or the "institution" as such, or a mix of both?

Another strand of trust research has focused on measuring individual trust using an experimental approach. Berg et al. (1995) invented the trust game, which is an experiment that allows causal inferences of trust and trustworthiness. The game has since then been extensively applied (for overview see e.g. Johnson and Mislin, 2011). Typically, both the trustor and trustee are endowed with the same amount of money at the beginning to rule out that transfer from trustor to trustee are related to social preferences such as inequality aversion or altruism. The trustor can transfer money to a trustee, and any amount sent is tripled before it is handed over to trustee. Then the trustee can return any amount received to the trustor. The game captures the key aspect of trust namely that the more an individual trust another, the more she will send, where the amount sent is a measure of trust. The amount returned is interpreted as trustworthiness. If more than one third of the amount received, which is the tripled amount of what the trustor sent, is returned by the trustee, then it paid off for the trustor to trust. The meta-study by Johnson and Mislin (2011) shows that trustors on average send 50.2% of endowment and trustees return 37.2% of amount received. Thus, on average it pays off for a trustor to trust, but trustees keep the larger share of the surplus generated by trusting. One ongoing area of research is if behavior elicited in a trust game correlates with self-reported trust. Most studies find a positive correlation, although the correlations sometimes are small (e.g. Ashraf et al. (2006), Bellemare and Kröger (2007); Fehr et al. (2003); Johnson and Mislin (2012)).

In order to measure institutional trust, we need a set of different institutions and a population that have an experience with the institution and a belief about the degree of trust. Because of this, we conduct the institutional trust experiment with entrepreneurs who own and manage micro, small and medium enterprises in Addis Ababa, Ethiopia. We investigate their trust in four different institutions that they interact with frequently. Micro, small and medium enterprises are seen as an engine of economic growth for developing countries (Daniels, 1999; Tybout, 2000). High level of trust in government creates smooth implementation of economic policies, as entrepreneurs will not be suspicious of the government and its intentions (Exadaktylos and Zahariadis, 2012). Moreover, trusting entrepreneurs are also more likely to deliver on their economic responsibility such as tax compliance and environmental protection (Kogler et al., 2013; Scholz and Lubell, 1998).

The rest of the paper is organized as follows. In section 2, we present how we measure trust, description of our sample and the procedure we followed. Section 3 presents both descriptive and econometric analysis of the results. Finally, the last section concludes our paper.

2. Measurement of institutional trust

The trust experiment and the survey questions on trust were a part of a survey study on entrepreneurs in Addis Ababa. In what follows we will describe the experiment and survey questions, the sample, and the procedures. The whole survey consisted of 11 sections, the trust experiment was done in the last section, and the survey questions on institutional trust was done in the middle of the survey (section 6) to keep them apart.

2.1 The institutional trust experiment

The institutional trust experiment followed the same basic design as the standard trust/investment game developed by Berg et al. (1995). Both trustors and trustee received an endowment of 100 Birr (4.45 USD² or in terms of purchasing power parity 11.5 USD³) each, which corresponds to two to three times the daily industrial workers wage in Addis Ababa during the survey period. This was done to limit other motives for sending money to trustee such as inequality aversion and altruism. The trustors had to decide how much to keep and how much to send to a trustee. The amount sent

² The exchange rate during the time of the experiment (April, 2017) was 1 USD to 22.8 Birr

³ The purchasing power parity during the time of the experiment (April 2017) was 1 USD to 8.7 Birr.

to a trustee was tripled, and then the trustee decided how much to keep and how much to return to the trustor. There were six different trustees, and subjects were asked how much they would send to each of the six trustees, presented in a random order. However, only one of the six decisions was played out for real. This was determined by a random draw after all six decisions had been made. The randomly selected trustee was then informed about the trust experiment, and had to make the decision on how much (if any was sent) of the amount that was sent and tripled to return to the trustor, and how much to keep. This part of the design builds on Falk and Zehnder (2013), where each trustee decided how much to send to 12 different trustees out of which only one was finally payoff relevant. In the trust experiment we included six different type of trustees: (i) a randomly selected resident of Addis Ababa, (ii) a randomly selected owner of a micro, small and medium enterprise in the district (woreda)⁴, (iii) a randomly selected employee at the district's (woreda's) micro and small enterprises development agency (iv) a randomly selected employee at the district (woreda) administration, (v) a randomly selected employee at the district (woreda) tax authority and (vi) a randomly selected employee at sub-regional branches of the electric utility, but the presented order was randomized for each subject. The first category, a randomly selected resident of Addis Ababa, can be used as a benchmark to previous trust games.

For each decision, trustors were given one blue and one green colored envelope (with the same number printed on it). The blue contained 100 birr. The empty green envelope had the type of trustee printed on it. The trustor put the amount of the money he would like to send to the specific trustee in the green envelope, and then sealed it (even if they decided to send nothing). Trustors made the decision in privacy, by having enumerators turning their back during the decision process. Once, the trustor had made a decision, he was asked to seal and give it to the enumerator. This procedure was repeated six times. In order to reduce the influence of order effects, we randomized the order the trustees were presented. Once the trustor was done with all the six decisions, the enumerator rolled a six-sided dice to determine which of the six trustees that would be used for the payout. The blue envelope that corresponded to the randomly drawn number was directly given to the trustor, while the green envelope was kept for transfer to the trustee.

