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The glue of the economic system: the effect of relational goods on trust and trustworthiness*.

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Abstract

The role of "relational goods" is almost unexplored in the literature, yet our experimental results document that, even in their weakest form (opportunity of meeting an unknown player at the end of an experimental game), they significantly affect important "lubricants" of economic activity such as trust and trustworthiness and generate significant departures from the standard Nash equilibrium outcome in investment games. Our findings do not reject the hypothesis that relational goods are an important "source of energy" in economic interactions and that the study of this "neglected particle" of socioeconomic life may produce significant advancements on both positive and normative economics.

Keywords: relational goods, trust, experimental games.

JEL Classification: C72, C91, A13.

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1. Introduction

In analogy with physics, progress in economics may be conceived as being based on the discovery of new "particles" which improve our knowledge and give us a clearer and more detailed picture of the functioning and effects of interactions among agents in the economic system. Traditionally, economic theorists have modelled such system through the interaction of *homines economici*, or purely self-interested individuals maximising their utilities uniquely oriented to material outcomes in a perfect information framework.

Experimental and behavioral economists documented violations of the hypothesis that economic agents are exclusively motivated by the pursue of their material self-interest. Such violations led to a broadened perspective on human preferences and are generally interpreted as evidence supporting the existence of trust, fairness, strategic fairness, inequity aversion, altruism, etc. (Rabin, 1993; Berg, Dickhaut and McCabe, 1995; Frey, 1997; Levine, 1998, Fehr and Schmidt, 1999; Andreoni and Miller, 2002; Charness and Rabin, 2002).

Even though the picture is becoming more and more realistic still many dimensions of the functioning of the economic system remain unexplored.

With this paper we argue that relational goods are one of the hidden "particles" which help to explain the movement of those already discovered. More specifically, *we find that relational goods have significant effects on trust and trustworthiness*. In our experimental study we observe that even the weakest form of them (taste/distaste arising from the possibility of a pleasing/nasty encounter with an unknown player at the end of the game) generates significantly higher levels of trust and trustworthiness. This nexus is important as it implies that relational goods may create the premises for more fruitful economic relationships, since trust has been shown to be the "lubricant" (Arrow, 1974) of the socioeconomic system[1] in many theoretical and empirical contributions.[2]

[1] On the definition of trust and on the distinction between *particularized* and *generalized* trust see Knack and Keefer (1997); Stolle and Rochon (1998) and Narayan, (1999), Berggren e Jordahl, (2006).

The paper is divided in six sections (including introduction and conclusions). In the second section we provide a short survey of the literature on relational goods. In the third section we describe our experimental design. In the fourth section we discuss our descriptive and econometric findings. In the fifth session a potential application of our findings is proposed. The sixth section concludes.

2. The concept of relational goods

Over the last few years, economic analysis has devoted more and more attention to the role of factors connected with interpersonal relations. One of the main attempts that economists have made in order to improve their understanding of them is linked to the concept of relational goods. Relational goods "depend upon interactions among persons" (Ulhaner 1989, p. 253) and are peculiar *intangible outputs of an affective and communicative nature* (Gui 2000) that are produced through social interactions. In particular, Gui (2002) proposes to consider every form of interaction as a particular productive process that the author calls encounter. Relational goods may be generated in an encounter, but they are not the encounter in itself, which can generate many other different outputs[3] (Gui 2000, p.155). Examples of relational goods are: social approval, solidarity, friendship and its benefit, the desire to be recognized or accepted by others, but also the "atmosphere" that is created among waiting customers in a hair dresser's shop, or a conversation concerning non-professional matters occurring during breaks in a business meeting" Gui (2000, p. 152). By looking at these examples, it is clear that relational goods can be either an asset, like a friendship, or else, a one-shot consumer good like the "atmosphere" that is created among waiting customers in a hair dresser's shop or, more in general, the relational goods associated with the

[2] Several contributions have shown that trust has an important impact on socio-economic performance. At an aggregate level, Knack and Keefer (1997) and Zak and Knack (2001) find that the level of trust in a given country has positive effects on economic growth. Putnam (1993) and La Porta et al. (1997 and 1999) highlight the role of trust in improving government performance. Becchetti and Pace (2006) and Fullenkamp and Chami (2002) analyse with theoretical models the effects of trust on firms' efficiency.

[3] Examples of outputs which are accounted for by standard economic concepts and which are produced during an encounter are: the reallocation of goods of people involved in the interaction (e.g a buyer and a seller) and the provision of a service (e.g in case of a legal advice) (Gui 2000).

"well-being" (or "bad-being") produced by a conversation with other people (Bruni and Stanca 2005)

Relational goods have three main characteristics. *First*, they are a subset of *local public goods*, since they are *non rival* and *non exclusive* but only with regard to the people who participate in their production. According to Uhlaner, "Relational goods can only be enjoyed with some others. They are thus unlike private goods, which are enjoyed alone, and standard public goods, which can be enjoyed by any number" (Uhlaner 1989, p.254).The consumption of relational goods is contextual and simultaneous to their production, since they can not be enjoyed alone, but only through interpersonal relations with other people (Sacco and Vanin 2000; Bruni and Stanca, 2005).They can be actually considered *anti-rival* since the joint fruition is essential to their value. *Second*, contributions to their production depend on mutual agreement (Uhlaner 1989). Goodwill is important for their production, they can not be imposed. Even though relational goods may be generated through encounters which happen in different environments, some circumstances seem more convenient than others. In particular, relations that are not constrained but that people voluntarily decide to start, such as relations inside volunteering associations, are more likely to generate relational goods (Prouteau and Wolff, 2004). *Third*, their value depends on the characteristics of people sharing the goods (Sacco and Vanin 2000) and is increased by *fellow feeling*.[4] With this respect, one could prefer to share time with people she trusts or she finds friendly. For this reason, the expected value of relational goods' consumption depends on the disposition that agents have on the personal characteristics of people they are going to meet. A good disposition increases the probability that agents enjoy the encounter and, consequently, the quality of the relational good produced (and consumed) by it. On the contrary, feelings such as rancour or envy can interfere with their production (and, consequently, with their consumption). Therefore, it is clear that some circumstances can promote better than other their creation.

[4] The *fellow feeling* hypothesis of Adam Smith has been recently re-elaborated by Sugden (2002) arguing that the intensity of common consent (and "the consequent removal of unease and dissonance caused by perception of disparities in sentiments") is a source of pleasure in relational activities.

Until now relational goods have been mostly considered to explain social behaviour such as political participation (Uhlaner 1989) or associational membership (Prouteau and Wolff 2004). Our analysis opens a new interesting field testing whether the possibility of consuming relational goods has a direct impact also on variables such as trust and trustworthiness that are key elements for socio-economic development.

2.1 Relational goods and trust: an experimental analysis

In our experiment, we introduce the possibility to consume relational goods through a personal interaction that agents will share after having played a two-player Investment Game (Berg et al., 1995). As it is well known the latter is a sequential game in which the two players are both endowed with an amount of money S, and the first mover, the Trustor, must decide what share of S to send to the second mover, the Trustee. The amount sent is tripled and delivered to the Trustee, who must decide how much of the tripled amount to give back to the second mover.[5] Before playing the game we give agents the possibility to declare if they want to meet the other player or if they do not. If agents opt for the encounter, by playing the Investment Game, they have the possibility to affect, inside an economic transaction, the disposition of the other players on their own characteristics.

