Dissecting an Investment Game: Evidence From a Field Experiment in Rural Cameroon

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Abstract

Trust plays a key role in promoting cooperation, exchanges, and interactions among individuals; therefore it is believed to foster economic development. Sender's behavior in the "investment game" (Berg et al. 1995) is widely employed to measure trust among individuals, but recent literature questioned its accuracy. We played the "investment game" with 3320 households from 200 rural villages in Cameroon. Using a triadic design, we measure participants' altruism, distributional preferences, and expectations of trustworthiness. We manipulate social pressure by randomly assigning participants to two treatments with different secrecy levels, and measure the effect of social norms on behavior in investment game. Finally, we test whether senders behavior only measures a belief in someone else's trustworthiness (i.e. trust), and whether trustworthiness in turn is only based on reciprocity. Controlling for risk preferences and other demographics, we find that senders' behavior measures mostly trust, but it is not an accurate measure of trust.

Keywords: Trust, trustworthiness, reciprocity, social preferences, institutions, Sub-Saharan Africa

JEL codes: C90, D2, D3

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1. Introduction

Trust plays a paramount role in daily life and in most human interactions. For this reason, trust has received much attention by scholars from different disciplines, ranging from evolutionary biology to sociology, and from political sciences to economics . Kenneth Arrow was among the first economists to acknowledge the importance of trust in lowering transaction costs, and enhancing production by the derived higher efficiency (Arrow, 1974). In the last couple of decades, economists have found that trust, and particularly levels of trust, play an important role in economic growth (Knack & Keefer, 1997), and other phenomena affecting economic growth like investment levels (Zak & Knack, 2001), firm size (Bloom, Sadun, & Van Reenen, 2012; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1997), cooperation (Gächter, Herrmann, & Thöni, 2004), financial development (Guiso, Sapienza, & Zingales, 2004, 2008), and management of common resources (Bouma, Bulte, & Van Soest, 2008), among others. Most studies on trust, however, have focused on the correlation between levels of trust and other occurrences (often exogenously induced), without really addressing via which channels trust operates or develops. These studies have used either answers to the World Value Survey (WVS) question "Generally speaking, would you say that most people can be trusted or that you cannot be too careful?" or the amount of money sent by first movers in the investment game (or trust game) developed by Berg et al. (1995) as a measure of trust. Few studies address the questions of what it is the VWS question or the trust game measure, or how trust operates. Notable examples for our study include Cox (2004), who uses a triadic design to disentangle trusting and reciprocating behavior from other regarding preferences; Ashraf et al. (2006), who ran investment- and dictator games using a within subject design to study what motivates people to be trusting or trustworthy in three different countries; Johansson-Stenman et al. (2013), who combine survey questions with behavior observed in an investment game to explain motivation behind such behavior; Sapienza et al. (2013), who use a combination of games and a within subject design to explain behavior in the investment game. With the exception of Johansson-Stenman (2013), all these studies take place in western/developed countries, using university students as subject poll. If trust is really important for development, however, then it would be more beneficial to study trust where

development is most needed; namely in Less Developed Countries (LDCs) , and in particular the rural areas of those countries. Surprisingly, there is only a relatively small number of studies focusing on trust in LDCs, and these studies focus mostly on the quantification of trust and its relationship with other observed phenomena that could have been affected by levels of trust, or that affected levels of trust, rather than understanding via which channels trust operates and develops. Understanding how trust operates or how it can develop can be of primary importance for policy. In fact, if policy makers wish to promote increased levels of trust, then they first need to know what determines and underlies trust. Trust has been typically assumed to be a belief, based on the expected probability an individual A places on another individual B performing an action that is beneficial for individual A. When A values this probability of B performing an action beneficial to A high enough to engage in some cooperation with B, then we say that individual A trusts individual B (Gambetta, 2000). Based on this definition, we can say that trust is purely an expectation of trustworthiness, and this seems to be the shared view in many disciplines (Cook, Hardin, & Levi, 2007; Gambetta, 2000; Rotter, 1980; Yamagishi & Yamagishi, 1994). Therefore, the behavior of first movers in the investment game proposed by Berg et al. (1995) should only depend on first mover's expectations about the amount returned by the second movers. Trustworthiness, on the other hand, is considered to be reciprocity, and reciprocity consists of rewarding kind actions with kindness, and punishing unkind actions with unkindness (Falk & Fischbacher, 2006). In an investment game, trustworthiness is measured as the amount of money second movers, return to first movers. Such amounts should only depend on how much second movers receive from first movers. These views have recently been challenged by several authors who have shown that only a small fraction of the money sent by first movers, and returned by second movers, are due to expectations of trustworthiness or reciprocity. Recent studies show that first mover's behavior in trust games also depends on individual risk preferences (Karlan, 2005; Sapienza et al., 2013; Schechter, 2007), and other-regarding preferences (Dufwenberg & Gneezy 2000; Cox 2004; Ashraf et al. 2006; Sapienza et al. 2013).