⁴ A *woreda* is the smallest administrative government unit in the capital Addis Ababa. The city is divided into ten sub-cities

In the next step, depending on which of the six trustees that was randomly selected, a trustee matching the criteria were randomly selected and then approached and informed about the experiment (the selection procedure is described below). After the instructions had been read, trustees were given a green and a blue envelope. The green envelope contained the tripled amount, and the blue envelope was empty. The enumerator asked the trustee to decide the amount he/she would like to send back to the trustor and how much to keep for himself/herself. The enumerator then turned his back so that the trustee could make the decision in private. The trustee was instructed to put the amount of money he would like to send back in the blue empty envelop. Once the trustee was done, he sealed the blue envelope and gave it to the enumerators, while keeping the green one for herself.

2.2. Stated trust

The stated institutional trust measures asked respondents to state how much they trust a given institution on a scale from 0 to 10, where 0 represents having no trust at all and 10 refers to a situation of complete trust. By specifically asking about trust, we avoid any confusion and ambiguity that might arise from asking about confidence as is done in the World Value Survey. The stated trust questions were asked in the middle of the firm survey, and well before the trust experiment. We separately elicited the trust entrepreneurs have towards the institutions and the employees working in these institutions. The stated trust question for an institution was “Please tell me on a scale of 0 to 10 how much you personally trust each of the institutions listed below, where 0 means you do not trust the institution at all and 10 means you have complete trust.”, while for employees at the institutions it was “Please tell me on a scale of 0 to 10 how much you personally trust an employee/individual of the institutions listed below, where 0 means you do not trust the employee/individual at all and 10 means you have complete trust.”

2.3. Description of sample

We sampled the trustors from all micro, small and medium enterprises in Addis Ababa, Ethiopia in two-stages. First, we randomly chose 260 firms from a list of more than 20,000 registered micro, small and medium enterprises obtained from Addis Ababa Trade Bureau and the Central Statistical Agency. Then we chose owner-managers of these enterprises to be the subjects in our study because they are the ones who make important decisions and hence have a direct working relationship with

the different government institutions. In situations where the enterprises are owned by more than one owner, we selected the owners who are most involved in the day to day operation of the enterprise. From this selected sample, only two entrepreneurs refused to participate in the trust experiment because they thought the experiment went against their religious belief.⁵ It was only in few instances that the respondents were general managers or spouses of the owners.⁶ Descriptive statistics of the trustors are presented in Table 1.

Table 1. Descriptive statistics of trustors.

Variable	N	Mean	Std dev	Min	Max
Age (in years)	257	38.34	10.20	22	76
At least college diploma	258	0.29	0.45	0	1
Male	255	0.78	0.42	0	1
Married	258	0.71	0.45	0	1
Christian orthodox	251	0.76	0.42	0	1
Muslim	251	0.10	0.30	0	1
Protestant	251	0.14	0.34	0	1
Preference for risk taking (between 0 and 10, where 10 is completely risk taking)	258	4.63	3.31	0	10
Business experience (in years)	253	6.88	6.28	0	43
Total no. of employees	258	10.05	11.95	1	86
Industry zone location	258	0.32	0.47	0	1
Monthly revenue (in 1000 Birr)	255	45.59	113.99	0	1000
More than one owner	258	0.45	0.50	0	1
Amhara (=1 if ethnically Amhara)	258	0.39	0.49	0	1
Oromo (1= if ethnically Oromo)	258	0.15	0.36	0	1
Guraghe (=1 if ethnically Guraghe)	258	0.17	0.37	0	1
Tigray (= 1 if from Tigray)	258	0.14	0.35	0	1
Other ethnic groups	258	0.09	0.29	0	1

About one third of the trustors have attained at least a college diploma, and 78 percent of them are men. We also asked trustors regarding their risk preferences using a stated risk question. The stated risk preference question was asked on a scale from “0” to “10”, where “0” represents completely risk averse and “10” refers to completely risk taking. Using this measure, an average trustor in our sample considers himself as risk neutral. The average experience as a business owner is almost

⁵ Two of the respondents who refused to participate were Muslims and they said the experiment resembles a gamble.

⁶ We have such instances for about 3 percent (9 enterprises) and the results are robust without these observations as well.

seven years. In terms of business locations, about a third of the micro, small and medium enterprises that trustors own/represent are located in industry zones/industry clusters. These clusters are government provided production areas usually at a very low rental rates. In terms of the monthly revenue, an average micro, small and medium enterprises owned by a trustor reports about 45,000 birr.