The Trustor can affect the disposition that the receiver has towards her by showing herself trustful. A trustful contribution by the Trustor reveals the willingness to create a cooperative relation with the Trustee and creates positive conditions for the production of relational goods after the game. On the social and economic point of view such contribution entails a monetary risk for the Trustor which may traded off by nonmaterial benefits generated by the relational good consumed during the encounter.

The Trustee can, in turn, affect the disposition of the Trustor by showing herself trustworthy (i.e. by sending back to the Trustor a "fair" amount). The trade-off between giving away monetary benefits to "pay" non material gains applies also to her.

[5] For details on the experimental design see the following section.

Even if experimental results on Ultimatum games (Güth, Schmittberger and Schwarze, 1982, Camerer and Thaler 1995), Dictator Games (Andreoni and Miller 2002), Gift Exchange Games (Fehr, Kirchsteiger and Reidl, 1993, Fehr, Kirchler, Weichbold and Gächter 1998), Trust Games (Berg, Dickhaut and McCabe 1995, Ben-Ner e Putterman 2006) and Public Good Games (Fischbacher, Gächter and Fehr 2001, Sonnemans, Schram and Offerman 1999, Fehr and Gächter 2000) have widely stressed that human behaviour is also strongly motivated by the consideration of others (i.e., for example, by fairness, reciprocity and inequity aversion), we are not aware of previous experimental studies that introduce the possibility of consuming relational goods in order to analyse their impact on cooperation.

Our work differs also from studies devoted to the analysis of the effects of pre-play communication (see, for example, Hoffman, McCabe and Smith, 1996; Bohnet and Frey, 1998; Buchan, Croson and Johnson, 2000) - and, more in general, of the manipulation of the social distance between the players - on individual choice in some of the games mentioned above.[6] The main results of this research is that the reduction of the social distance amongst the subjects facilitates the deviation from purely selfish behaviour. This evidence is explained by presuming that "the 'framing' of the decision can influence expectations by associating a subject's decision with past experience" (Hoffman, McCabe and Smith, 1996: 655) and, more in general, with her everyday social life. The reduction of the social distance increases the subject's concern for the social consequences of her decision, and this results in a higher probability of adopting in the laboratory the same rules which drive her everyday social interactions.

In our study subjects can decide to remove the anonymity, *but they will meet their counterparts only at the end of the game and only if their counterparts have decided to meet them as well*. This reflects a typical fragility of relational goods: individual investment is exposed to the risk of lack of correspondence from the counterpart. If a subject decides not to meet her counterpart, she will play

[6] See, for example, Isaac and Walker (1991), Ledyard (1995), Frey and Bohet (1999), Charness and Gneezy (2000), Buchan, Croson and Johnson (2006). See Bicchieri (2002) for an interpretation of the evidence about the effects of pre-play communication.

a standard anonymous game.[7] This implies that the decision about the meeting is part of player's strategy: she can freely determine the social distance between herself and her counterpart.

In our analysis, Trustors and Trustees who decide to meet the other player after the game could decide to be relatively more trustful and trustworthy in order to increase the expected value of the relational goods they have the possibility to produce through the encounter. In this perspective the reason why agents choose to meet their counterpart does not have a key role in our approach. What really matters is that this decision opens the possibility to produce and consume relational goods with others.

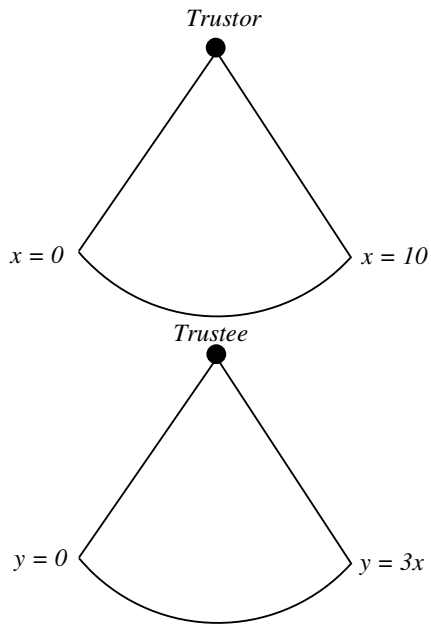
An important qualification, relevant to our experiment, is that the concept of relational good may vary from a minimum to a maximum content. In our case the minimum content is just the desire to avoid the hostility of the counterpart, while the maximum content may be the hope to build a friendship with the other player starting from the small joint experience lived during the game. We may just observe in the experiment whether contributions grow when the opportunity of the encounter is provided (and/or is chosen by the two players), but we cannot discriminate whether the players do it by having in mind the minimum or the maximum content of the relational good.

3. Experimental design and procedure

The experiment is based on a standard two-player Investment Game (Berg, Dickhaut and McCabe 1995). At the beginning of the game both players are endowed with 10 tokens (1 token=0.50 euros). The first mover, the Trustor, must decide how much of her endowment to send to the second mover, the Trustee. The amount sent is tripled and delivered to the Trustee, who must decide how much of the tripled sum to send back to the Trustee (Figure 1). Assuming that players have purely self-interested preferences, the subgame perfect Nash equilibrium of this game is the strategy vector in which the Trustee sends 0 and the Trustor sends 0.

[7] According to the role of goodwill stressed in section 2, the voluntary character of the encounter should create a favourable environment for the creation of relational goods.

Figure 1. *The Investment Game*



Trustor's payoff= 10-x+y
Trustee's payoff = 10+3x-y

We combine the experimental analysis of the Investment Game with a survey aimed at collecting socio-demographic data and information about subjects' attitudes, habits, feelings, satisfaction with their life and work, and like[8]. As it will be shown in the empirical section of the paper, the survey helps to control for composition effects which may explain our results and, above all, for selection bias problems which may arise when we compare two subsamples which are discriminated on the basis of a non-random voluntary individual choice (that of meeting the other player). In such case we need to discriminate whether differences between the two subsamples are generated by the experiment or by the factors which affected individual's choices of entering one of the two samples (see section 4.2).

Subjects played the Investment Game under different conditions: (i) the experimental sessions have been conducted in three Italian universities, University of Trento, University of Milano-Bicocca, and University of Forlì; (ii) part of the subjects filled the survey before playing the game, while

[8] Example of studies based on this combination of classical surveys and experiments based on simple games are, among others, those of Glaeser et al.(2000) and Fehr et al. (2003).

another part of them filled it after the game was played; finally (iii) only half of the subjects had the possibility to choose whether to opt for meeting the counterpart, knowing that the encounter would take place at the end of the experiment but only if both players agreed on it.

As a consequence, we had three treatment variables: Location, Survey and Meeting and the experiment consisted of eleven treatments:[9] i) Baseline treatment in Trento (TB); ii) Encounter Treatment in Trento with survey beforehand (T1B); iii) Encounter Treatment in Trento with survey afterwards (T1A); iv) Baseline treatment in Milano with survey beforehand (MBB); v) Baseline treatment in Milano with survey afterwards (MBA); vi) Encounter Treatment in Milano with survey beforehand (M1B); vii) Encounter Treatment in Milano with survey afterwards (M1A); viii) Baseline treatment in Forlì with survey beforehand (FBB); ix) Baseline treatment in Forlì with survey afterwards (FBA); x) Encounter Treatment in Forlì with survey beforehand (F1B); xi) Encounter Treatment in Forlì with survey afterwards (F1A).