Most of the aforementioned evidence is gathered through conducting experiments in a university lab with university students as a subject poll. Exceptions are Karlan (2005) and Schechter (2007), who conducted field experiments in Peru and Paraguay, respectively. Their studies, however, focus on whether behavioral trust games can predict loan repayment, and whether behavior in a risk game predicts behavior in an investment game respectively.

We add to the existing literature on the motivations for trusting and trustworthy behavior by studying the dynamics of trust with a subject pool that is representative for households living in rural Cameroon. A characteristic feature of this subject pool is that trusting behavior is not only guided by expectations of reciprocity, unconditional kindness and trustworthiness, but also to a large extent by the amount of social pressure to share resources. This type of pressure has been aptly described by Evans-Pritchard (1960) studying the Nuer (an ethnic group living in Southern Sudan), who noted that non-assistance could be perceived as murder. Wolf Jr. (1955) has similar findings in his study among Asian families. Because of this forced solidarity, people are often pressured to put up with risks or get involved in situations they would prefer to avoid had they the opportunity to keep this decision a secret. Kinship is just one type of social or peer pressure that can be encountered in real life situations, especially in LDCs.

Using behavior observed during the sequence of games described in the next section, and a random treatment imposing exogenous variation on the level of payoff secrecy, we measure to what extent trusting and trustworthy behavior are motivated by beliefs (reciprocity), other regarding preferences (unconditional kindness and distributional preferences), and the environment in which decisions are made (social pressure). This will allow for better understanding as to what really motivates people to engage in trust interactions. Given the vast body of literature linking trust to efficiency, growth, social capital, cooperation, and coordination (Ashraf et al., 2006; Fukuyama, 1996; Knack & Keefer, 1997; Kramer & Tyler, 1996; La Porta et al., 1997; Putnam, 2000; Sapienza et al., 2013; Slemrod & Katuščák, 2005; Zak & Knack, 2001), a better understanding of what motivates people to trust one another can be of extraordinary importance for policy. In fact, only by providing a good measure of trust in LCDs and understanding via which channels it develops or affects growth can good policy recommendations be provided and good policy measures be put in place. For instance, as suggested by Ashraf et al. (2006), if trust is mainly a function of expected trustworthiness, then recommendations and policy measures should focus on the level of trustworthiness and on beliefs about that level. However, if trust is mainly motivated by unconditional kindness (or social pressure in our case), policy recommendations/measures should focus on fostering intrinsic rewards instead.

2. Experimental Design

Our sample consists of 3320 household heads from 199 different villages situated in the Adamawa region of Northern Cameroon. Villages were selected from the 817 enumeration areas (EAs)1 in Adamawa used for the 2005 General Population and Habitat Census ("Recensement Géneral de la Population et de l'Habitat", RGPH) provided by the Cameroonian National Institute of Statistics ("Institut National de la Statistique", INS) and the Census Bureau Center for Population Studies ("Bureau de Centre de Recensement des Etudes sur la Population", BUCREP). We employed a stratified randomization on EAs size and location (urban or rural). The research was implemented as part of a larger study on the adoption of biodigesters in rural Adamawa commissioned by the Netherlands Development Organization (SNV). For this reason, research participants consisted of those meeting eligibility criteria for the biodigester program, and randomly selected villagers.

The selected households were visited between June and July 2013 for a baseline consisting of a household questionnaire. Three months later we visited the same households to gather information on households' risk preferences, social preferences, distributive preferences and trust in others, as well as trust in village institutions. Households were visited at their homes. In the Adamawa region of Cameroon, households are mostly male headed (92% of our sample). The heads of the households were invited to participate in the research activity. After some general information on the household was collected, the household head was invited to play several games, after which a short survey was carried out. Since many participants are illiterate, all explanations of the games were conducted orally by enumeration staff. Before each game, participants were reminded that they would only be paid for one of the games they were about to play, and that the game they were to be paid for would be determined by draw at the end of our stay at the village. They were told that their choices would always remain anonymous. However, one half (randomly determined) were told that we could not guarantee the secrecy of their earnings, while the other half was reminded that their earnings would remain a secret. If this was understood, the game would be simulated to ensure comprehension. Participants understood that this was a simulation, and that they would later play the same game for real money.

[1] Each enumeration area contains between 200 and 250 households and therefore can be bigger or smaller than a village.

In the first game played with the household, head risk preferences were elicited and measured following the procedure proposed by Holt and Laury (2002), where subjects were presented with a set of ten paired lotteries in Table 1: Risk game lotteries. XAF stands for the CFA franc, the currency used in Cameroon.. Preferences of the head were collected (the husband is always considered the head of the household in Adamawa), and if applicable his wife or, in the case of a polygamous household, one of his wives make a joint decision with the husband. The wives were always interviewed by female enumerators to conform to local customs.

>>>Table 1 About Here<<<

After the risk game subjects played additional games to measure trust and its constituent components (other regarding preferences, trust and trustworthiness): a standard Triple Dictator Game (TDG), a Reverse Triple Dictator Game (rTDG) and an Investment Game (IG).