The trustees in our experiment were from six different groups. The first two categories of trustees include a random resident of Addis Ababa and an entrepreneur operating in the trustor's district. The other four categories of trustees were government institutions that implement rules at the district level and provide various services that are sometimes important for the establishment, survival and growth of firms. The entrepreneurship development agency is mainly responsible to nurture entrepreneurship. This agency provides technical support, facilitates financial access through loans, establishes market linkages through business fairs, provides business trainings, etc. The district (woreda) administration is the lowest level of the executive branch of the Ethiopian government in Addis Ababa. It issues and renew licenses, executes government's labor and environmental regulations, provides local level public infrastructures, etc. The tax authority is the third government institution included as a trustee. The tax authority is mainly responsible for introduction and enforcement of tax regulations at the lowest administrative level. It provides tax identification numbers, requires businesses to report monthly income statements, collects taxes of different nature and takes legal measures against tax evaders. The fourth institution is the electric utility. This a public utility solely responsible for both the generation and distribution of electricity service in the whole country. The utility also collects electricity fees, provides technical supports during power outages, etc. Thus, these four government institutions altogether provide the overwhelming majority of services that micro, small and medium enterprises operating in Addis Ababa require for their very existence. Entrepreneurs make frequent visit to offices of these institutions giving them enough opportunity to interact with the employees of the institutions starting from the establishment of their firms and during its operation.

Micro, small and medium enterprises owned and ran by trustors in our experiment are located in different parts of Addis Ababa. This means that the branches of the institutions that serve them are different. This is mainly pertaining to the decentralized structure of the government offices in the

city. The city administration is divided into 10 sub-cities; which are further decentralized into districts (woredas). In total, Addis Ababa is organized into 116 districts. The three of the institutions, except for the electric utility, we consider in our experiment, have their lowest administrative branches at the district level. We have about 85 different branches for each of the three institutions: the tax authority, entrepreneurship development agency and district administration. As for the electric utility, there are four regional branches.⁷ Even though pay scales, academic requirements and job description for a similar position within each branch of a given institutions are set to be equal by the government, there might be heterogeneity in how employees perform their work.

We collected a range of observable characteristics of each branch of the institutions from the Human Resource departments. Since the owners of the micro, small and medium enterprises are in a frequent contact with all of these institutions, they get to observe and have a perception about the individuals working in these institutions. In addition to this, other characteristics of employees such average earning or educational qualifications are also common knowledge among the general population as these are publically available information. Table 2 presents the average socio-economic characteristics of the institutions.

⁷ Unlike the other three institutions, the electric utility in Addis Ababa is organized into four regional branches: East, West, North, and South Addis Ababa offices.

Table 2. Descriptive statistics of employees of the institutions.

Institution	Average monthly salary	Average age	Proportion of men	Proportion of employees with at least college diploma
Entrepreneurship dev. agency	4926 (1199)	30.20 (2.09)	0.75 (0.19)	0.83 (0.17)
Tax authority	5998 (1298)	34.48 (2.93)	0.52 (0.25)	0.47 (0.21)
District	2861 (704)	32.33 (2.45)	0.49 (0.09)	0.52 (0.09)
Electric utility	3973 (131)	38.94 (2.09)	0.74 (0.02)	0.55 (0.07)

Among the four institutions, entrepreneurship development agency has the youngest employees, but it has the largest proportion of male employees and the highest number of employees having at least a collage diploma. The tax authority has the largest average salary of employees, while it also has the lowest share of workers who have at least a collage diploma. Compared to the other three institutions, the electric utility employees have the highest average age.

2.4. Procedure

The trust experiment was part of a larger firm survey, conducted in collaboration with the Ethiopian Development Research Institute (EDRI). As the institute conducts a wide range of surveys with both households and firms in the city, it is known to most of the participants as a neutral research institute. Moreover, to assure participants that both the survey and the experiment were conducted for a sole purpose of research, enumerators presented an official letter issued by EDRI addressed to the respective micro, small and medium enterprises explaining this and asking for their participation. We believe the political neutrality of the institute and the assurances participants were given that their responses will be treated with the maximum confidentiality ensure good quality of the responses. Enumerators were given physical addresses of the micro, small and medium enterprises randomly selected for participation. Upon arrival at the participant's address, they were instructed to first introduce themselves and show the official letter sent from EDRI asking if the participant would like to participate in a survey. If yes, the survey was conducted

either straight away or by appointment in situations where the owner/manager of the micro, small and medium enterprises was not present during first visit⁸.

In the last part of the survey, the trust experiment was conducted. An enumerator read aloud the instructions for the trust experiment, including that both trustor and trustee have the same initial endowment, the different stages of the experiment with six different decisions and how payout is determined. We also incorporated different examples elaborating outcomes of different decisions. To reduce any influence that providing examples might have, we had three examples where two of them had either a small or a large amount being sent while the third example presented a situation where half of the endowment was sent. As our subjects are entrepreneurs and hence relatively literate individuals, it was easy for them to understand the experiment even without the examples as we already knew from our pilot studies. However, we did not want to compromise understanding and hence we kept this format. We informed trustors that they would be paid within four weeks. The enumerator brought back to the principal researchers five pairs of envelopes, which had not been selected to be payout relevant, and one single envelope from the payout relevant decision that contained the amount to be sent to the trustee. The principal researchers opened the envelopes, recorded the amounts sent and put the tripled amount in a new envelope to the randomly selected trustee.

