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 trust (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.
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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 self-interested individuals maximising their preferences, uniquely oriented to material outcomes, in a perfect information framework. In a second step imperfect and asymmetric information was added to the picture and a set of incentives was studied to align conflicting interests of different economic agents in order to avoid problems such as moral hazard and adverse selection.

In a third step economists discovered that contracts were incomplete since not all the innumerable contingencies arising in human events could be foreseen and taken into account. At the same time 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 in terms of trust, fairness, strategic fairness, inequity aversion, altruism, etc. (Rabin, 1993; Frey, 1997; Fehr and Schmidt, 1999; Charness and Rabin, 2002; Levine, 1998).

Even though the picture is becoming more and more realistic still many dimensions of the functioning of the economic system remain unexplored and, as it is normal to be, the discovery of a new important "particle" soon creates the new question of which are its determinants.

With this paper we argue that relational goods are one of these hidden elements 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" of the socioeconomic system[1] in many theoretical and empirical contributions.[2]

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

[1] In some expressions, trust could also generate negative effects at an aggregate level. In this perspective we have to distinguish between particularized and generalized trust. Knack and Keefer consider *generalized" as opposed to "specific" trust placed in people one has repeated interactions with."* (Knack and Keefer 1997, p.1258). Other definitions are by Stolle and Rochon (1998) that define *generalized trust "a trust that goes beyond the boundaries of kinship and friendship and even beyond the boundaries of acquietance"* (Stolle and Rochon 1998, p. 48) and by Berggren and Jordahl (2006) that distinguish between *particularized and generalized trust where*: *"the former entails trusting people you know or know something about; the latter trusting most (but not all) people you do not know or know anything about."* (Berggren and Jordal 2006, p.143). The groups characterized by particularized trust may generate negative effects towards people who are not included in the networks and towards public interest. This distinction is related to that introduced by Narayan (1999) between groups that are expression of bonding (i.e. strong family ties) or bridging social capital: "There may be high social capital within a group ("bonding" social capital) which helps members, but they may be excluded from other groups (they lack "bridging" social capital)" Narayan (1999, p. 1). The concept of trust we are considering is a concept of generalized trust (agents do not know who they play the investment game with) and do not seem to suffer from possible negative externalities that characterize particularized trust in some contexts.

[2] In particular, 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 present in a country and its economic growth are positively associated. 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) discuss the theoretical model on the positive effects of trust on firms' efficiency.

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. Relational goods, trust, trustworthiness and economic performance

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 attempts that economists have made in order to improve the understanding of agents' behaviour is related 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. The consumption of relational goods is contextual and simultaneous to their production, since the latter can not be enjoyed alone, but only through interpersonal relations with other people (Sacco and Vanin 2000). 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).

Relational goods have three main characteristics. *First*, they are a subset of local public goods. Differently from private goods, they can not be enjoyed alone. At the same time, they are non rival and non exclusive but only with regard to the people who participate in their production. According to Uhlaner's approach: "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). *Second*, goodwill is important for the relational goods' whose value originates from mutual agreement (Uhlaner 1989).[3] *Third*, their value depends, in two main ways (beliefs and dispositions), on the characteristics of people sharing the goods (Sacco and Vanin 2000). 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 beliefs that agents have on the personal characteristics of people they are going to meet. Related to the previous point, the production of these goods depends on the disposition that one has towards the people she is meeting. A good disposition increases the probability of relational goods' production and increases the probability that agents enjoy the encounter. On the contrary, feelings such as rancour and envy can interfere with their production. Therefore, it is clear that some circumstances can promote better than other their creation.

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: 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

[3] Prouteau and Wolff (2004 p. 437) stress that "[Relational goods]can be produced in many environments, but some circumstances seem more convenient. The less the relation between people is constrained, the more it fosters this production." The authors investigate this idea by carrying out an empirical analysis on the effects of (voluntary) associational activities on production and consumption of relational goods and finding that the voluntary associational membership positively affects the production and consumption of relational goods by agents.

tripled and delivered to the Trustee, who must decide how much of the tripled amount to send to the second mover (for details on the experimental design see the following section). Before playing the game we give agents the possibility to declare if they want to meet the other player or if they do not[4]. If they opt for the encounter, by playing the Investment Game, both agents have the possibility to affect, inside an economic transaction, the reciprocal beliefs and dispositions on the characteristics of others[5].

The trustor can affect beliefs and dispositions 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 affect beliefs and 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. 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 effect of pre-play communication – and more in general on the manipulation of the social distance between the players - on individual choice in the some of the games mentioned above[6]. 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 also their counterparts have decided to meet them*. 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 decide not to meet her counterpart, he/she will play a standard anonymous game. This implies that the decision about the meeting is part of player's strategy.

In our analysis, trustors and trustees who decide to meet the other player after the game could decide to be trustful and trustworthy in order to increase the expected value of the relational goods that they have the possibility to produce through the encounter. In this perspective the reason why agents choose to meet the others 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 and it proves to be able to generate trust and trustworthiness.

An important qualification relevant to our experiment which needs to be made here 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 grows when the opportunity of the encounter is provided (and/or is chosen by the two players) but

[4] It is important not to muddle relational goods and (face to face) encounters. Relational goods may be generated in an encounter, but they are not the encounter in itself. An encounter can generate many different outputs and it could also not produce relational goods (Gui 2000, p.155). Finallly, virtual relationships (people who meet each other and interact only via internet) are relational goods generated without any face to face encounter.