During the TDG, all heads of the household played the role of the dictator. Here, participants were endowed with 10 experimental tokens, each worth 100 XAF. Participants were then asked to allocate a fixed endowment $\mathbf{E}^{\mathbf{TDG}}$ between himself and another recipient from the village who did not receive any endowment. Each token sent to the recipient $\mathbf{X}^{\mathbf{TDG}}$ was then tripled by the experimenter. Therefore, the dictator's payoff would correspond to $\mathbf{E}^{\mathbf{TDG}}\mathbf{-X}^{\mathbf{TDG}}$, and the recipient's payoff would be equal to $\mathbf{3X}^{\mathbf{TDG}}$. All responses were recorded in double copy. One copy was called version A and the other copy was called version B. Respondents were informed that based on random drawing, they could either be the dictator or the recipient. In case respondents were dictators, their payoff would be determined by the amount they sent during the TDG ($\mathbf{E}^{\mathbf{TDG}}\mathbf{-X}^{\mathbf{TDG}}$). If they were recipients, they had to draw an envelope containing the responses from another participant registered in version B; here the payoff would correspond to the triple the amount sent by the other participant as indicated in version B.

In the rTDG, respondents were shown, one at a time, the ten possible outcomes of the TDG where the dictator sent more than zero. Respondents are informed about their own experimental endowment $\mathbf{EA}^{\mathbf{rTDG}}$ (corresponding to what the receiver in the TDG would have received), and about the endowment of another recipient in the village $\mathbf{EB}^{\mathbf{rTDG}}$ (corresponding to what the sender would have kept). It is important to stress that the participant and the other recipient are endowed with these amounts and no connection is made between amounts sent and received

during the triple dictator game. Participants are asked how much of their endowment they want to share with the other recipient in the village for all the 10 situations: $\mathbf{X}^{\mathbf{rTDG}}$. Similarly to the TDG, responses were recorded in double copy, version A and version B. A random draw would determine whether the participant was a sender or receiver, as well as which of the 10 situations would be used to determine the participant's payoff. In case the participant was a sender, his payoff would correspond to his endowment $\mathbf{EA}^{\mathbf{rTDG}}$ minus the amount shared with the other recipient $\mathbf{X}^{\mathbf{rTDG}}$, for the one among ten situations drawn. In case the participant was a receiver instead, he would have to draw an envelope containing the responses from another participant registered in version B. The payoff in this case would correspond to the initial endowment $\mathbf{EB}^{\mathbf{rTDG}}$ plus the amount sent by the other participant $\mathbf{X}^{\mathbf{rTDG}}$ for the one among ten situations drawn. Unlike the TDG, endowments shared with other recipients $\mathbf{X}^{\mathbf{rTDG}}$ were not tripled by the experimenter.

After the rTDG, all participants were asked to participate in an investment game based on Berg et al. (1995), both as first movers (trustor) and as second movers (trustee). Similarly to TDG, trustors were asked to share their endowment $\mathbf{E}^{\mathbf{IG}}$ (consisting of ten experimental tokens each worth 100 XAF each) with another recipient in the village, the trustee. The amount sent by the trustor $\mathbf{X}^{\mathbf{IG}}$, would be tripled by the experimenter and the trustee would receive $3\mathbf{X}^{\mathbf{IG}}$. The trustee could then return any amount of money $\mathbf{Y}^{\mathbf{IG}}$ between 0 and $3\mathbf{X}^{\mathbf{IG}}$ to the trustor. After indicating how much money they would send to the trustee, participants were asked to indicate how much they expected back, and then they would participate in the game as trustees. Similar to Ashraf et al. (2006), we used the strategy method where second movers had to decide on a contingent action for every possible amount sent by the first mover. Similarly to the TDG and rTDG, responses from the participants were recorded in double copy (version A and version B), and a random drawn would determine whether participants were trustors or trustees. In either case, participants had to draw an envelope containing version B with the responses of another participant. In case the participant was a trustor, his payoff would be determined by subtracting the amount sent $\mathbf{X}^{\mathbf{IG}}$ from his endowment $\mathbf{E}^{\mathbf{IG}}$, and adding the amount returned by the trustee for the corresponding situation $\mathbf{Y}^{\mathbf{IG}}$(recorded on version B from drawn envelope). In case the participant was a trustee instead, his payoff would be determined by three times the amount sent by another trustor in the village and recorded on version B in the drawn envelope, minus the

amount the trustee returns for the corresponding situation. Therefore the payoff for trustor corresponds to $\mathbf{E^{IG}}$-$\mathbf{X^{IG}}$+$\mathbf{Y^{IG}}$, and the payoff of the trustee corresponds to 3$\mathbf{X^{IG}}$-$\mathbf{Y^{IG}}$.

Games were followed by a light survey on households' perceptions on general topics like gender issues and religion, and two experimental auctions involving pico-solar lamps and biodigesters.