We adopted a between-subjects design, that is, each subject participated only in one treatment for a total of 368 subjects. Each session lasted on average 45 minutes. Participants earned on average € 10.50 (including a show-up fee of € 3).

At the University of Trento subjects were recruited by posting ads at various departments[10], while at Universities of Milano-Bicocca and Forlì they were recruited by email[11]. The participants were all students enrolled in different programs of study, even though most of them were students of Economics.

In all the treatments subjects used a computer for both playing the game and filling the survey. The experiment was conducted under complete anonymity and without communication.

[9]For further details on the experimental design see Appendix 2.

[10] Ads were posted one week before the experiment. Subscriptions by students interested in participating to the experiment were collected by the staff of the Computable and Experimental Economics Laboratory (CEEL) of the University of Trento.

[11] Subject were students included in the mailing list of the Experimental Economics Laboratories (EELAB and LES). Two weeks before the experiment they received an email in which the staff invited them to visit the Laboratory's website for information about the experiment and subscriptions.

Two experimenters were in the room during the sessions. The same two experimenters conducted all the sessions.

In each session experimenters selected the role (Trustor or Trustee) of one player for each computer terminal and linked it with another terminal in the room before the subjects entered it. Upon their arrival, subjects picked a slip of paper with an alphanumerical identification code from a box and chose one of the terminals at random (Appendix 2). In this way, when sitting at one terminal, participants were automatically assigned their role and paired with their counterparts.

Subjects were handed written instructions[12] which were read aloud by one of the experimenters. They signed in by entering their personal identification code on their terminals, discovered their role and played the game. Each Trustor decided how many tokens to send to the Trustee, a message with the number of tokens sent by the Trustor appeared on the Trustee monitor, and finally the Trustee made her choice. The payoff of the players appeared on their monitors and the game was over. Subjects were paid just after the end of the experiment.

In treatments with survey afterwards, subjects first played the game and then filled the survey.

In treatments with survey beforehand, subjects first filled the survey and then played the game.[13]

In treatments with the option of the encounter, before playing the game, independent of the fact that the survey was before or after the game, subjects had the possibility to decide whether to meet their counterpart at the end of the experiment. More precisely, subjects had the possibility to decide with regard to the encounter, as explained in Appendix 2, after the experimenter read the instructions about the investment game and before they signed in and discovered their role.[14] Subjects were handed a form with the following question: "Do you want to meet, at the end of the experiment, the person you are going to play with?". They were informed of the fact that the meeting would take

[12] Experimental instructions are available from the authors on request.

[13] By randomizing the moment in which subjects fill in the survey we try to reduce the risk of distorting effects. The survey before may create framing effects, while the survey after may lead to rationalise the behaviour followed during the experiment in survey answers.

[14] It means that in treatments T1B, M1B and FB1 everything is as in T1A, M1A and F1A, except for the fact that the subjects filled the survey before playing the game, (more precisely, before the experimenter read the instruction about the game, see Appendix 2).

place only if both players replied with a "Yes". Experimenters collected the forms with subjects' answers and the game started. Notice that when subjects made their choices about the encounter they *knew the rules of the game, but they did not know which role they were going to play.*

If both players opted for the encounter, they actually met at the end of the experiment.

4.1 Descriptive findings on Trustors

By just looking at the distributions of Trustor's contributions we find that the share of Trustors following a behaviour consistent with Nash equilibrium when players have standard self-interested preferences based only on monetary arguments[15] (that is, sending no money to the Trustee, which we define from now on as *standard (textbook) behaviour* for simplicity) is 11.41 on the overall sample of 184 observations. It rises to 19.78 percent in the 91 cases in which the opportunity of the encounter is not available and falls sharply to 3.22 percent in the same number of cases in which the opportunity is offered (Table 1)[16]. Within this subsample the share is slightly higher for Trustors who do not opt (4.17 percent on 48 cases) and slightly smaller for those who opt for the encounter (2.22 percent with 45 cases).

Hence, the opportunity of consuming a relational good has significant effects on the deviation from the *standard behaviour.* This finding shows that, with a slight departure from an aseptic context with no possibility of creating relational goods, benchmark concepts, such as Nash equilibria under the assumption of self-interested players, become less and less adequate to describe agents' choices. On another perspective we may as well interpret our finding by arguing that absence of relational opportunities reduces the capacity to create trust and trustworthiness and the productivity gains which may arise from cooperation.

[15] The analytical Appendix of the paper actually shows that Trustors sending zero contributions may have a taste for relational goods and that even Trustors who follow standard Nash rationality may be induced to send some money if they believe that the Trustee will not be of their kind.

[16] The passage from a zero contribution to a positive one when the opportunity of the meeting is provided does not imply that the Trustor does not follow standard behaviour as her choice may depend just on the assumption that the counterpart has adopted a non-standard one.

The comparison of the average Trustor's contribution under two different treatments (when the option of meeting the Trustee is available or not) yields results consistent with those commented above (Table 2). The average contribution is significantly larger when the option is available (5.16 tokens) than when it is not (3.78 tokens) and the difference in means is significant at 95 percent[17]. This implies that the simple availability of the opportunity of the encounter raises on average the Trustor contribution, independently from her decision to meet the counterpart. Given the standard assumption that the amount given by the Trustor is tripled, our finding implies that, on average, the "aggregate gain" generated by the option of the encounter - i.e. the extra amount of tokens generated by it - is 15.48-11.40 = 4.08 tokens or a 42.1% increase with respect to the benchmark in which the relational good is not available.

It may be argued that the result is determined by the expected larger contribution of those who actually opt for the possibility of the encounter when the option is available. However, this does not seem to explain the entire story since the mean contribution of those who have the opportunity but do not opt for the encounter is still higher (4.37 tokens) than that of those who are devoid of such opportunity (3.78 tokens). An interpretation for this finding may be that part of the higher contribution of the sender in presence of the opportunity to opt for the encounter is independent from the Trustor's decision to opt for it and has a *strategic component*, represented by the anticipation that the Trustee may be willing to pay back more if she opts for the encounter (see Appendix 1). Consider, however, that the difference between those who have the possibility to opt and do not and those who are not given such opportunity is only weakly significant both with parametric and non parametric tests (77 percent significance).

When we restrict our descriptive analysis within the sample of the 93 Trustors who are given the opportunity to opt for the encounter, we observe that the average contribution of those who opt

[17] Since the distribution of Trustor's contributions departs from normality we also consider non parametric diagnostics and find that the significance is confirmed by Wilcoxon rank-sum (Mann-Whitney) test= -2.940 Prob > |z| = 0.003.

(6.82 tokens) is significantly higher than that of those who do not opt (4.37 tokens)[18]. As explained with analytical details in Appendix 1 what we have actually tested here is a joint null hypothesis that i) Trustors have a positive taste for relational goods and ii) they believe that, by contributing more, they can positively affect the disposition of the counterpart and therefore enjoy a richer relational good.

By evaluating this finding jointly with those commented above we may say that the effect generated by the possibility of consuming a relational good goes beyond the "strategic rationale" since most of the difference is between those who opt and those who do not when the opportunity is available. However, given the limited number of observations in our sample, a strategic component cannot be excluded, even though the difference between those who do not opt by having the opportunity and those who do not have such opportunity is not strongly significant.