[5] As it will be clear in the next section, the encounter will take place only if both the players that play the investment game together have declared that they want to meet each other.

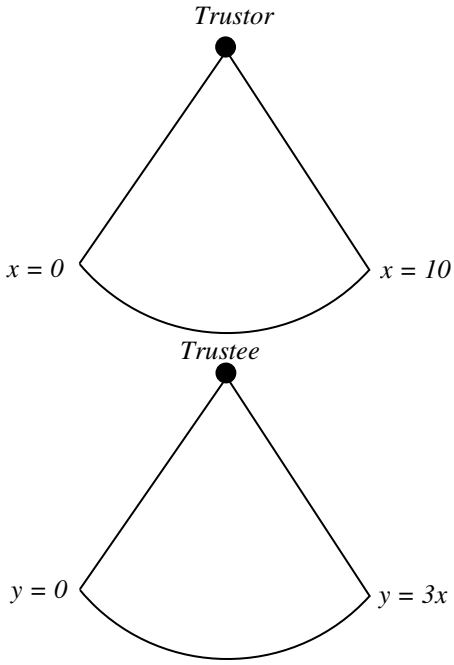
[6] See for example Isaac and Walker (1991), Ledyard (1995), Frey and Bohet (1999), Charness and Gneezy (2000), Buchan, Croson and Johnson (2006). See Bicchieri (2002) for an intepretation of the evidence about the effects of pre-play communication.

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 et al., 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 send 0 and the Trustor send 0.

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[7]. As it will be shown in the empirical section of the paper the survey helps us 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.

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

Subjects played the Investment Game under different conditions: (i) the experimental sessions have been conducted in two Italian universities, University of Trento and University of Milano-Bicocca; (ii) one part of subjects filled the survey before playing the game, while another part of them filled it after the game was played; finally (iii) only half of 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 and only if both players agreed on it.
As a consequence, we had three binary treatment variables: Location, Survey and Meeting and the experiment consisted of seven treatments:

1. Baseline treatment in Trento (TB)
2. Encounter Treatment in Trento with survey beforehand (T1B)
3. Encounter Treatment in Trento with survey afterwards (T1A)
4. Baseline treatment in Milano with survey beforehand (MBB)
5. Baseline treatment in Milano with survey afterwards (MBA)
6. Encounter Treatment in Milano with survey beforehand (M1B)
7. Encounter Treatment in Milano with survey afterwards (M1A)

We adopted a between-subjects design. Each subject participated only in one treatment. We ran 8 sessions (each with 16 subjects) in Trento and 4 sessions (each with 32 subjects) in Milano, for a total of 256 subjects (figure 2). Each session lasted on average 45 minutes. Participants earned on average € 10,50 (including a show-up fee of € 3).

Figure 2. Experimental treatments

	Trento			**Milano**	
	Survey beforehand	**Survey afterwards**		**Survey beforehand**	**Survey afterwards**
No Encounter		TB (64 subjects)	**No Encounter**	MBB (32 subjects)	MBA (32 subjects)
Encounter	T1B (32 subjects)	T1A (32 subjects)	**Encounter**	M1B (32 subjects)	M1A (32 subjects)

At University of Trento subjects were recruited by posting ads at various departments[8], while at University of Milano-Bicocca they were recruited by email[9]. The participants were all students enrolled in different programs of study (most of them were students of Economics).
In all the treatments subjects used a computer both for playing the game and for filling the survey. The experiment was conducted under complete anonymity and without communication.
Two experimenters were in the room during the sessions. The same two experimenters conducted all the sessions.

[8] Ads were posted one week before the experiment. Subscriptions by students interested in participating in the experiment have been collected by the staff of the Computable and Experimental Economics Laborator (CEEL) of the University of Trento.
[9] Subject were students included in the mailing list of the Experimental Economics Laboratory (EELAB) of the University of Milano-Bicocca. 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.

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 (see Appendix 2 for details on the sequence of the game in different experiment designs). In this way, when sitting at one terminal, they were automatically assigned their role and paired with their counterparts.
Subjects were handed written instructions (see Appendix 3) 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 TB and MBA subjects first played the game and then filled the survey.
In treatment T1B and M1B subjects first filled the survey and then played the game.[10]
In treatments T1A and M1A (the two treatments with the option of the encounter), before playing the game (more precisely as explained in Appendix 2 after the experimenter read the instructions about the investment game and before they signed in and discovered their role), subjects had the possibility to decide whether to meet their counterpart at the end of the experiment. They 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?". Subjects were informed of the fact that the meeting would take 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.
In treatments T1B and M1B everything is as in T1A and M1A expect 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).

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[11] (sending no money to the trustee, which we define from now on as *standard (textbook) behaviour* for simplicity) is 14.84 on the overall sample of 128 observations, rises to 25 percent in the 64 cases in which the opportunity of the encounter is not available and falls sharply to 4.65 percent in the same number of cases in which the opportunity is offered (Table 1)[12]. Within this sample the share is slightly higher for trustors who do not opt for the encounter (5.41 percent on 37 cases) and slightly smaller for those who opt (3.70 percent with 27 cases).
Hence, the opportunity of consuming a relational good has significant effects on the departure from the *standard behaviour* confirming our argument described in the introduction according to which, when we slightly move toward a situation which is more similar to the reality of economic activity

[10] The decision about the correct sequence between survey and experiment is a matter of discussion among experimental economists. The survey before may create framing effects while the survey after may lead to rationalise in survey answers the behaviour followed during the experiments (BIBLIO)
[11] The analytical Appendix of the paper actually shows that trustors sending zero contributions may have a taste for relational goods and that even trustors which follow standard Nash rationality may be induced to send some money if they believe that the trustee will not be of their kind.
[12] Consider here that 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.