At the end of our visit to the village (one to three days after the completion of the session), respondents were asked to meet us in a common space (normally a public building with the possibility to have a space with privacy for payments), where they were paid randomly, and therefore subjects did not know the results of the experiment. In neither the public nor the private treatment were earnings actually revealed.

3. Conceptual framework

To explain what motivates people to engage in trusting or trustworthy behavior, we need to disentangle the different mechanisms underlying such behaviors. Following previous literature (Ashraf et al., 2006), we use the amount sent in the investment game $\mathbf{X^{IG}}$ as our measure of trust, and the amount returned in the same game $\mathbf{Y^{IG}}$, divided by the amount received $\mathbf{3X^{IG}}$ ($\mathbf{Y^{IG}}$/$\mathbf{3X^{IG}}$) as our measure of trustworthiness. We use the fraction of money trustors expected in return E($\mathbf{Y^{IG}}$/$\mathbf{3X^{IG}}$), as trustors' expectation on trustees' levels of trustworthiness. Pure altruism is measured as the amount shared during the Triple Dictator Game $\mathbf{X^{TDG}}$, and distributional preferences are measured as the amount shared during the Reverse Triple Dictator Game $\mathbf{X^{rTDG}}$. Our proxy for social pressure consists of a treatment dummy (**PUBL**) taking value 1 for the treatment "Public" and value 0 for treatment "Private".

We estimate the following equations:

$$X^{IG} = \alpha + \beta_1^* E\left(Y^{IG}/3X^{IG}\right) + \beta_2^* X^{TDG} + \beta_3^* PUBL + \beta_4^* Controls \quad (1)$$

$$Y^{IG}/3X^{IG} = \alpha + \beta_1^* 3X^{IG} + \beta_2^* X^{TDG} + \beta_3^* X^{rTDG} + \beta_4^* PUBL + \beta_5^* Controls \quad (2)$$

Following Ashraf et al. (2006), we test the following hypotheses for Eq.1:

H1: Trust is only based on unconditional expectations of trustworthiness.

We accept H1 if our trust indicator $\mathbf{X^{IG}}$ is related to the amount trustors expect trustees to return $\mathbf{E(Y^{IG}/3X^{IG})}$, but not to our indicator of pure altruism $\mathbf{X^{TDG}}$ or the level of social pressure (**PUBL**).

H2: Trust is only based on unconditional kindness

We accept H2 if $\mathbf{X^{IG}}$ is related to the amount sent during the Triple Dictator Game ($\mathbf{X^{TDG}}$), but not to the amount trustors expect in return from trustees $\mathbf{E(Y^{IG}/3X^{IG})}$, or the level of social pressure (**PUBL**).

H3: Trusting behavior is not affected by social pressure

We reject H3 if $\mathbf{X^{IG}}$ or $\mathbf{Y/3X^{IG}}$ are not related to our treatment dummy **PUBLIC**. This would indicate that Investment Games played outside of a lab setting would be "contaminated" by the social realities in the field.

H4: Trustworthiness is only based on reciprocity

H4 is confirmed when the amount returned during the investment game $\mathbf{Y^{IG}/3X^{IG}}$ is related to the amount received $\mathbf{3X^{IG}}$, but it is not related to the amount sent in the Triple Dictator Game $\mathbf{X^{TDG}}$ or the treatment dummy **PUBLIC**.

H5: Trustworthiness is only based on conditional kindness

This hypothesis is supported if $\mathbf{Y^{IG}/3X^{IG}}$ is strongly related to the amount sent in the Triple Dictator Game $\mathbf{X^{TDG}}$, but not to the amount received in the investment game $\mathbf{3X^{IG}}$ or the treatment dummy **PUBL**.

In addition, we control for respondents distributional preferences by the mean of the amount sent during the Reverse Triple Dictator Game ($\mathbf{X^{rTDG}}$), as well as heterogeneity in subjects' characteristics and village characteristics.

4. Experimental Results

This section will briefly discuss some descriptive statistics related to the outcomes of our experimental games, before moving on to a more detailed analysis of the data in light of the hypotheses described above.

4.1 Descriptive Statistics

When asked to participate in the TDG (without any expectations of reciprocity) participants on average offer 3.44 of their 10 tokens to their counterpart. In the public treatment (*n = 1273*) the average is 3.40, while 3.47 is offered in the private treatment (*n= 1268)*. This difference is not statistically significant (p = 0.41). To see the distribution of choices over the 11 possible offers (0-10) see Figure 1.

In the rTDG, people on average send 26.1% of their endowment to their counterpart (n = 25400 as there are 10 observations per participant due to the strategy method used). In the public treatment this is 26.4% (n= 12720) compared to 25.7% (n=12680) in the private treatment. Again, this difference is not statistically significant (p = 0.119) if we cluster standard errors at the individual level. The percentage of the endowment sent to the counterpart for every possible endowment is given by Figure 2.