With regard to the other two variants in our design (location and timing of the survey), the comparison of the average amount sent across the 3*2 different experiment contexts (Milano, Trento, Forlì, questionnaire before and questionnaire after) shows that differences are minimal and not significant.

4.2 Econometric findings on Trustors

To examine whether composition effects may contribute to explain our findings we perform regression analysis on our experimental data. A preliminary exploration on all survey variables available in our database (related to objective personal characteristics) shows that the only factors which seem to affect significantly the Trustor's contribution are sex (males give more) and the number of family members. We therefore introduce these variables as controls in the estimates together with the level of income which is a standard control in these types of estimates.

Our first econometric test is on the effect of the opportunity to opt for the encounter on the likelihood that an individual will behave consistently with the *standard behavior* (Tab.3). Our

[18] The significance is confirmed by the nonparametric Wilcoxon rank-sum (Mann-Whitney) test: test= -2.451 Prob > |z| = 0.014).

findings confirm here what was already evident in descriptive statistics. The effect of such option has a significant and negative effect, together with that of the number of family members. The result is robust to the change in the survey-experiment sequence and to the place of the experiment. A remarkable finding here is that in the subsample of "survey after the game" and in the case of "Trento sessions" and "Forlì sessions", the "encounter" dummy predicts failure (dependent variable=0 or absence of standard behaviour) perfectly

We then focus on the amount sent by the Trustors and consider that our dependent variable (the amount sent by the Trustors) is discrete qualitative as it takes integer values from 0 to 10. The most suitable approach is therefore an ordered logit estimate, even though, given its extended range, a dependent variable with identical range has been sometimes approximated in the literature to a continuous one so that OLS models have also been estimated (see Frey and Stutzer, 2005 in case of life satisfaction estimates).

Consistently with such literature, we therefore decide to provide both OLS and ordered logit estimates (Tab. 4). The estimate on the sample of the 93 individuals who are given the opportunity to opt for the encounter shows that the dummy which takes the value of one when the Trustor opts for the encounter and zero otherwise, is strongly positive and significant. The extra contribution with respect to the average one provided when opting from the encounter is between 26% and 33% Consider, however, that our experiment is subject to a typical selection bias problem since the definition of the treatment and control sample is not random, but determined by a decision of the subjects undergoing the experiment. It is therefore possible in principle that the significantly higher contribution provided when opting for the encounter is not determined by the possibility of the encounter itself, but by the same ex ante characteristics which led individuals to choose this option.

To evaluate whether the decision to opt for the encounter is significantly affected by individual characteristics we regress, in turn, the *Rgoods* dummy variable (which takes value of one if the Trustor opts for the encounter in treatments in which the option is available) on all variables

included in our survey. We find that only one variable (the marriage status of player's parents) has significant effects (at 1%) on this decisions.

We therefore estimate the following treatment regression model

(1.1) $Amountsent_i = \alpha_0 + \alpha_1 Male + \alpha_2 Nmembers + \alpha_3 Income + \alpha_4 Rgoods + \varepsilon_i$

(1.2) $Rgoods_i = \beta_0 + \beta_1 Parmarried \quad + v_i$

where, in the first equation, *Amountsent* is the Trustor's contribution, *Male* is a gender dummy, *Nmembers* is the number of family members, *Income* is the Trustor's level of income and *Rgoods* a dummy which takes value of one if the Trustor is given the opportunity of the encounter and opts for it. In the second equation the *Rgoods* dummy is regressed on the marriage status of her parents (*Parmarried*).

In the two equation system (v) and (ε) are bivariate normal random variables with zero mean and covariance matrix $\begin{bmatrix} \sigma & \rho \\ \rho & 1 \end{bmatrix}$. The likelihood function for the joint estimation of (1.1) and (1.2) is provided by Maddala (1983) and Greene (2003).

Our results confirm that the decision to opt for the encounter affects significantly and positively the amount sent by the Trustor, net of the Trustor characteristics which positively influence her decision (Tab.5), even though its significance is slightly weaker.

4.3 Descriptive statistics on Trustees

Following the same pattern adopted for the Trustor we start from the distribution of the outcomes of the Trustee under five different situations: the overall sample, the samples in which the opportunity to opt for the encounter is not given and given and, within the latter, the subsamples in which the receiver opts for the encounter and does not (Table 6).

The dependent variable chosen here is the share of the amount paid back on the total amount received.

Note that the share of Trustees behaving consistently with the *standard behavior* is higher here (26.38 percent on the overall sample against 11.41 among Trustors). *This is reasonable if we assume that the Trustee, differently from the Trustor, has no strategic reasons* (such as the hope to stimulate the contribution of the Trustee) *to deviate from the standard behaviour*. Another striking difference is that most of the variability is not explained just by the opportunity of the encounter (conformity to the *standard behaviour* is even higher for those who are given the opportunity of the encounter but do not opt (33.33 percent) than for those who are not given the opportunity) but by the actual choice of opting for the encounter (in such case the share of individuals which follows *standard behaviour* drops to 16.67 percent). *Our interpretation is that the receiver has no expected additional gains from the possibility that, even though she does not opt for the encounter, the other player does. Hence there is no point to her in giving more when the option is available but she does not want to meet the Trustor.*

This interpretation is also supported by the fact that the opportunity of the encounter has no significant effects on the average share paid back[19] (Table 7).

With respect to the other two variants of the experiment design (location and timing of the survey), even though Trustees give more on average in Forlì and when the survey comes before the experiment, the difference is not statistically significant (Table 7).

When we restrict the analysis to the subsample of the 90[20] individuals who have the opportunity to opt for the encounter we find that the amount sent back is significantly higher (it almost doubles) when the Trustee opts for the encounter (around 35 percent for those who opt against around 21 percent of those who don't)[21]. Since the distribution of the dependent variable is definitely not normal, we use non parametric test to evaluate whether this difference is significant and find that it is.

[19] Two-sample Wilcoxon rank-sum (Mann-Whitney) test z = -0.802 Prob > |z| = 0.422.

[20] The sample is slightly smaller than the corresponding one among Trustors since Trustees receiving zero amounts are obviously dropped from the sample.

[21] Two-sample Wilcoxon rank-sum (Mann-Whitney) test z = -2.703Prob > |z| = 0.007.

4.4 Econometric findings for Trustees

In a preliminary econometric analysis we regress our dependent variable (*Sharerest)* - the ratio of the Trustee/Trustor contribution - on each of the survey variables of the questionnaire related to objective personal characteristics of the subjects (with the exception of the *Rgoods* dummy) and find that there is no significant effect of any of them.

The *Rgoods* dummy is significant and positive (Table 8). In the OLS estimate the magnitude of the marginal effect on the amount sent by the Trustee generated by the decision to opt for the encounter is quantifiable in a 19 percent increase of the average Trustee contribution.

Since our preliminary inquiry on the determinants of the Trustee's decision to opt for the encounter demonstrates that the latter is not significantly affected (at 1%) by any variables in our sample, we are not able to perform the treatment regression model estimated with regard to the analysis of Trustors' contribution.

5. Potential implications: an application to trust game corporations

Experimental results may sometime seem far from the economic reality. In this section we want to show that our findings may have very concrete economic applications. More specifically we want to demonstrate that a better relational environment may contribute significantly to team working[22] and firm productivity in what we call modern "trust game corporations".