(where people in many cases interact by knowing each other and not in anonymous contexts) 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 anonymity and absence of relational opportunities reduce the capacity to create trust and trustworthiness and to cooperate among each other.
The comparison of the average trustor contribution under two different designs (when the option of the meeting with 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 (5.39 euros) than when it is not (3.59 euros) and the difference in means is significant at 95 percent (since the distribution of trustor's contributions departs from normality we also consider non parametric diagnostics and find that the significance is confirmed by the Wilcoxon rank-sum (Mann-Whitney) test) (Figure 4). 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.
As it is obvious we may argue 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. This does not seem to explain the entire story since the mean contribution of those who have the opportunity and do not opt for the encounter is still higher (4.35 euros) than that of those who are not provided such opportunity (3.59 euros). 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 however weakly significant both with parametric and non parametric tests (84 percent significance).
When we restrict our descriptive analysis within the sample of the 64 senders who are given the opportunity to opt for the encounter, we observe that the average contribution of those who opt (6.82 euros) is significantly higher than that of those who do not opt (3.45 euros) (here again the significance is confirmed by the nonparametric Wilcoxon rank-sum (Mann-Whitney) test) (Fig.4). 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 designs (location and timing of the survey) the comparison of the average amount sent across the four different experiment context (Milano, Trento, questionnaire before and questionnaire after) shows that differences are minimal and not significant. We also find that the average number of previous participations to experiments does not affect the amount sent by trustors (evidence is omitted for reasons of space).

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 regressors available in our database shows that the only variable which seems to affect significantly the trustor's contribution given is sex (males give more) and the number of family members. We therefore

introduce these variables as controls in the estimates together with the number of family members and the level of income which we a priori assume that may have an effect on individual contribution.
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 findings confirm here what is 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.
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 probit 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 estimate).
Consistently with such literature, we therefore decide to provide both OLS and ordered logit estimates (Tab.4). The estimate on the sample of the 64 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 20% and 30% of the sum available to the Trustor.
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 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 *Relgoods* dummy variable on all variables included in our survey. We find that only three variables have significant effects on this decisions (the marriage status of parents with negative effect, income and the number of people known with positive effects). Even though these variables taken individually are not significant in a simple two variable regression in which the amount of money send is the dependent variable, it may well be the case for their combination which is shown to affect significantly the probability that a trustor opts for the encounter.
We therefore estimate the following treatment regression model

(1.1) $Amountsent_i = \alpha_0 + \alpha_1 Male + \alpha_2 Nmembers + \alpha_3 Encounter + \varepsilon_i$

(1.2) $Encounter_i = \beta_0 + \beta_1 Income + \beta_2 Parmarried + \beta_3 Numknown + \nu_i$

where, in the first equation, *Amountsent* is the trustor's contribution, *male* a gender dummy, *Nmembers* is the number of family members and *Encounter* 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 *Encounter* dummy is, in turn, regressed on the trustor's level of income (*Income*), on the marriage status of her parents (*Parmarried*) and on the number of people known (*Numknown*). Consider that the selection of regressors in the second equation is based on a series of two by two equations in which we inspect which controls available in our survey may explain the trustor's decision to opt for the encounter. The three variables included are the only ones which are significant.

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 subsample 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 (around 33 percent on the overall sample). This is reasonable if we assume that the trustee has not the trustor's strategic reason (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 (39.53 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 him in giving more when the option is available even when she does not want to meet the trustor.*
This interpretation seems confirmed by the fact that the opportunity of the encounter has no significant effect on the average share paid back (Table 7 and Figure 6). 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 Trento and when the survey comes before the experiment the difference is not statistically significant (Table 7).
When we restrict the analysis to the subample of the 64 for 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 37 percent for those who opt against around 19 percent of those who don't) (Fig.7). Since also 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.

4.4 Econometric findings for trustees

In a preliminary econometric analysis we regress our dependent variable (*Sharerest*) on each of the survey variables of the questionnaire taken individually (with the exception of the *Relgoods* dummy) and find that there is no significant effect of any of them.
The *Relgoods* 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 increase of 19 percent of the average trustee contribution.
Here again, we need to control for the selection bias. Our preliminary inquiry on the determinants of the trustee's decision to opt for the encounter demonstrates that the latter is significantly affected by three variables (negatively by the belief that most people in life are purely self interested (*Selfin*),

positively by sport practice (*Sport*) and positively by the belief that being generous with others is convenient since others tend to reciprocate (*Gencon*)). Hence the specification of our treatment regression model is in this case

(2.1) $Sharerest_i = \alpha_0 + \alpha_1 Male + \alpha_2 Nmembers + \alpha_3 Encounter + \varepsilon_i$

(2.2) $Encounter_i = \beta_0 + \beta_1 Selfin + \beta_2 Sport + \beta_3 Gencon + \beta_4 Year + \nu_i$

where *sharerest* is the ratio of the trustee/trustor contribution ratio and the other variables are described above or in section 4.2.
The estimation of the treatment regression model confirms that the effect of the decision to opt for the encounter on the share sent back is significant also when we control for the selection bias (Table 9).

5. Potential implication: 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[13] 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[14] which require the contribution of knowledge, inventive skills and ideas of workers with nonoverlapping human capital endowments.
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 his 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 8)
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 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.