The essence of the Investment Game is a combination of the two previous games. On the sending side (first movers), 3.24 tokens are shared on average with the counterpart. Here the difference between public and private treatments is significant at the 10% level: in the private treatment 3.18 tokens are sent, compared to 3.30 in the public treatment. For the distribution of the responses, see Figure 3.

When asked to return tokens, the second movers on average returned 32.9% of the amount sent to them by the first movers. In the private treatment this figure is 32.70% and in the public treatment it is 33.11% which is not a significant difference (p=0.469). Figure 4 shows the average response for each possible offer.

>>>Figure 1 About Here<<<

>>>Figure 2 About Here<<<

>>>Figure 3 About Here <<<

>>>Figure 4 About Here<<<

4.2 Result 1: Is trust an expectation of trustworthiness, unconditional kindness or just a response to social pressure?

In Table 2, we present the results of a multivariate regression (Eq.1), where we control not only for expectations of return, unconditional kindness, and social pressure but also for risk preferences, participant's demographics and village characteristics, and attitudes toward trust. In order not to add further complexity to an already elaborate design, we did not control for order effects. Previous literature has found modest or no order effects at all. It should be noted that all subjects made their decisions sequentially, in the same order, and with the same information. For these reasons, we believe that ordering does not alter the robustness of our results.

Column 1 from Table 2 presents the basic model specification. At a single glance it is clear that the main determinants of trusting behavior are expectations of return and unconditional kindness. This is largely in line with the literature. We find that pure altruism is statistically highly significant, and that a unitary increase in amounts sent during the TDG ($\mathbf{X^{TDG}}$) increases the amounts sent during the investment game by 25% (i.e. 25 XAF for every 100 XAF sent in the investment game). Expectations of amounts returned by second movers in the investment game $\mathbf{E(Y/3X^{IG})}$ is statistically highly significant and it account for over 32% of the amounts sent by first movers in the investment game.

Risk, on the other hand, does not seem to play an important role. For each additional safer lottery chosen by participants, amounts sent in trust game decrease by about 0.002. This means that

subjects more adverse to risk, on average, tend to send less in the trust game. Such a result is in line with our expectations and with other literature, however, it is not statistically significant nor is it economically significant on account of the small coefficient.

The only other statistically significant contributor to sending in the trust game is the number of wives the respondent has. This is after controlling for family size, marital status, and wealth measured by an asset index.

We find no statistically significant effect of making final payments public. However, the coefficient is not negligible and the raw t-test presented above showed different behavior on average for both treatments. We therefore examine it further, in column 2 of Table 2, where we test the indicator for public treatment with the main determinants of trusting behavior: expected returns, and unconditional kindness. We find that for every token sent in the TDG, people in the public treatment send 0.1 tokens more than those in the private treatment.

To make more detailed claims we standardized all independent variables, except for indicators, in column 3. This is somewhat problematic, as we expect the standard errors to be clustered at the village level where the game is played. By standardizing we implicitly assume there to be one single distribution, thereby dropping our clustering. We feel this is justified so as to compare the relative effect sizes of the constituent components of trust. We find that expectations of returns dominate other determinants. A one standard deviation increase in expected returns increases the sent amount by one. The coefficients for unconditional kindness and social pressure are modest in comparison.

Finally, we add the responses for the reverse Triple Dictator Game, in the form of the fraction of the endowment sent to the respondent's counterpart. This changes the analysis somewhat, in so far as we have 10 responses for each respondent in the rTDG. We therefore cluster both at the village level and at the individual respondent level. The analysis shows that distributional preferences as measured by the rTDG have a significant, but small effect. Every token sent in the rTDG is correlated to an increase in the investment game sending of 0.05.

4.3 Result 2: Is trustworthiness a reward (punishment) for kind (unkind) behavior, unconditional kindness or just a response to social pressure?

In Table 3 we report results for our regression on trustworthiness (Eq. 2). In this regression, we cluster our data points on the household level and the village level. This is because for second movers in the investment game, we employed the strategy method as described above, and this results in 10 data points for each participant. Looking at our results, we are surprised to find that our explanatory variable for reciprocity (amount received by second movers in investment game $\mathbf{3X^{IG}}$) is negatively related to our dependent variable – share returned from second movers in investment game ($\mathbf{Y/3X^{IG}}$). This coefficient is statistically highly significant, and seems to be related to the normative environment. As a matter of fact, when we look at this coefficient together with our indicator for wealth of participants (measured with an asset index), we see that wealthier subjects (households with more assets) return significantly more. This could mean that when poorer trustees receive more, they may assume that their trustor is wealthier, and therefore they return less.

As expected, amount shared during the Triple Dictator Game $\mathbf{X^{TDG}}$ (our indicator for social preferences), is statistically highly significant and positively correlated with our indicator of trustworthiness.

Not surprisingly, we observe amounts shared during the Reverse Triple Dictator Game $\mathbf{X^{rTDG}}$ to be significantly and positively correlated with amounts returned by second movers during the investment game. This means that subjects' distributional preferences matter.