What we mean by this is that the productive activity of a firm originates from the performance of complex tasks[23] which require the contribution of knowledge, inventive skills and ideas of workers with nonoverlapping human capital endowments.

[22] Thompson and Wallace (1996) consider that, with the development of lean production and other forms of work organization under advanced manufacturing, team working has emerged as a central focus of redesigning production. Katz and Rosenberg (2004) argue that "that the productivity of an organization crucially depends on cooperation among workers" and highlight the importance of altruistic and cooperative attributes in workers emphasized by the organizational theory (see, among others, Smith et al. 1983; Organ, 1989; Organ and Ryan, 1995; McNeely and Meglino, 1994; Penner et al, 1997 and Podsakoff and Mackenzie, 1993).

[23] Consider for instance a blueprint in which different contributor skills are production inputs related by some forms of complementarity. Or the definition of a corporate strategy which requires participants from different firm divisions to share knowledge and skills. The same scheme could be applied in different (non corporate) fields of activity such as, for instance, a co-authored academic working paper to which different researchers contribute with their specialized skills

Consider in a very simple two players game that any complex task consists of a trust game between two firm employees, player A and B, endowed with personal skills (stand alone contributions to final output) that we term, respectively, as $h_a \in R^+$ and $h_b \in R^+$. The corporate trust game is a sequential game in which one of the two players (player A, the Trustor) may decide whether sharing or not her skills with the other player. In the second stage of the game the second player (player B, the Trustee) may decide to cooperate or abuse. We assume that sharing ideas, projects, intuitions creates a positive externality - that we introduce in the model as a superadditive component ($e \in [0,1]$) - generated by the initial knowledge sharing and by the dialogic process of jointly performing the task (Figure 2)

As demonstrated by Becchetti and Pace (2007) such game has a clear productivity paradox since the *non sharing solution* (h_a,0) yielding a ”third best” suboptimal firm output is the SPNE of the uniperiodal full information game when i) the Trustor has non inferior stand alone contribution to output than the Trustee and ii) the superadditive component is inferior to the sum of Trustee and Trustor stand alone contributions.

What this proposition tells is that, if job tasks in modern corporations assume the form of trust games, Nash behaviours generate suboptimal productivity results.

Assume now that workers care for relationships and that any new interaction may generate a relational good (f) in case of cooperation and destroy the pre-existing stock (F) in case of abuse. Becchetti and Pace (2007) show that, in such case, there exists a threshold value of the relational good in the Trustee utility function (f*) which triggers the switch from the non cooperative to the cooperative (share, not abuse) equilibrium.

The intuition is that, when relationships matter they can reduce the productivity paradox as far as (f), or the utility that players get by not abusing of someone we know of we may meet, is positive.

It is important to clarify that our basic trust game performed in the experiments does not aim to reproduce the corporate investment trust game briefly sketched in this section but it is basically a test on the positive value of (f). The rejection of the insignificance of the relational goods on the

degree of cooperation chosen by Trustor and Trustee in our experiment tells us that economic agents' utilities are affected by relational goods and that productivity paradoxes in trust game corporations may be solved by providing occasions which lead to the creation of stocks of relational goods among employees.

6. Conclusions

Economists are traditionally not accustomed to evaluate the effects of the logic of human relationships on socioeconomic behaviour of individuals.

The standard prediction of a typical investment game which ignores such logic is the {0,0} Nash equilibrium. In such equilibrium both the Trustor and Trustee do not transfer any amount to each other since the assumption that any player follows a self-interested behaviour and has preferences in which only monetary payoffs matter is common knowledge.

Commonly observed violations of such equilibrium in such game have led to a broadened perspective on human preferences in which trust and trustworthiness are explained by fairness, strategic fairness, inequity aversion, altruism, etc.

In our paper we propose an original analysis of the role of relational goods in promoting trust and trustworthiness by introducing a simple original variation of the standard investment game, according to which we give players the option to meet each other at the end of the game.

Our result are quite robust and show that the availability of the option and the decision to opt by the Trustor significantly increase her contribution. They also seem to suggest that part of this effect materialises also when the opportunity of the encounter is available and the Trustor does not opt for it.

On the overall, we interpret such results by arguing that the Trustor's extra contribution is affected by a *strategic rationale* (the expectation that the Trustee might opt and therefore contribute more generously even if the Trustor does not intend to meet the Trustee) and a *relational good rationale*

(the desire to meet the other and the belief that an extra contribution will create a more favourable environment for the meeting).

We explain in the paper that, in the latter case, we are testing jointly two distinct hypotheses: i) the Trustor has a positive taste for relational goods and ii) she believes that the extra contribution will increase the value of such good.

When looking at the Trustee's choice, we observe that the significant extra contribution does not arise simply from the opportunity of the encounter, but only when such opportunity is chosen by the Trustee, consistently with the fact that the strategic rationale does not apply for such player.

Our results generate questions and ideas for further research and potential applications. We briefly discuss an important one by making reference to the literature of the application of trust games in modern corporations whose productivity is always more determined by the performance of complex task which require non overlapping consequences of different workers. We conclude by arguing that our findings on the positive effect of relational goods on trust and trustworthiness may provide interesting insights for the definition of original incentive structures that foster cooperation and remove productivity bottlenecks in modern corporate environments.

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Appendix 1: An analytical description of players' choices

A.1 The Trustor behaviour

A more analytical treatment of our experiment may help to clarify how our tests discriminate among different hypotheses on players' preferences.

Assume that the Trustor (sender) participating to our experiment has the following generic utility function

$$U_S = \alpha_s \left(10 - X_s + X_R^e\right) + \beta_s RG^e(X_s, X_R^e) + \sum_i \delta_{si}\Omega_i$$

where α_S is the Trustor's marginal utility of one unit of income, β_S is the marginal utility arising from the consumption of the relational good (RG) and the δ_{Si} coefficients express the weight in the utility function of other non conventional preference structures (altruism, reciprocity, etc.). X_S and X_R are, respectively, the Trustor's and Trustee's contributions, where, according to the standard investment game structure, $X_R = \lambda 3X_s$, $X_S \in [0,10]$ and $\lambda \in [0,1]$[24], so that we may reformulate the Trustor's expectation on the Trustee's contribution as $X_R^e = E_s[X_R] = E_s[\lambda]3X_S$.

RG is the specific relational good generated by the (possible) encounter with the unknown counterpart at the end of the game, which we assume to be a positive function of contributions of the (two) j players (j=S,R) ($\partial RG \setminus \partial X_j > 0$). This is because such contribution is expected to affect positively dispositions, thereby increasing the value of the relational good arising from the encounter (see section 2). Players have two available (σ_j) strategies (a=accept, na=non accept the encounter). Consider that RG>0 only if both players accept to meet each other or $RG > 0 \mid \sigma_S = \sigma_R = a$. Hence, the value of the relational good cannot be known with certainty by the Trustor who has an expectation on it, conditional on her expectation about the Trustee's strategy and contribution ($RG^e > 0 \mid \sigma_S = \sigma_R{}^e = a$).