[13] Thompson and Wallace (1996) consider that, with the development of lean production and other forms of work organization under advanced manufacturing, teamworking 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, 1988; Organ and Ryan, 1995; McNeely and Meglino, 1994; Penner et al, 1997 and Podsakoff and Mackenzie, 1993).
[14] 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 specialised skills

Becchetti and Pace shows 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 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 between 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 and are generally interpreted in terms of fairness, strategic fairness, inequity aversion, altruism, etc.
In our paper we proposed an original source for such deviations by introducing a simple original variation of the standard 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 many questions and ideas for further research and potential application of our findings. 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 adding that our finding 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 environment.

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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 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, with $X_R = \lambda 3X_s$, $X_S \in [0,10]$ and $\lambda \in [0,1]$ so that we may reformulate the trustor's expectation on the trustee's contribution as $E_s[X_R] = E_s[\lambda]3X_S$.
RG is the specific relational good generated by the (possible) encounter with the unkwown 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). This is because such contribution is expected to affect positively dispositions and beliefs thereby increasing the value of the relational good arising from the encounter The latter have two available (σ_j) strategies (a=accept, na=non accept) with respect to the opportunity of the encounter. Consider that RG>0 only if both players accept to meet each other or $RG^e > 0 \mid \sigma_S = \sigma_R{}^e = a$. 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.
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 $E_s[X_R] = E_s[\lambda_0 + \theta\lambda^*]3X_S$ with $E[\lambda^*] > 0 \mid \sigma_R^e = a$.
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 want to contribute more in case she decides to opt for the encounter. In other terms, independently from her 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

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

Consider that the trustor decides not to give anything if $\alpha>0$, β and $\delta_{Si}=0$ and

$-X_s + 3\lambda^e X_S < 0$ or $\lambda^e < \frac{1}{3}$.

Consider as well that, when Nash rationality is common knowledge, $\delta_{Si}=0$, $\beta_S=0$ and $E_s[X_R] = 0$, we necessarily get $X_R=0$.
This implies that the trustor can depart from Nash behaviour (give more than zero) also when she is self-interested and Nash rational but expects that the trustee is not. This is the case when

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

or

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

On the other hand we may have the opposite case in which a trustor is not purely interested in monetary payoffs and decides however to give zero when

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

under the case in which she decides to meet the trustee,

or $\alpha_s\left(10-1+X_R^e\right)+\beta_s RG+\sum_i \delta_{si}\Omega < \alpha_s\left(10+X_R^e\right)+\sum_i \delta_{si}\Omega$, which implies that $\beta_S RG^e < \alpha_s$ if she decides not to meet her.

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 contribution 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

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

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

Consider now
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)

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

Hypothesis 2: (RELATIONAL EFFECT ON THE TRUSTOR FROM THE OPPORTUNITY OF THE ENCOUNTER) the trustor will give more under iii) than under ii) if $\left.\frac{\partial U_S}{\partial X_S}\right|_{OA/NO} > 0$[15] *and* $\frac{\partial \beta_s RG^e(X_s,X_R^e)}{\partial X_s} > 0$ *which implies that both* $\beta_s > 0$ *and* $\frac{\partial RG^e(X_s,X_R^e)}{\partial X_s} > 0$[16]

This implies that, 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 trustor 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

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[15] 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 payoff has no benefit in sending extra money for strategic reasons.

[16] 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 discarded.

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 also 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.

1.2 The trustee behaviour
The trustee utility function is simply given by

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

Note also that, for the trustee as well, the relational good has to be expressed with its expected value since the player is not informed whether the trustor has opted for the encounter.
If the trustee has standard (affected only by monetary payoffs and purely self interested) preferences she will also behave consistently with Nash equilibrium since
$\alpha_R(10+3X_s) > \alpha_R(10+(1-\lambda)3X_s)$ with λ>0.
Consider also that the trustee may abandon Nash behaviour when the option of the encounter is available if
$\alpha_R(10+3X_s) < \alpha_R(10+(1-\lambda)3X_s) + \beta_R RG^e(X_R, X_S)$
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

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

ii) the marginal utility of the trustee if the opportunity of the encounter is available and she does not opt for it is

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

iii) the marginal utility of the trustee if the opportunity of the encounter is available and she opts for it is

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

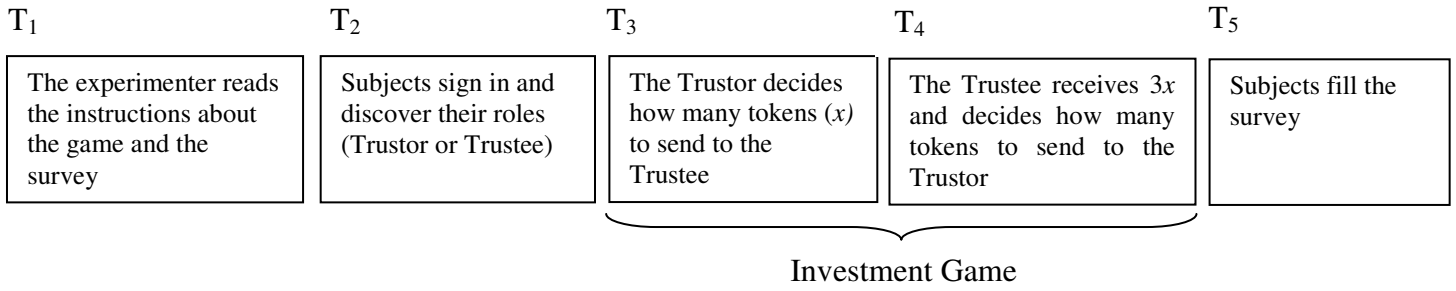
Note that the strategic effect is necessarily absent here while we can therefore formulate the following hypothesis on the relational effect