In line with our expectations, risk preferences appear not to matter in explaining levels of trustworthiness, and neither do village or households size, marital status or number of wives. Similarly to Glaeser et al. (2000), we find that amounts returned by trustees during the investment game are correlated with higher levels of trust in the WVS question.

To our surprise, our treatment dummy **PUBL** appears not to be statistically significant in explaining trustworthiness and neither do its interaction with social and distributional preferences. Their signs, however, are aligned with our expectations.

The age of the participant appears to be statistically significant and negatively correlated with levels of trustworthiness, reinforcing our belief that the normative environment affects behavior in the trust game. In this case, we expect that elderly people return less because they perceive the amounts received as a gift from trustors.

>>>Table 2 About Here<<<

>>>Table 3 About Here<<<

5. Discussion and Conclusions

Social capital is receiving increasing attention in economic theories and analysis, and trust is at the very core of the theory on social capital. Therefore, an increasing amount of empirical work is focusing on the role of trust in economics.

If we want to use indicators of trust to explain economic behaviors outside of the labs, however, we first need to ask ourselves whether we are really measuring trust, and if what participants outside of the lab think they are playing when they play an investment game.

These questions motivated our study, where we dissect the investment game proposed by Berg into two sub games (triple dictator game and reverse triple dictator game) meant to capture altruism and distributional preferences. In addition, we ask participants about their expectations of return on the initial endowment shared with the receiver during the investment game, and manipulate secrecy levels to create exogenous variation in social pressure. We use behavior observed in the sub games to test whether senders behavior in the investment game really only measures trust (and therefore a belief in someone else's trustworthiness), and whether trustworthiness in turn is a reciprocation of kindness with kindness, or unkindness with unkindness. We control for risk preferences and other demographics, and find that expectations on receivers' trustworthiness is most important in explaining amounts sent by first movers in the investment game. Contrary to most widespread definitions of trust, there is more than just expectations of trustworthiness behind amounts shared by first movers in investment games. In fact, the fraction of the initial endowment shared by first movers also depends on altruism, social pressure (or social norms), and distributional preferences. We find that altruistic participants

become more altruistic with higher level of exposure to social pressure, and that when exposure to social pressure is higher, participants expect less in return.

Contrary to what we expected - but in line with some of the existing literature – we find that risk preferences are irrelevant in explaining trust.

Concerning trustworthiness, we find that the more the amount received by second movers increases, the fraction returned to the senders decreases. In addition, we find that both altruism and distributional preferences matter. As expected, risk preferences do not play an important part in explaining trustworthiness. Quite surprisingly, exposure to social pressure does not help explain trustworthiness. Instead, levels of wealth, measured with an asset index, seem to explain the fraction of money returned to senders. The wealthier the participant, the more he will return. Older participants, instead, return less.

For both senders and receivers, we find that polygamous participants, tend to both send and return more (controlling for levels of wealth). We find this result quite puzzling, and we are still trying to understand the mechanisms behind it. We believe it could be the higher size of kin network derived from polygamy, but it will require further analysis.

All this evidence suggests that several factors other than just expectations of trustworthiness, or reciprocity affect the decisions of how much to share or how much to return in an investment game. Many of these factors are not observable in the lab, where the dynamics of private versus public gains, or having more or less wives would have no effect. While taking the trust game out of the lab and into the field does yield useful insight in the dynamics of trust in a real world settings, and thus this study can thus not be labeled an autopsy as the trust game is not dead, ignoring the role played by these factors in participants' motivations for sharing or returning would lead to unreliable measures of trust.

Tables and Figures

Table 1: Risk game lotteries. XAF stands for the CFA franc, the currency used in Cameroon.

Option A	Option B	Expected Payoff Difference
1/10 of 2,000 XAF, 9/10 of 1,600 XAF	1/10 of 3,850 XAF, 9/10 of 100 XAF	XAF 1170
2/10 of 2,000 XAF, 8/10 of 1,600 XAF	2/10 of 3,850 XAF, 8/10 of 100 XAF	XAF 830
3/10 of 2,000 XAF, 7/10 of 1,600 XAF	3/10 of 3,850 XAF, 7/10 of 100 XAF	XAF 500
4/10 of 2,000 XAF, 6/10 of 1,600 XAF	4/10 of 3,850 XAF, 6/10 of 100 XAF	XAF 160
5/10 of 2,000 XAF, 5/10 of 1,600 XAF	5/10 of 3,850 XAF, 5/10 of 100 XAF	XAF -180
6/10 of 2,000 XAF, 4/10 of 1,600 XAF	6/10 of 3,850 XAF, 4/10 of 100 XAF	XAF -510
7/10 of 2,000 XAF, 3/10 of 1,600 XAF	7/10 of 3,850 XAF, 3/10 of 100 XAF	XAF -850
8/10 of 2,000 XAF, 2/10 of 1,600 XAF	8/10 of 3,850 XAF, 2/10 of 100 XAF	XAF -1180
9/10 of 2,000 XAF, 1/10 of 1,600 XAF	9/10 of 3,850 XAF, 1/10 of 100 XAF	XAF -1152
10/10 of 2,000 XAF, 0/10 of 1,600 XAF	10/10 of 3,850 XAF, 0/10 of 100 XAF	XAF -1185