The trustees were selected in different way depending in which group they belonged to. For the randomly selected resident of Addis Ababa we randomly drew from a sample list of about 35,000 households obtained from the EDRI.⁹ A trustee was the selected by randomly, taking into account the population densities of the ten sub-cities of Addis Ababa. From each of the ten sub-cities, we randomly chose one district. Depending on the population densities of the district, we randomly chose three individuals from eight of the districts and two individuals from the remaining two districts. For fellow entrepreneurs operating in the sender's district, we randomly selected them from a list of registered micro, small and medium enterprises operating in the same district as the sender. To choose trustees making up employees of the four government institutions, we first obtained complete lists of employees of each district branch. From these lists, one person was

⁸ Considering the situation that some micro, small and medium enterprises could not be reached, we have also prepared a replacement list in advance.

⁹ We used this list as it was impossible to obtain an official registry.

randomly selected if that institution had been drawn in the first stage.¹⁰ For each randomly selected employee, we provided enumerators with one reserve employee as a replacement if the employee was on leave or away for longer period.¹¹

Trustees were then approached and informed about the trust experiment in similar manner as the trustors including all details. The instructions were also read out loud to the trustees, and they were then informed about what happened at the first stage of the experiment. We also presented them with similar examples as for the trustors. Once the instruction was read, trustees were given two pairs of envelopes. A green envelope contained the tripled amount, and a blue envelope that was empty. After they had made their decision, enumerators brought back the blue envelope to the principal researchers who counted and recorded the amount sent back by the trustees. The trustors were then contacted again, and received the money the trustee had sent.

3. Results

We begin with presenting the results from the trust experiment followed by the stated trust, then we compare experimental results and stated trust including generalized trust.

3.1 The institutional trust experiment

In total we have 258 trustors deciding how much of their endowment to send to the trustee. Descriptive statistics of the amounts sent are presented in Table 3.

¹⁰ However, it is possible that more than one employee of a given local branch of the institution would be selected as a trustee if in the first stage there have been more than one draws of trustors served by the given branch.

¹¹ In practice, this only happened in a few instances, about 2% of the cases.

Table 3. Average amount sent by trustee category (N=258).

Trustee category	Mean amount sent	Std. dev.	Proportion of trustors sending zero	Mean amount sent conditional on sending non-zero
A resident of Addis Ababa	45.74	28.35	0.078	49.58
Entrepreneur in the same district	45.66	28.79	0.105	51.00
Entrepreneurship dev. agency employee	43.53	28.38	0.132	50.13
District administration employee	35.54	27.55	0.178	43.25
Tax authority employee	34.57	30.70	0.213	43.94
Electric Utility employee	32.05	28.27	0.225	41.35

There are clear differences when it comes to the amount sent to the different trustee categories. Only 9 percent of our sample sends the same amount to all the trustee categories. Trustor sends considerably more to a random person in the city and an entrepreneur, than to any of the four other institutions. Among the institutions, the highest amount is sent to an employee at the entrepreneurship development agency. This is perhaps not surprising since the main task for them is to support the entrepreneurs. In addition, the amount sent to an employee at the electric utility is around 30 percent lower than the amount sent to a random person in the city. In a more detailed analysis of the amount sent, we split on proportion sent zero and amount sent conditional on sending a non-zero amount. The proportion of trustors sending zero to the trustee categories ranges from 0.078 for random person to 0.225 to electric utility, while conditional amount sent ranges from 51% for entrepreneur in the same district to 41.35% of endowment to electric utility employee. Interestingly, in both of these cases district administration employee, tax authority employee and electric utility employee are both less likely to receive any amount as well as conditional on receiving money they receive less compared to the other three trustee categories.

In Table 4, we provide a more detailed comparison of the amounts sent to the six different categories, and a statistical test of the differences.

Table 4. Differences in amounts sent between trustee categories (p-values of Wilcoxon signed-rank test in parentheses) (N=258).

	Entrepreneur in the district	Entrepreneurship dev. agency	District (Woreda)	Tax authority	Electric utility
A resident of Addis Ababa	0.08 (0.707)	2.21 (0.471)	10.20 (<0.001)	11.17 (<0.001)	13.69 (<0.001)
Entrepreneur in the same district		2.13 (0.247)	10.12 (<0.001)	11.09 (<0.001)	13.61 (<0.001)
Entrepreneurship dev. agency			7.99 (<0.001)	8.96 (<0.001)	11.48 (<0.001)
District administration				0.97 (0.727)	3.49 (0.135)
Tax authority					2.52 (0.035)

Pairwise comparisons of amounts sent to different categories shows that the amount sent are statistically significantly different for most of the combinations (10 out of 15 cases). The largest difference are when we compare the amounts sent to our benchmark groups (random person/entrepreneur) and the institutions. The differences are also statistically significant when we compare the amount sent for the entrepreneurship development agency with the three other institutions: the amount of money sent to the development agency is consistently higher. Among the remaining three institutions, the amount sent to an employee of the tax authority is statistically significantly higher than the amount sent to an employee at the electric utility. Overall, what we find is that that micro, small and medium enterprise owners appear to have less trust in government institutions with whom they have a frequent and direct working relationship.