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* $\frac{\partial RG^e(X_s, X_R^e)}{\partial X_R} > 0$[17]

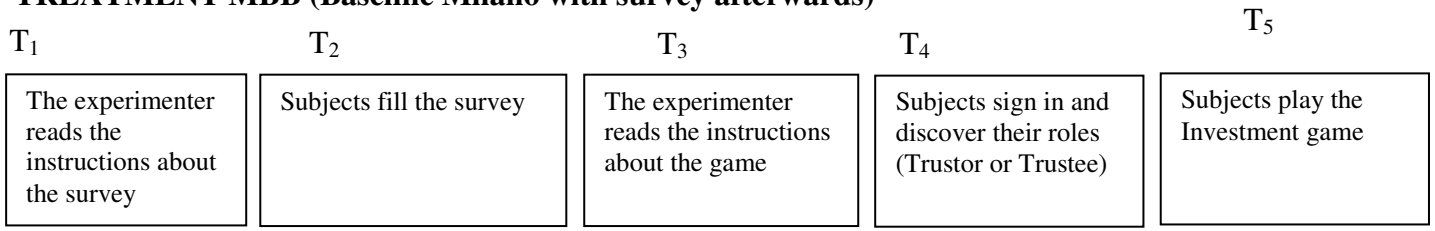
[17] See footnote 16 for the exclusion of the irrelevant alternatives.

APPENDIX 2. Timing of the experiment

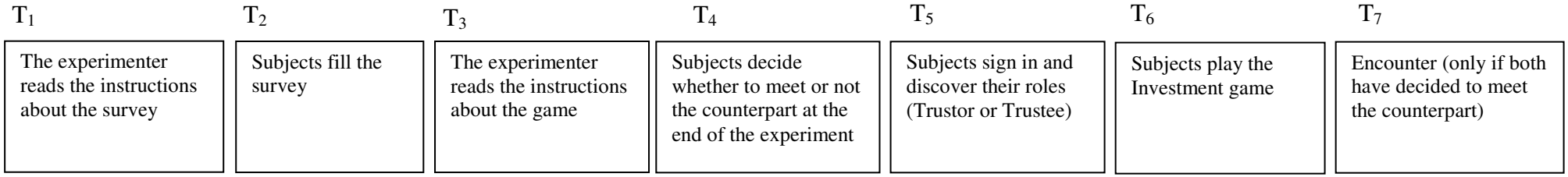
TREATMENTS TB AND MBA (Baseline Trento and Baseline Milano, with survey beforehand)



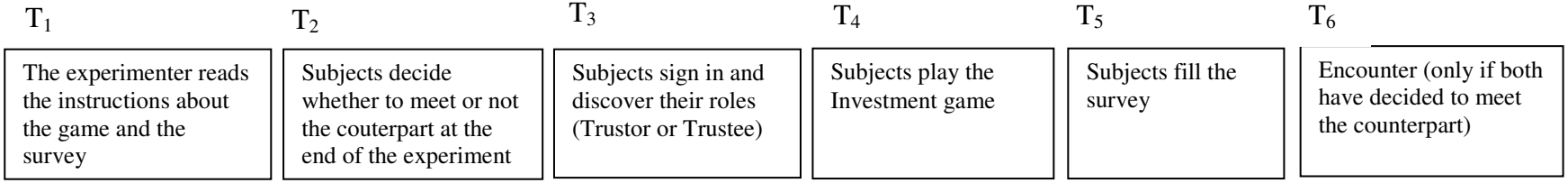
TREATMENT MBB (Baseline Milano with survey afterwards)



TREATMENTS T1B AND M1B (Encounter, Trento and Milano, with survey beforehand)



TREATMENTS T1A AND M1A (Encounter, Trento and Milano, with survey afterwards)



APPENDIX 3: INSTRUCTIONS

[*All the treatments*]

Thank you for participating in this experimental session.
You will receive € 3 for your participation and you can earn an additional sum of money with the experiment we will present below.

You will receive the money just after the end of the experimental session.

Anonymity

The experimental session will be conducted under absolute anonymity and with the use of a personal computer.
On entering the room you picked a slip of paper with an alphanumerical code. Please keep this code till the end of the session.
The use of this code will assure your complete anonymity. As it will become clear below, the experimenters will not be able to associate your name with your choices and answers.

The experimental session consists of two stages.
In the first stage you will participate in an experiment, in the second stage you will fill a survey.
The whole session will last approximately 45 minutes.

FIRST STAGE

[treatments TB, MBA, T1A and M1A. In treatments MBB, T1B and M1B the first stage is the survey and the second stage is the experiment]

A mask like the one in figure 1 will appear on your monitor. You will have to enter you personal identification code in the blank field. The experimenter will tell you when to do it.

Figure 1.

The experiment
Participants have been divided into 16 (32) pairs by means of a random mechanism. Each pair is composed of a Player A and a Player B.

In particular, before you entered the room, each computer has been linked with another one and it has been associated with one of the two roles (Player A or Player B). Thus, by choosing your computer you have chosen both your role and the person you are paired with.

At the beginning of the experiment both the players are given 10 tokens (1 token = 0,50 euros).