Finally, we take into account also the possibility that the Trustor may strategically increase her contribution in presence of the opportunity of the encounter, since $E_s[X_R] = E_s[\lambda_0 + \lambda^*]3X_S$ with $E[\lambda^*] > 0 \mid \sigma_R^e = a$ and $\lambda_0 + \lambda^* \in [0,1]$. Note that the expected value of the second part of the Trustee contribution is higher than zero conditional to the Trustor's expectation that the Trustee decides to opt for the encounter. In other terms, independently from the Trustor's decision to opt from the encounter, the existence of this opportunity makes her consider that the Trustee could opt for the encounter and therefore increase her transfer for this reason.

As a consequence, we may rewrite Trustor's utility function as

$$U_S = \alpha_s \{10 + \{3E_S[\lambda_o + \lambda^*] - 1\}X_s\} + \beta_s RG^e(X_s, X_R^e) + \sum_i \delta_{si}\Omega_i$$

Consider that, when Nash rationality is common knowledge, δ_{ji} =0 and β_j=0, we necessarily get X_R=0.

Consider as well that the Trustor decides not to give anything if α>0, β and δ_{si} =0 and

[24] According to the standard rules we adopt X_S and X_R can take only integer values. This implies that also λ cannot be continuous.

$$-X_s + 3E_S[\lambda_0 + \lambda^*]X_S < 0 \text{ or } E_S[\lambda_0 + \lambda^*] < \frac{1}{3}$$

This implies that the Trustor can depart from Nash behaviour (give more than zero) also when she is self-interested but expects that the Trustee is not. This is the case when

$$\alpha_s\{10 + \{3E_S[\lambda_o(X_s) + \lambda^*(X_s)] - 1\}X_s\} > \alpha_s 10$$

or

$$E[\lambda_0 + \lambda^*] > \frac{1}{3}$$

On the other hand we may have the opposite case in which a Trustor is not purely interested in monetary payoffs and however decides to give zero, under the case in which she decides to meet the Trustee, when[25]

$$\alpha_s\left(10 - 1 + X_R^e\right) + \beta_s RG + \sum_i \delta_{si}\Omega < \alpha_s\left(10 + X_R^e\right) + \beta_s RG(X_s = 0) + \sum_i \delta_{si}\Omega$$

or $\beta_S(RG^e - RG^e(X_S = 0)) < \alpha_s$.

This implies that, without controlled experiments, we cannot infer conclusions on the importance of relational goods for the two agents by just looking at their contributions and eventual departures from Nash behaviour.

With our controlled experiment we can instead test several hypotheses.

Consider that

i) the marginal utility of the Trustor's contribution when the option of the encounter is not available (ONA case) is

$$\left.\frac{\partial U_S}{\partial X_S}\right|_{ONA} = \alpha_s\left(3E_S[\lambda_o] - 1\right) + Z$$

Where Z is the value of the sum of the derivatives of the additional Ω non standard arguments in the utility function;

ii) the marginal utility of the Trustor's contribution when she does not opt for the encounter and the option of the encounter is available (OA/NO case) is

$$\left.\frac{\partial U_S}{\partial X_S}\right|_{OA/NO} = \alpha_s\{3E_S[\lambda_o + \lambda^*] - 1\} + Z$$

Based in i) and ii) we may formulate what follows

Hypothesis 1: (STRATEGIC EFFECT ON THE TRUSTOR FROM THE OPPORTUNITY OF THE ENCOUNTER) the Trustor will give more under ii) than under i) if λ>0 and* $\left.\frac{\partial U_S}{\partial X_S}\right|_{OA/NO} > 0$.

Consider now

[25] Remember that, for convenience, we fixed that only discrete sums can be chosen and therefore that 1 token is the minimum nonzero amount that can be given by the Trustor.

iii) the marginal utility of the Trustor's contribution when the option of the encounter is available and she does opt for the encounter (OA/O case)

$$\left.\frac{\partial U_S}{\partial X_S}\right|_{OA/O} = \alpha_s \left\{3E_S\left[\lambda_o + \lambda^*\right] - 1\right\} + \frac{\partial \beta_s RG^e(X_s, X_R^e)}{\partial X_s} + Z$$

This leads to formulate the following hypothesis

Hypothesis 2: (RELATIONAL EFFECT ON THE TRUSTOR FROM THE OPPORTUNITY OF THE ENCOUNTER) the Trustor will give more under iii) than under ii) if $\left.\frac{\partial U_S}{\partial X_S}\right|_{OA/NO} > 0$[26] *and* $\beta_s \frac{\partial RG^e(X_s, X_R^e)}{\partial X_s} > 0$*, which implies that both* $\beta_s > 0$ *and* $\frac{\partial RG^e(X_s, X_R^e)}{\partial X_s} > 0$.[27]

Hence, in order to accept hypothesis 2, two important conditions must jointly hold: i) the individual has a positive taste for relational good, ii) the relational good is a positive function of the individual contribution since a cooperative attitude creates better conditions for the encounter or increases the value of the relational good enjoyed in the encounter.

In such test consider also that a selection bias problem may arise. Since the placement of the Trustor in one of the two subsamples (Trustors who opt for the encounter and Trustors who don't) is non-random and voluntary, characteristics affecting other nonconventional arguments in players' preferences may affect the decision to opt for the encounter. Hence, the additional contribution might depend on differences in such characteristics and not from the structure of the experiment. In other terms, if I am more altruistic I may be more likely to opt for the encounter and, by being more altruistic, I get more pleasure by giving more to the Trustee and this factor (and not the opportunity of the encounter) could explain my extra contribution. In other terms if

$$Z\big|_{OA/O} > Z\big|_{OA/NO}$$

Hypothesis 2 will not hold.

This is the reason why we use the treatment regression model which allows us to disentangle between the two options. With the treatment regression model we can control for this additional effect by estimating a system in which such effect is measured in an equation where the decision to opt for the encounter is regressed on Trustor's characteristics.

Note that, if we include in the experiment also cases in which the option is not available, we avoid this inconvenient but we cannot disentangle anymore hypothesis 1 from hypothesis 2. In fact iii)>i) may depend both on the strategic and the relational good effect.

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[26] Consider that this implies that $E[\lambda_0 + \theta\lambda^*] > \frac{1}{3}$ since, if the Trustee gives more given the opportunity of the encounter but the inequality is not meet, the Trustor has no benefit in sending extra money for strategic reasons.

[27] The hypothesis that $\beta_s < 0$ and $\frac{\partial RG^e(X_s, X_R^e)}{\partial X_s} < 0$, or that the Trustor dislikes relational goods and with an extra contribution want to reduce its value, can be reasonably discarded by assumption.

1.2 The Trustee behaviour

The Trustee utility function is simply given by

$$U_R = \alpha_R\left(10 + (1-\lambda)3X_s\right) + \beta_R RG^e(X_R, X_S) + \sum_i \delta_{si}\Omega_i$$

Note that, also for the Trustee, the relational good has to be expressed with its expected value, since the player is not informed whether the Trustor has opted or not for the encounter.

If the Trustee has standard (affected only by monetary payoffs and purely self interested) preferences, she will behave consistently with Nash equilibrium since

$\alpha_R\left(10 + 3X_s\right) > \alpha_R\left(10 + (1-\lambda)3X_s\right)$ with $\lambda>0$.