Figure 1: TDG

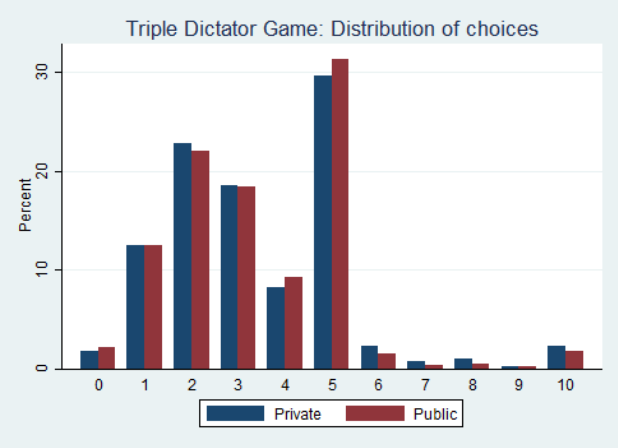

Figure 2: rTDG

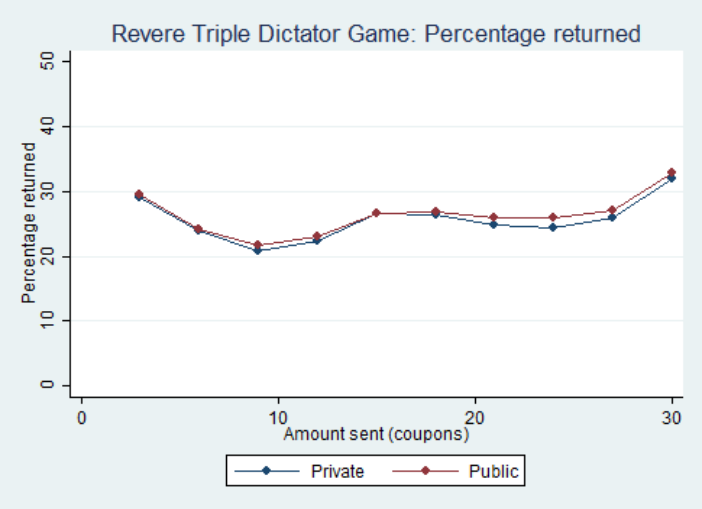

Figure 3: IG First movers

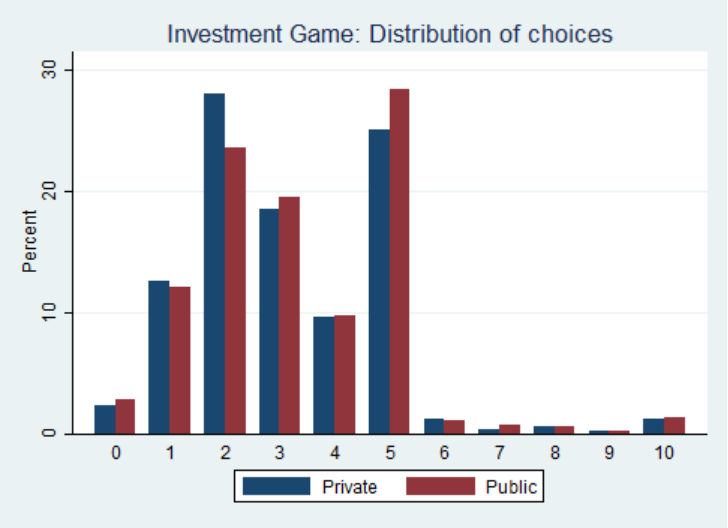

Figure 4: IG second movers

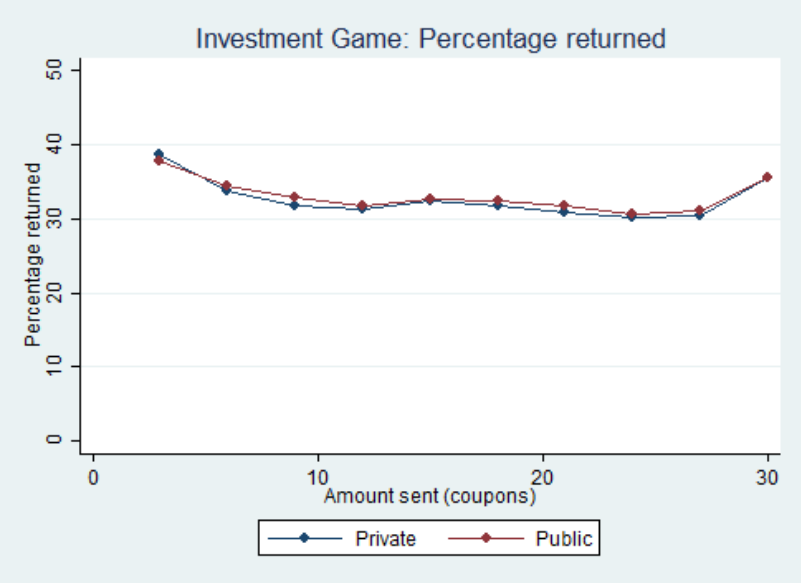

Table 2: Result from the analysis on trusting behavior

	(1) IG: Sent	(2) IG: Sent	(3) IG: Sent	(4) IG: Sent	(5) IG: Sent
RG: # safe choices	-0.00195	-0.00246	-0.00925	-0.00234	-0.00281
	(-0.25)	(-0.32)	(-0.31)	(-0.31)	(-0.37)
TDG: sent	0.247***	0.192***	0.361***	0.229***	0.178***
	(10.32)	(6.43)	(7.82)	(10.44)	(6.35)
IG: Expected Return	0.324***	0.352***	1.112***	0.316***	0.343***
	(20.50)	(16.00)	(22.31)	(20.80)	(16.49)
WVS Trust 2	0.0963	0.0974	0.0974	0.0839	0.0848
	(1.37)	(1.40)	(1.37)	(1.29)	(1.31)
WVS Trust 3	0.154	0.165	0.165	0.141	0.151
	(1.48)	(1.59)	(1.56)	(1.33)	(1.43)
WVS Trust 4	0.0390	0.0509	0.0509	0.0367	0.0478
	(0.46)	(0.59)	(0.60)	(0.45)	(0.59)
Public treatment	0.108	-0.0829	0.108	0.0994	-0.0846
	(1.74)	(-0.56)	(1.83)	(1.65)	(-0.63)
Village size	0.000172	0.000207	0.0288	0.000136	0.000167
	(0.75)	(0.95)	(0.89)	(0.67)	(0.85)
Asset Index	0.0765	0.0342	0.00441	0.0291	-0.0118
	(0.34)	(0.15)	(0.13)	(0.13)	(-0.05)
Married	-0.00124	-0.0000889	-0.0000889	-0.0162	-0.0152
	(-0.01)	(-0.00)	(-0.00)	(-0.15)	(-0.14)
# Wives	0.126*	0.126*	0.114*	0.128*	0.128*
	(2.13)	(2.16)	(2.30)	(2.10)	(2.13)
HH size	-0.00837	-0.00943	-0.0454	-0.00965	-0.0106
	(-0.90)	(-1.03)	(-1.02)	(-1.06)	(-1.18)
Age HH head	0.00284	0.00289	0.0465	0.00314	0.00319