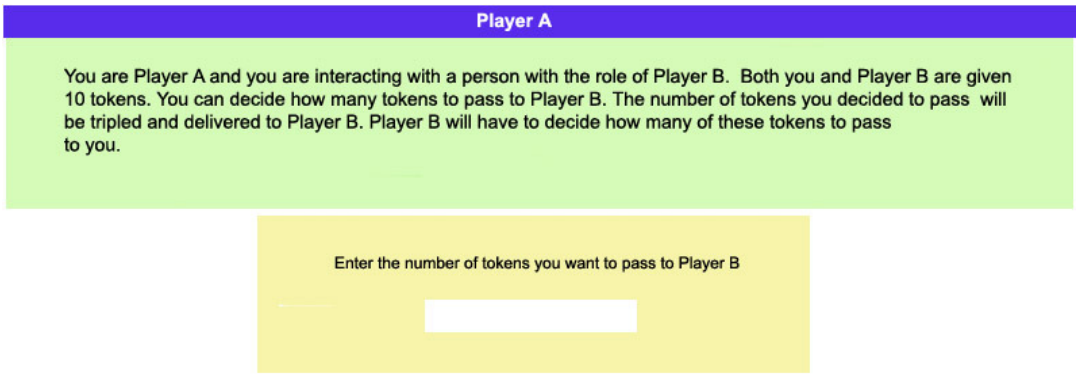
You will discover your role once you have signed in by entering your identification code.

Player A moves first and must decide how many of the 10 tokens to pass to player B. A window like the one in figure 2 will appear on his/her display, he/she can choose by entering a number between 0 and 10 in the blank field.

The tokens passed by Player A will be tripled and passed to player B.

If x is the number of tokens passed by Player A to Player B, Player B will receive $3x$ tokens

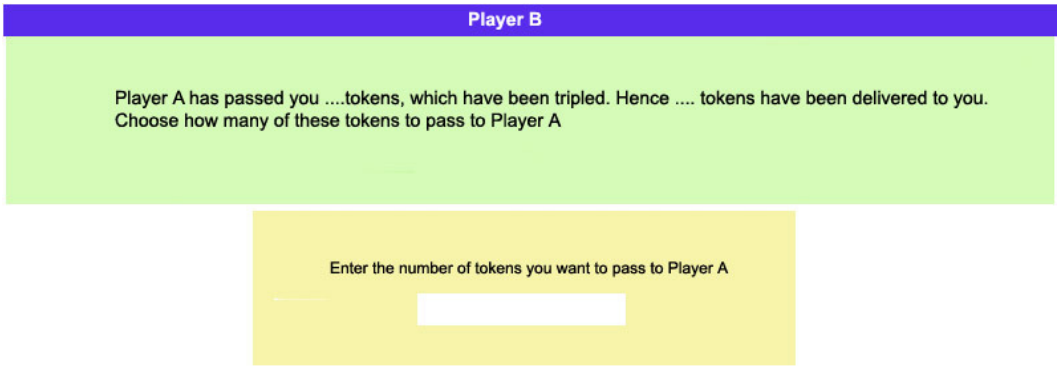
Figure 2.



Player B waits until Player A has made his/her choice. Once Player A have made his/her choice a message with the number of tokens passed by Player A and with the number of tokens actually delivered to player B (3 times the tokens passed by A) will appear on Player B's monitor.

At this point, Player B will have to decide how many tokens to pass to Player A, knowing that he/she can use only the tokens passed by Player A and tripled by the experimenters (Figure 3)

Figure 3.



If x is the number of tokens passed by Player A to Player B, B will be delivered $3x$ tokens and must decide how many of these $3x$ tokens to pass to Player A.

The payoff of the two players will be the following:

Player A's payoff = 10 tokens – tokens passed to B + tokens passed by B

If x is the number of tokens passed by Player A to Player B, and y is the of tokens passed by Player B to Player A, at the end of the experiment Player A will receive:

$10-x+y$

Player B's payoff = 10 tokens + tokens passed by A and tripled by the experimenter - tokens passed to A.

If x is the number of tokens passed by Player A to Player B, and y is the number of tokens passed by Player B to Player A, at the end of the experiment Player B will receive:

$10 + 3x - y$

The experiment will be over just after Player B's choice.
Your payoff will appear on your monitor. There will not be any repetition.

Meeting

[Only treatments T1A, T1B, M1A, M1B]

Before the experiment starts you will have the possibility to decide whether to meet – at the end of the experimental session - the person you are going to play with.

You have received a form with the question: "Do you want to meet - at the end of the experiment – the person you are going to play with? YES [ ] NO [ ]". Enter your identification code and

- choose YES if you want to meet the person you are paired with.
- choose NO if you do not want to meet the person you are paired with.

If you choose YES and the other person chooses YES, you will meet her/him at the and of the experimental session.

If you choose YES and the other person chooses NO, you will not meet her/him.

You must choose before starting the experiment. The experimenter will tell you when to do it.

Once you have made your choice, the experimenter will collect the forms and will tell you when to sign in for starting the experiment.

SECOND STAGE

[treatments TB, MBA, T1A and M1A; in treatments MBB, T1B and M1B: the first stage is the survey and the second stage is the game; in treatments MBB, T1B and M1B players fill the survey before looking at the second stage instruction]

Once the experiment is over one of the experimenters will sign your payoff (in euros) on your payment form and will launch a new software.

In this stage of the experimental session we ask you to enter your identification code and to fill a survey with 95 socio-demographic and attitudinal questions.

If you do not want to answer a particular question, just skip it.

END OF THE EXPERIMENTAL SESSION

Once you have completed the survey you can leave the room.