Consider also that the Trustee may abandon self interested behaviour when the option of the encounter is available if

$$\alpha_R\left(10 + 3X_s\right) < \alpha_R\left(10 + (1-\lambda)3X_s\right) + \beta_R RG^e(X_R, X_S)$$

or $\alpha_R \lambda 3X < \beta_R RG^e(X_R, X_S)$, that is, the monetary loss determined by the amount given back is more than compensated by the value of the encounter.

Here again we can test the relational good hypothesis with a controlled experiment. Consider that

i) the marginal utility of the Trustee if the opportunity of the encounter is not available is

$$\left.\frac{\partial U_R}{\partial X_R}\right|_{ONA} = -\alpha_R + Z\ .$$

The expression obviously coincides with the marginal utility of the Trustee if the opportunity of the encounter is available and she does not opt for it (ii).

iii) The marginal utility of the Trustee if the opportunity of the encounter is available and she opts for is

$$\left.\frac{\partial U_R}{\partial X_R}\right|_{OA/O} = -\alpha_R + \frac{\partial \beta_s RG^e(X_s, X_R^e)}{\partial X_R} + Z$$

Note that the strategic effect is necessarily absent here.

We can therefore formulate the following hypothesis on the relational effect

Hypothesis 3: (RELATIONAL EFFECT ON THE TRUSTEE FROM THE OPPORTUNITY OF THE ENCOUNTER) the Trustor will give more under iii) than under ii) if $\left.\frac{\partial U_R}{\partial X_R}\right|_{ONA} > 0$ *and* $\frac{\partial \beta_R RG^e(X_s, X_R^e)}{\partial X_R} > 0$ *which implies that both* $\beta_R > 0$ *and* $\frac{\partial RG^e(X_s, X_R^e)}{\partial X_R} > 0$.[28]

[28] See footnote 16 for the exclusion of the irrelevant alternatives.

APPENDIX 2. Timing of the experiment

BASELINE TREATMENTS with survey afterwards

T_1	T_2	T_3	T_4	T_5
The experimenter reads the instructions about the game and the survey	Subjects sign in and discover their roles (Trustor or Trustee)	The Trustor decides how many tokens (*x*) to send to the Trustee	The Trustee receives 3*x* and decides how many tokens to send to the Trustor	Subjects fill the survey

Investment Game

BASELINE TREATMENTS with survey beforehand

T_1	T_2	T_3	T_4	T_5
The experimenter reads the instructions about the survey	Subjects fill the survey	The experimenter reads the instructions about the game	Subjects sign in and discover their roles (Trustor or Trustee)	Subjects play the Investment game

ENCOUNTER TREATMENTS with survey afterwards

T_1	T_2	T_3	T_4	T_5	T_6
The experimenter reads the instructions about the game and the survey	Subjects decide whether to meet or not the couterpart at the end of the experiment	Subjects sign in and discover their roles (Trustor or Trustee)	Subjects play the Investment game	Subjects fill the survey	Encounter (only if both have decided to meet the counterpart)

ENCOUNTER TREATMENTS with survey beforehand

T_1	T_2	T_3	T_4	T_5	T_6	T_7
The experimenter reads the instructions about the survey	Subjects fill the survey	The experimenter reads the instructions about the game	Subjects decide whether to meet or not the counterpart at the end of the experiment	Subjects sign in and discover their roles (Trustor or Trustee)	Subjects play the Investment game	Encounter (only if both have decided to meet the counterpart)

TABLES

Table 1. Descriptive statistics on the distribution of Trustor's contribution under different subsamples

Amount sent by the Trustor	Total Sample (with and without encounter option) (184 obs.)	Encounter option not available (91 obs.)	Encounter option available Trustor's decision to opt for the encounter		
			Both YES and NO (93 obs.)	YES (43 obs.)	NO (45 obs.)
0 (purely self-interested Trustors)	11.41	19.78	3.23	2.22	4.17
1	8.70	8.79	8.60	4.44	12.50
2	7.61	5.49	9.68	8.89	10.42
3	12.50	15.38	9.68	8.89	10.42
4	15.76	13.19	18.28	13.33	22.92
5	14.67	14.29	15.05	13.33	16.67
6	5.43	5.49	5.38	6.67	4.17
7	4.35	4.40	4.30	6.67	2.08
8	3.80	3.30	4.30	4.44	4.17
9	1.09	1.10	1.08	2.22	12.50
10	14.67	8.79	20.43	28.89	4.17
Total	100	100	100	100	100

Percent values.

Table 2. Descriptive statistics on the average Trustor's contribution under different structures of the game

		Obs	Mean	Std. Err.	[95% Conf. Interval]	
Total Sample (with and without encounter option)		184	4.478	0.231	4.023	4.933
Encounter option available (treatments T1A, T1B, M1A, M1B)	Trustor decision: YES	45	6.820	0.474	5.046	6.954
	Trustor: NO	48	4.375	0.409	3.552	5.198
	All experiments	93	5.161	0.321	4.523	5.799
Encounter option not available (treatments TB, MBB, MBA)		91	3.780	0.316	3.152	4.409
Survey Beforehands (treatments T1B, MBB, M1B)		75	4.853	0.378	4.101	5.606
Survey afterwards (treatments TB, T1A, MBA, M1A)		109	4.220	0.289	3.648	4.792
Trento (treatments TB, T1B, T1A)		64	4.359	0.424	3.512	5.207
Milano (treatments MBB, MBA, M1B, M1A)		64	4.625	0.417	3.792	5.458
Forlì (treatments FBB, FBA, F1B, F1A)		56	4.446	0.343	3.760	5.133

Table 3. The effect of the option of the encounter on the probability that the Trustor has standard "textbook" behaviour

Method	***Logit***	***Logit***
Encounter	-1.934	-2.744
	(0.657)***	(1.087)**
Male	0.818	1.673
	(0.530)	(0.865)*
Nmembers	-0.507	-0.546
	(0.258)**	(0.366)
Income		0.002
		(0.241)
Constant	-0.004	-0.590
	(0.994)	(1.552)
Pseudo R^2	0.147	0.249
Prob > χ^2	0.001	0.002
Number of obs.	177	121

Legend: dependent variable: dummy taking the value of one in case of zero contribution of the Trustor and zero otherwise. *Encounter*: dummy which takes value of one if the option of the encounter is available or not for individuals participating to the experiment. *Male*: gender dummy taking the value of one if the subject is a male. *Nmembers*: number of family members. *Income*: level of income.
* significant at 10%; ** significant at 5%; *** significant at 1%; Standard errors in brackets
Note: in the case of "survey after the game" and in the case of "Trento sessions" and "Forlì sessions", the "encounter" dummy predicts failure (dependent variable=0) perfectly

Table 4. The determinants of the Trustor's contribution

Method	*OLS*	*Ologit*	*OLS*	*Ologit*
Rgoods	1.697	1.154	1.977	1.368
	(0.579)***	(0.392)***	(0.687)***	(0.478)***
Male	2.064	1.292	2.408	1.534
	(0.583)***	(0.390)***	(0.677)***	(0.460)***
Nmembers	0.482	0.331	0.514	0.348
	(0.273)*	(0.172)*	(0.341)	(0.224)
Income			-0.045	-0.027
			(0.199)	(0.128)
Constant	1.385		1.320	
	(1.166)		(1.662)	
cut1		-1.324		-1.914
		(0.881)		(1.436)
cut2		0.159		0.392
		(0.759)		(1.114)
cut3		0.979		1.054
		(0.759)		(1.106)
cut4		1.547		1.539
		(0.762)		(1.106)
cut5		2.417		2.507
		(0.774)		(1.119)
cut6		3.114		3.140
		(0.796)		(1.139)
cut7		3.429		3.536
		(0.811)		(1.157)
cut8		3.705		3.879
		(0.825)		(1.177)
cut9		4.009		4.155
		(0.842)		(1.193)
cut10		4.094		4.255
		(0.848)		(1.199)
Adj R^2	0.213		0.227	
Pseudo R^2		0.058		0.070
Root MSE	2.740		2.741	
Prob > F	0.000		0.000	
Prob > χ^2		0.000		0.000
Number of obs.	91	91	69	69