	(1.48)	(1.53)	(1.48)	(1.63)	(1.67)
Exp. ret.*Public		-0.0464	-0.146*		-0.0462
		(-1.50)	(-2.25)		(-1.56)
TDG*Public		0.104*	0.196**		0.0969*
		(2.30)	(3.07)		(2.25)
rTDG				0.0490***	0.0463***
				(8.95)	(6.77)
rTDG*Public					0.00397
					(0.38)
Constant	0.845***	0.942***	3.128***	0.750***	0.846***
	(5.63)	(6.03)	(28.17)	(5.06)	(5.49)
Observations	1743	1743	1743	17420	17420
r2	0.512	0.515	0.515	0.523	0.526

t statistics in parentheses ,* p < 0.05, ** p < 0.01, *** p < 0.001

Table 3: Results from the analysis on trustworthy behavior in the Investment Game

	(1) IG: Returned	(2) IG: Returned
IG: Received	-0.00823***	-0.00817***
	(-26.30)	(-18.22)
TDG: sent	0.0134***	0.0118***
	(8.12)	(5.71)
rTDG: sent	0.0238***	0.0238***
	(28.20)	(21.45)
RG: # safe choices	0.0000393	0.0000300
	(0.05)	(0.04)
WVS Trust 2	0.0113	0.0114
	(1.89)	(1.89)
WVS Trust 3	0.0107	0.0111
	(1.07)	(1.11)
WVS Trust 4	0.00585	0.00627
	(0.78)	(0.83)
Village size	-0.0000226	-0.0000213
	(-1.00)	(-0.94)
HH size	0.000369	0.000330
	(0.49)	(0.44)
Asset Index	0.0554*	0.0549*
	(2.27)	(2.26)
Age HH head	-0.000453**	-0.000452**
	(-2.79)	(-2.79)
Married	0.0139	0.0139
	(1.50)	(1.49)
# Wives	0.00180	0.00192
	(0.40)	(0.42)
Received * Public		-0.0000939
		(-0.15)
TDG*Public		0.00325
		(0.96)
rTDG*Public		-0.0000723
		(-0.04)
Public treatment		-0.00976
		(-0.68)
Constant	0.310***	0.314***
	(21.21)	(18.95)
Observations	20560	20560
r2	0.217	0.217

t statistics in parentheses ,* p < 0.05, ** p < 0.01, *** p < 0.001

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