[*only for treatments T1A, T1B, M1A, M1B*]

If you have chosen to meet the person with whom you were paired in the experiment, one of the experimenters will check what the other person has decided. If she/he also has opted for the meeting then you can meet her/him outside the room.

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

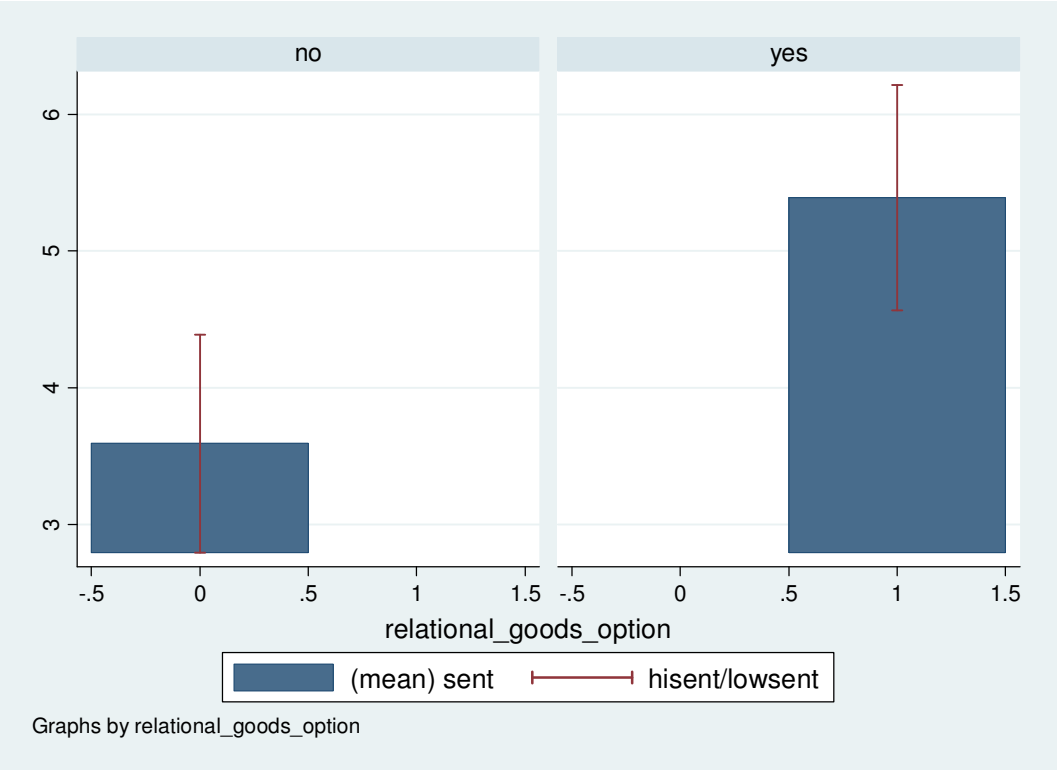
Amount sent by the trustor	Total Sample (with and without encounter option)	Encounter option not available (treatments TB, MBB and MBA)	Encounter option available (treatments T1A, T1B, M1A and M1B) Trustor's decision to opt for the encounter		
			Both YES and NO	YES	NO
0 (purely self-interested trustors)	14.84	25.00	4.69	3.70	5.41
1	10.16	10.94	9.38	3.70	13.51
2	6.25	4.69	7.81	7.41	8.11
3	8.59	10.94	6.25	3.70	8.11
4	14.84	12.50	17.19	7.41	24.32
5	14.06	10.94	17.19	14.81	18.92
6	5.47	6.25	4.69	3.70	5.41
7	3.13	4.69	1.56	3.70	0
8	4.69	4.69	4.69	7.41	2.70
9	0.78	0	1.56	3.70	0
10	17.19	9.38	25.00	40.74	13.51
Total	100	100	100	100	100

Percent values.