Legend. dependent variable: amount sent by Trustors (integer values from 0 to 10). *Rgoods* dummy which takes value of one if the Trustor opts for the encounter in treatments in which the option is available. *Male*: gender dummy taking the value of one if the subject is a male. *Nmembers*: number of subject's family members. *Income*: level of income.
* significant at 10%; ** significant at 5%; *** significant at 1%; Standard errors in brackets

Table 5. The determinants of the Trustor's contribution (Treatment regression model)

Dep. Var.	Amount sent	Decision to meet the Trustee	Amount sent	Rgoods
Male	2.289		2.639	
	(0.562)***		(0.636)***	
Nmembers	0.626		0.706	
	(0.250)**		(0.317)**	
Income			-0.033	
			(0.174)	
Parmarried		-.562		-0.689
		(0.222)**		(0.279)**
Rgoods	7.611		7.270	
	(0.938)***		(1.266)***	
Constant	-2.151	0.439	-2.514	0.596
	(1.076)	(0.203)	(1.518)	(0.259)
Number of obs.	91		69	
Log likelihood		-275.017		-207.606

Legend. *Amount sent*: amount sent by Trustors (integer values from 0 to 10). *Rgoods*: dummy which takes value of one if the Trustor opts for the encounter in treatments in which the option is available. *Male*: gender dummy taking the value of one if the subject is a male. *Nmembers*: number of subject's family members. *Income*: level of income. *Parmarried*: dummy which takes value of one if the parents of the subject are married.
* significant at 10%; ** significant at 5%; *** significant at 1%; Standard errors in brackets

Table. 6 Descriptive statistics on the Trustee's contribution under different experiment designs

Total sample

Sharerest (Amount payed back/ Total amount received)	All experiments (163 obs.)	Encounter option not available (73 obs.)	Encounter option available		
			Trustee's decision to opt for the encounter		
			YES and NO (90 obs.)	YES (36 obs.)	NO (54 obs.)
0	26.38	26.03	26.67	16.67	33.33
0 < sharerest ≤ 0.1	7.98	8.22	7.78	8.33	7.41
0.1< sharerest≤ 0.2	16.56	20.55	13.33	8.33	16.67
0.2< sharerest≤ 0.3	3.07	5.48	1.11	0.00	1.85
0.3< sharerest≤ 0.4	21.47	19.18	23.33	25.00	22.22
0.4< sharerest≤ 0.5	7.98	6.85	8.89	11.11	7.41
0.5< sharerest≤ 0.6	4.29	2.74	5.56	11.11	1.85
0.6< sharerest≤ 0.7	7.98	5.48	10.00	13.89	7.41
0.7< sharerest≤ 0.8	1.84	0.00	3.33	5.56	1.85
0.8< sharerest≤ 0.9	0.61	1.37	0.00	0.00	0
0.9< sharerest≤ 1	1.84	4.11	0.00	0.00	0
Total	100	100	100	100	100

Percent values.

Table 7. Descriptive statistics on the average Trustee's contribution under different experiment designs

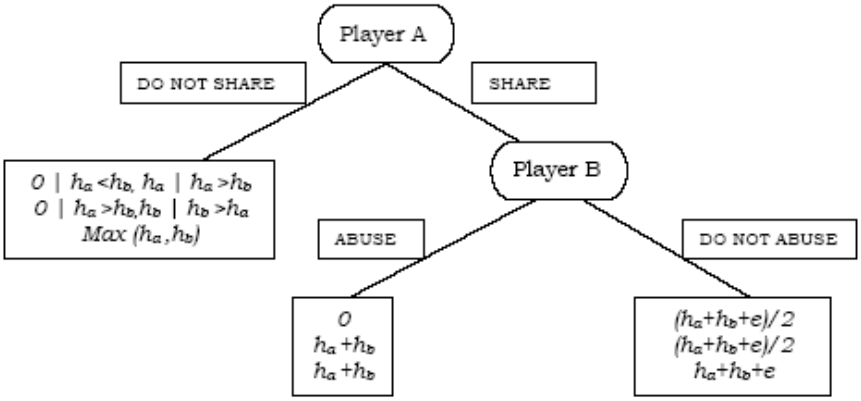
Sharerest (Amount payed back/ Total amount received)		Obs	Mean	Std. Err.	[95% Conf. Interval]	
Total Sample (with and without encounter option)		163	0.260	0.020	0.222	0.299
Encounter option not available (treatments TB, MBB, MBA)		73	0.249	0.031	0.188	0.310
Encounter option available (treatments T1A, T1B, M1A, M1B)	Option decision: YES	36	0.352	0.041	0.269 .	0.435
	Option decision: NO	54	0.214	0.030	0.153	0.274
	Option decision: YES and NO	90	0.269	0.025	0.219	0.319
Survey Beforhands (treatments T1B, MBB, M1B)		66	0.299	0.034	0.232	0.366
Survey afterwards (treatments TB, T1A, MBA, M1A)		97	0.234	0.023	0.187	0.280
Trento (treatments TB, T1B, T1A)		54	0.179	0.026	0.125	0.232
Milano (treatments MBB, MBA, M1B, M1A)		55	0.283	0.039	0.206	0.361
Forlì (treatments FBB, FBA, F1B and F1A)		54	0.318	0.033	0.253	0.384

Table 8. The determinants of Trustee contribution

Method	*OLS*	*Tobit*	*OLS*	*Tobit*
Rgoods	0.145	0.182	0.142	0.182
	(0.050)***	(0.065)***	(0.059)**	(0.075)**
Male	-0.008	-0.050	-0.029	-0.072
	(0.49)	(0.063)	(0.059)	(0.076)
Nmembers	0.025	0.029	0.055	0.074
	(0.026)	(0.033)	(0.033)	(0.043)*
Income			-0.018	-0.035
			(0.022)	(0.028)
Constant	0.120	0.063	0.081	-0.019
	(0.108)	(0.141)	(0.134)	(0.173)
Adj R-squared	0.072		0.074	
Pseudo R^2		0.128		0.157
Root MSE	0.230		0.238	
Prob > F	0.025		0.058	
Prob > χ^2		0.022		0.036
Number of obs.	89	89	71	71

Legend: dependent variable: the share of the amount paid back by Trustees on the total amount received. Rgoods dummy which takes value of one if the Trustor opts for the encounter for individuals participating to the treatment in which the option is available. *Male*: gender dummy taking the value of one if the subject is a male. *Nmembers*: number of subject's family members. *Income*: level of income.
Significant at 10%; ** significant at 5%; *** significant at 1%.
Standard errors in brackets.

Figure 2 The one-shot corporate trust game



Source: Becchetti- Pace (2007).