Next, we investigate determinants of the amounts sent to the four different institutions and the regression results are shown in Table 5. We pool the observations for the four different institutions and include a number of characteristics describing the institutions, and a number of characteristics describing the trustor. In the first model, we only include dummy variables for the different institutions (with the entrepreneurship development agency as the base group), and in the second model we include institutional and trustor characteristics.

Table 5. Determinants of amount sent in the trust game.

	(1)	(2)
<i>Institutional dummies (Base group= Entrepreneurship development agency)</i>		
Tax authority	-9.131 (4.24)***	-10.674 (1.90)*
Electricity utility	-12.488 (6.27)***	-12.300 (3.19)***
District administration	-8.581 (4.47)***	-2.144 (0.51)
<i>Institutional characteristics</i>		
Average Salary ('000 Birr)		2.183 (1.65)*
Average age		0.266 (0.70)
Proportion of males		7.151 (0.95)
Proportion of employees with Diploma and above		2.313 (0.26)
<i>Trustor characteristics</i>		
Age (in years)		0.309 (1.85)*
At least college diploma		0.467 (0.14)
Male		-4.888 (1.39)
Married		4.588 (1.43)
Risk preference		0.867 (1.99)**
Business experience		-0.158 (0.60)
Total no. of employees		0.120 (0.79)
Industry Zone Location		7.837 (2.33)**
Monthly revenue (in 1000 Birr)		-0.015 (0.99)
More than one owner		-7.739 (2.27)**
<i>Religion dummies (Base group=Orthodox Christian)</i>		
Muslim		1.948 (0.33)
Protestant		4.870 (1.11)
<i>Ethnicity dummies (Base group=Tigray)</i>		
Amhara (1=if ethnically Amhara)		7.330 (1.69)*
Oromo (1=if ethnically Oromo)		9.267 (1.79)*
Guraghe (1=if ethnically Guraghe)		1.494 (0.30)
Other ethnic groups		2.518 (0.38)
Constant	44.41 (21.00)***	-1.014 (0.05)
R ²	0.024	0.104
Adjusted R ²	0.021	0.081
Number of observations	911	911

The dependent variable is amount of money sent to each of the trustee in the trust game. Standard errors are clustered at a trustor level.
*, **, *** denote significance at 10, 5 and 1 percent levels.

Naturally, model 1 confirms the descriptive statistics, where in particular lower amounts of money are sent to the tax authority and the electric utility compared with the amount sent to the entrepreneur development agency. Only one of the institutional characteristics is statistically significant: trustors send more to the trustee when the average salary is higher. Thus, institutions with employees with a higher socioeconomic status are more trusted. Among the trustor characteristics, only a few are statistically significant at the 5% level. If the business is located in an industry zone and if there is only one owner, then the amount sent is higher. Trustors who identify themselves as more risk taking send more to the trustee, and similarly, older trustors send more. Furthermore, the ethnicity of trustors also affects institutional trust though this is only statically significant at 10% level. Trustors who are ethnic Amharas and Oromos (the two largest ethnic groups in Ethiopia) appear to have higher trust in the institutions compared to others.

3.2 Stated trust

Table 6 shows the level of stated trust for the six different groups of trustees. Do note that for the four institutions we asked two questions, one specific about employees at the institution, and one about the institution as such. This was also asked for micro, small and medium sized enterprises in general as well, since the individual question concerned an owner or manager or the business entity itself. The second question is not used in our analysis.

Table 6. Stated trust in institutions: trust in employee working the institution and the institution in general.

Trustee category	Obs.	Employee		Institutions		Sig-rank
		Mean	Std. Dev.	Mean	Std. Dev.	p-values
A resident of Addis Ababa	235	5.41	2.08	n/a	n/a	n/a
Entrepreneur in the district	235	5.51	2.11	5.47	2.32	0.330
Entrepreneurship dev. agency	235	5.53	2.41	5.86	2.69	0.004
District administration	235	5.18	2.38	5.24	2.73	0.239
Tax authority	235	4.98	2.27	5.40	2.62	0.001
Electric Utility	235	4.56	2.29	4.90	2.71	0.034

We begin with comparing the stated trust in the employee and in the institution. The correlation coefficients are between 0.64 and 0.67. Thus, there is a substantial degree of correlation, although far from perfect. In general, the stated trust levels are higher when subjects are asked about the

institution as such compared with when asked about the employees. Furthermore, the variation in stated trust shows the same pattern as the variation in transferred amount in the trust game in the sense that the trust is higher for a random person in Addis Ababa and an entrepreneur in the district while it is the lowest for the electric utility.

Next, we investigate the determinants of stated institutional trust in the same manner as we investigated determinants of amounts sent in the trust game as shown in Table 5. Again, we pool the responses for the four institutions. We use stated trust in the institution, results are similar if we use stated trust in the employee. Results are presented in Table 7.

Table 7: Determinants of stated trust in institutions.

<i>Institutional dummies (Base group= Entrepreneurship development agency)</i>	(1)	(2)
Tax Authority	-0.530 (2.61)***	-0.365 (0.65)
Electric Utility	-1.097 (5.17)***	-0.831 (2.00)**
District Administration	-0.706 (3.44)***	-0.717 (1.68)*
<i>Institutional characteristics</i>		
Average Salary (in 1000 Birr)		-0.031 (0.27)
Average age		-0.029 (0.85)
Proportion of males		-0.159 (0.23)
Proportion of employees with Diploma and above		0.084 (0.09)
<i>Truster characteristics</i>		
Age (in years)		-0.023 (1.25)
At least college diploma		-0.280 (0.95)
Male		-0.617 (1.87)*
Married		-0.355 (1.16)
Risk preference		0.073 (1.62)
Business experience		0.043 (1.67)*
Total no. of employees		0.003 (0.24)
Industry Zone Location		-0.260 (0.85)
Monthly revenue (in 1000 Birr)		-0.002 (1.45)
More than one owner		0.130 (0.40)
<i>Religion dummies (Base group=Orthodox Christian)</i>		
Muslim		0.296 (0.58)
Protestant		-0.171 (0.55)
<i>Ethnicity dummies (Base group=Tigray)</i>		
Amhara (1=if ethnically Amhara)		0.298 (0.69)
Oromo (1=if ethnically Oromo)		1.194 (2.36)**
Guraghe (1=if ethnically Guraghe)		0.941 (1.91)*
Other ethnic groups		0.101 (0.18)
Constant	5.985 (31.70)***	7.681 (4.11)***
R ²	0.021	0.085
AdjustedR ²	0.018	0.059
Number of observations	835	835

None of the institutional characteristics are statistically significant. Stated trust is in the electric utility and the district administration is statistically significantly lower than the stated trust in the development agency.

3.3. Comparison of trust game and stated trust

Let us now in more detail compare trust game with stated trust. To begin with, we report correlation coefficients for both stated trust measures and this is shown in Table 8.

Table 8. Correlation between amounts sent in the trust game and stated measures of trust.

Institution	Trust in the game and stated trust in institutions		Trust in the game and stated trust in the employees of the institutions		Trust in the game and generalized trust	
	Correlation	P-value	Correlation	P-value	Correlation	P-value
Entrepreneurship dev. agency	0.21	0.001	0.22	<0.001	0.11	0.103
District administration	0.27	<0.001	0.32	0.005	0.17	0.009
Tax authority	0.23	<0.001	0.19	0.002	0.14	0.029
Electric Utility	0.37	<0.001	0.42	<0.001	0.17	0.008

The correlation coefficients between stated trust (for both the institution and employees) and amount sent in the trust game, which ranges between 0.19 and 0.42, is considerably smaller than the correlations between the two stated trust measures, which we found to range from 0.64 to 0.67. At the same time, they are all statistically significantly different from zero. Remember that squaring the correlation coefficient yields the variance explained, i.e. a correlation coefficient of 0.42 means that almost 18% of the variance is explained. If we compare these correlation coefficients with what has been reported in the literature regarding generalized trust and trust games, the correlations found here are still rather large. For example Johansson-Stenman *et al.* (2013) found a correlation coefficient of 0.13 comparing the proportion sent in a trust game and stated trust among Bangladesh subjects. Table 8 also shows that the correlation between generalized trust and trust in the experiment is considerably lower. It is almost half of the correlation between the specific stated trust question and trust in the experiment.

In order to explore this further, we next report the average amount sent in the trust game for different levels of stated trust. Figure 1 shows in more detail the relationship between the average amounts sent and stated level of trust. For example, for the electric utility the average amount sent is 16 birr for the lowest level of trust, and 46 birr for the highest level of trust.

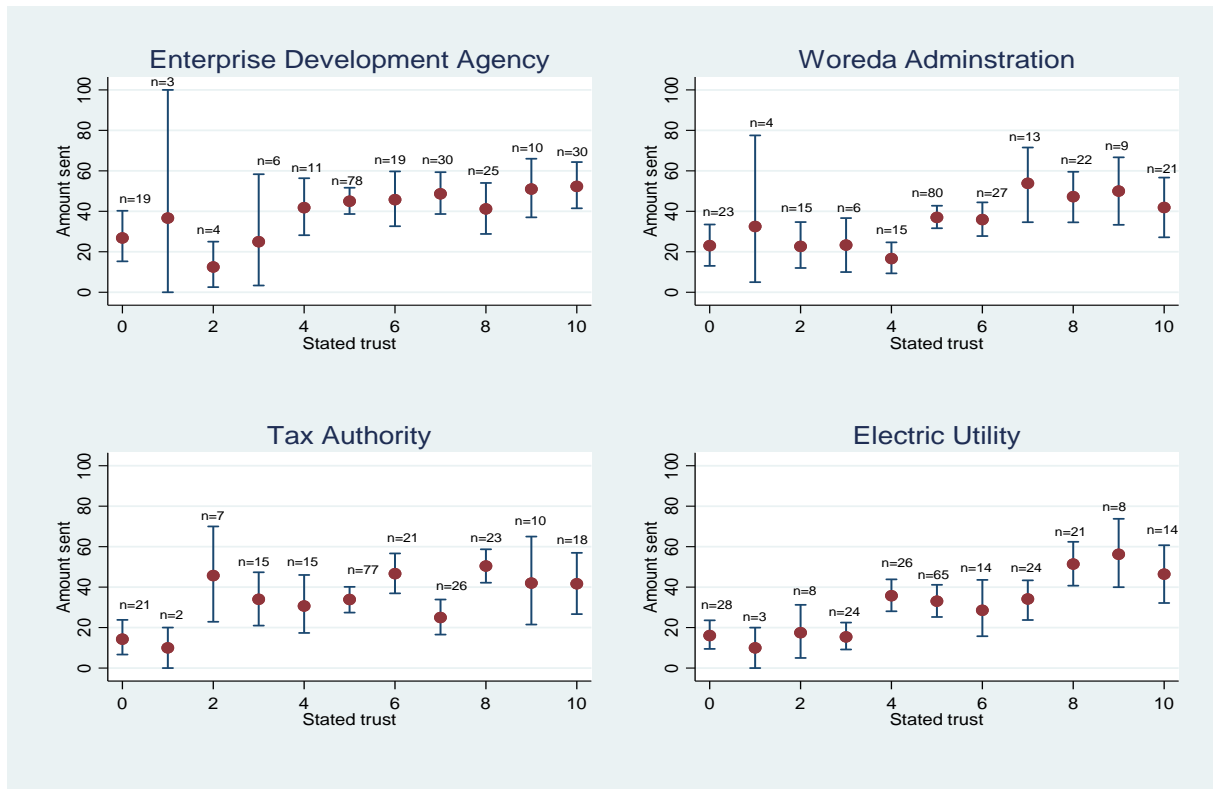


Figure 1. Mean amount sent in the experiment for each stated trust level; 95 percent confidence interval using 1000 bootstraps and the percentile method.

Finally, in Table 9 we now include the stated trust measures in the regression models with the amount sent in the institutional trust game as dependent variable. In the first column we report the results of model 3 from Table 7, but with a smaller sample since we exclude subjects that did not answer all stated trust questions.¹²

¹² For a majority of the cases this is because they replied “do not know”, one trustor refused to answer the questions though.

Table 9. Determinants of amount sent in the trust game, including stated trust as explanatory variables.

	(1)	(2)	(3)	(4)
Institutional dummies(Base group=Entrepreneurship dev. agency)				
Tax Authority	-7.955 (1.36)	-9.797 (1.24)	-8.283 (1.04)	-8.836 (1.55)
Electricity Utility	-11.966 (2.93)***	-16.840 (2.67)***	-16.087 (2.59)**	-11.787 (2.90)***
District (Woreda) Administration	-2.045 (0.47)	-6.789 (1.06)	-5.462 (0.87)	-2.591 (0.61)
Stated trust				
Stated trust tax authority		2.675 (3.67)***	2.764 (3.80)***	
Stated trust district admin.		3.591 (4.91)***	3.554 (4.86)***	
Stated trust electric utility		3.833 (6.19)***	3.826 (6.01)***	
Stated trust Entrep. dev. agency		2.495 (3.09)***	2.600 (3.28)***	
Generalized trust				1.882 (2.84)***
Trustor Characteristics				
Average Salary (in 1000 Birr)	1.478 (1.03)	1.896 (1.40)	1.586 (1.16)	1.575 (1.12)
Average age	0.123 (0.30)	0.227 (0.57)	0.214 (0.54)	0.055 (0.14)
Proportion of males	10.131 (1.28)	7.298 (0.95)	10.243 (1.33)	8.583 (1.11)
Prop. employees with diploma	3.065 (0.32)	1.184 (0.13)	2.238 (0.24)	1.210 (0.13)
Senders characteristics				
Age (in years)	0.302 (1.71)*	0.361 (2.07)**	0.372 (2.17)**	0.286 (1.63)
At least college diploma	0.128 (0.04)	0.222 (0.06)	0.861 (0.26)	1.326 (0.39)
Male	-4.279 (1.16)	-3.356 (1.03)	-2.463 (0.73)	-2.981 (0.84)
Married	5.296 (1.56)	6.494 (1.91)*	6.358 (1.92)*	4.067 (1.23)
Risk preference	0.806 (1.70)*	0.473 (1.04)	0.559 (1.26)	0.384 (0.79)
Business experience	-0.100 (0.34)	-0.183 (0.68)	-0.241 (0.86)	-0.153 (0.54)
Total no. of employees	0.105 (0.64)	0.089 (0.54)	0.106 (0.65)	0.172 (0.99)
Industry Zone Location	6.902 (2.00)**	7.757 (2.49)**	7.693 (2.47)**	8.775 (2.56)**
Monthly revenue (in 1000 Birr)	-0.014 (0.67)	-0.006 (0.28)	-0.008 (0.41)	-0.013 (0.65)
More than one owner	-8.224 (2.33)**	-7.382 (2.41)**	-8.668 (2.64)***	-8.783 (2.55)**
Religion dummies (Base group=Orthodox Christian)				
Muslim	2.529 (0.41)	-0.012 (0.00)	1.450 (0.25)	1.073 (0.17)
Protestant	3.399	4.376	3.842	1.998

	(0.68)	(0.91)	(0.78)	(0.39)
Ethnicity dummies (Base group=Tigray)				
Amhara (1=if ethnically Amhara)	6.806 (1.40)		5.526 (1.21)	8.227 (1.80)*
Oromo (1=if ethnically Oromo)	7.968 (1.40)		3.873 (0.71)	9.293 (1.75)*
Guraghe (1=if ethnically Guraghe)	0.768 (0.11)		-3.503 (0.67)	1.321 (0.26)
Other ethnic groups	-0.272 (0.05)		0.221 (0.03)	5.133 (0.73)
Constant	5.163 (0.26)	-9.783 (0.50)	-14.440 (0.74)	1.721 (0.09)
R ²	0.103	0.171	0.183	0.125
Adjusted R ²	0.077	0.148	0.156	0.099
Number of observations	835	835	835	835

Note. Dependent variable: amount of money sent for each trustee in the trust game. Standard errors are clustered at the trustor level. *, **, *** denote significance at 10, 5 and 1 percent levels respectively.

Let us begin with comparing models 1 and 3 in Table 9. In model 3, we add the stated trust measures, and all four stated trust measures are statistically significant.¹³ Including stated trust results in an increase in the adjusted R² from 0.077 to 0.156, thus almost exactly a doubling of the predictive power of the model. Excluding other explanatory variables, i.e., model 2, does not affect the statistical significance or magnitudes of the stated trust coefficients to any large extent. Thus, there is consistent positive relationship between stated trust and behavior in the trust game. There is, however, some variation between institutions. We find the strongest correlation between the trust game and stated trust for the electric utility, and the lowest for the entrepreneurship development agency.

Finally, we investigate the correlation between behaviors in the trust game with the generalized measure of trust. In model 4, we estimate a model where we instead of stated trust in institutions include the generalized trust response. The coefficient for generalized trust is positive and statistically significantly. However, the coefficient is smaller than the corresponding ones for the institutional stated trust, again indicating that the relationship between generalized trust and behavior in the institutional trust game is weaker. Including generalized trust results in an increase in the adjusted R² from 0.077 to 0.099, which is also considerably smaller increase than when including stated trust in institutions.

¹³ We conduct a joint significance test of the stated measures and we reject the null-hypothesis that they are jointly different from zero by using a F-test (p-value<0.001)

4. Conclusions

Trust has traditionally been investigated and measured by using generalized trust questions or trust games with a focus on interpersonal trust and economic growth, i.e., bonding or bridging trust. The objective of this paper is to contribute to the trust literature on measurement of linking trust. We measure trust in institutions by using both a novel institutional trust experiment and stated trust questions. We use entrepreneurs as the trustors and different types of institutions with which they frequently interact with as trustees. We conducted our study in Addis Ababa, Ethiopia, which is currently experiencing a rapid economic growth where important actors for the growth are entrepreneurs.

Overall, we find a low level of trust towards institutions. As these are institutions that provide services that are important for the survival and growth of firms, the low level of trust imply these working relationships could be ineffective. In particular, firms could be suspicious to policies and technologies introduced by these institutions. Moreover, they might also be reluctant to deliver on their civic and economic responsibilities such as tax compliance, environmental protection in light of these low trust levels they held about the institutions.

Moreover, we find that entrepreneurs have different levels of trust in different institutions, where trust in our sample was lowest for the Electric Utility and the Tax Authority. This finding per se indicates it is important to measure institutional specific trust. Our results show that stated trust in a specific institution and the amount sent to the same institution in the experiment is positively correlated, and statistically significant. On the other hand, generalized trust or trust measured as amount sent to a random individual is only weakly correlated with institutional trust, although the correlation is still positive and statistically significant. These findings have important implications on how to elicit trust, both for stated trust and trust games, and the take home message is that in both cases however trust should be domain specific. How much trust varies between domains and what can be considered to be one domain of trust is an important topic that we trust future research to analyze in more detail.

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