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

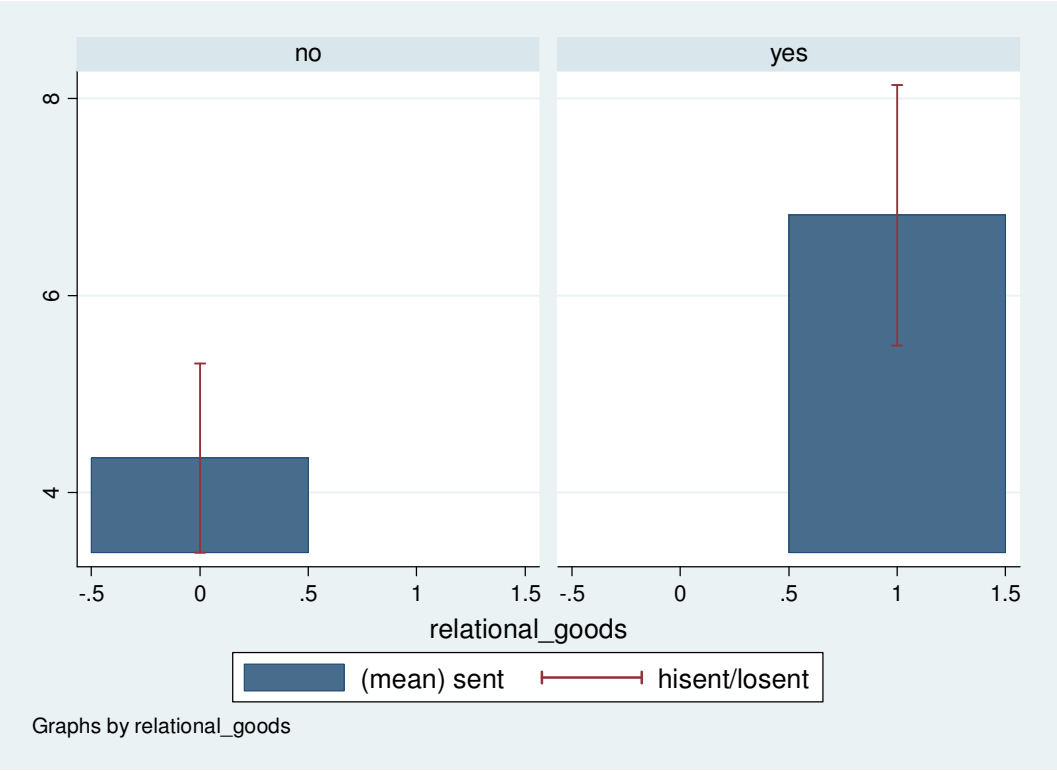
		Obs	Mean	Std. Err.	[95% Conf. Interval]	
Total Sample (with and without encounter option)		128	4.492	0.296	3.906	5.079
Encounter option available (treatments T1A, T1B, M1A and M1B)	Trustor decision: YES	27	6.815	0.643	5.493	8.136
	Trustor: NO	37	4.351	0.473	3.391	5.311
	All experiments	64	5.391	0.412	4.568	6.213
Encounter option not available(treatments TB, MBB and MBA)		64	3.594	0.399	2.797	4.391
Survey Beforhands (treatments T1B, MBB and M1B)		48	4.729	0.515	3.692	5.766
Survey afterwards (treatments TB, T1A, MBA And M1A)		80	4.35	0.361	3.631	5.069
Trento (treatments TB, T1B and T1A)		64	4.359	0.424	3.512	5.207
Milano (treatments MBB, MBA, M1B and M1A)		64	4.625	0.417	3.792	5.458

Fig. 4 Difference in the amount sent by the trustor conditional to the availability of the option to meet the trustee



Two-sample Wilcoxon rank-sum (Mann-Whitney) test= -3.061 Prob > |z| = 0.0022

Figure 5. Difference in the amount sent between trustors who opted for the encounter and those who did not (subsample of the experiments in which the option is available)



Two-sample Wilcoxon rank-sum (Mann-Whitney) test z = -2.853 Prob > |z| = 0.0043

Table 3 The effect of the option of the encounter on the probability that the trustor Has standard "textbook" behaviour

Method	***Logit***	***Logit***
Encounter	-1.990	-3.079
	(0.695)***	(1.221)***
Male	-0.943	-1.948
	(0.596)	(1.058)*
Nmembers	-0.701	-0.969
	(0.286)***	(0.474)**
Income		0.012
		(0.347)
Constant	2.978	5.286
	(1.586)*	(2.829)*
Pseudo R^2	0.178	0.315
Prob > χ^2	0.001	0.003
Number of obs.	121	73

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: both in the case of "survey after the game" and in the case of "Trento sessions", the "encounter" dummy predicts failure (dependent variable=0) perfectly

Table 4 the determinants of the trustor's contribution

Method	***OLS***	***Ologit***	***OLS***	***Ologit***
Relgoods	2.479	1.625	3.231	2.396
	(0.755)***	(0.519)***	(0.948)***	(0.734)***
Male	2.016	1.256	2.255	1.442
	(0.749)***	(0.481)***	(0.898)**	(0.583)**
Nmembers	0.310	0.219	0.283	0.250
	(0.329)	(0.198)	(0.445)	(0.294)
Income			-0.263	-0.247
			(0.284)	(0.183)
Constant	2.128		3.083	
	(1.432)		(2.316)	
cut1		-1.351		-2.542
		(0.976)		(1.754)
cut2		-0.072		-0.449
		(0.886)		(1.520)
cut3		0.548		-0.030
		(0.891)		(1.509)
cut4		0.938		0.156
		(0.892)		(1.502)
cut5		1.818		1.171
		(0.893)		(1.478)
cut6		2.626		2.041
		(0.915)		(1.481)
cut7		2.912		2.446
		(0.929)		(1.500)
cut8		3.015		2.592
		(0.936)		(1.507)
cut9		3.349		2.885
		(0.962)		(1.531)
cut10		3.469		3.035
		(0.962)		(1.543)
Adj R^2	0.241		0.249	
Pseudo R^2		0.072		0.097
Root MSE	2.869		2.877	
Prob > F	0.000		0.005	
Prob > χ^2		0.000		0.002
Number of obs.	62	62	43	43

Legend. dependent variable: amount sent by trustors (integer values from 0 to 10). *Relgoods* 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	Decision to meet the trustee
Male	2.137		2.144	
	(0.854)**		(0.846)**	
Nmembers	0.328		0.289	
	(0.460)		(0.458)	
Income		0.352		0.399
		(0.145)**		(0.164)**
Parmarried		-1.512		-1.698
		(0.524)***		(0.563)***
Numknown				0.031
				(0.018)*
Decision to meet the trustee	2.781		2.536	
	(1.609)*		(1.498)*	
Constant	2.123	-0.355	2.397	-0.947
	(2.374)	(0.684)	(2.291)	(0.812)
Number of obs.	43		43	
Log likelihood	-126.432		-124.763	

Legend. *Amount sent*: amount sent by trustors (integer values from 0 to 10). *Decision to meet the trustee*: 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. *Numknown* number of people known by the subject.

* 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

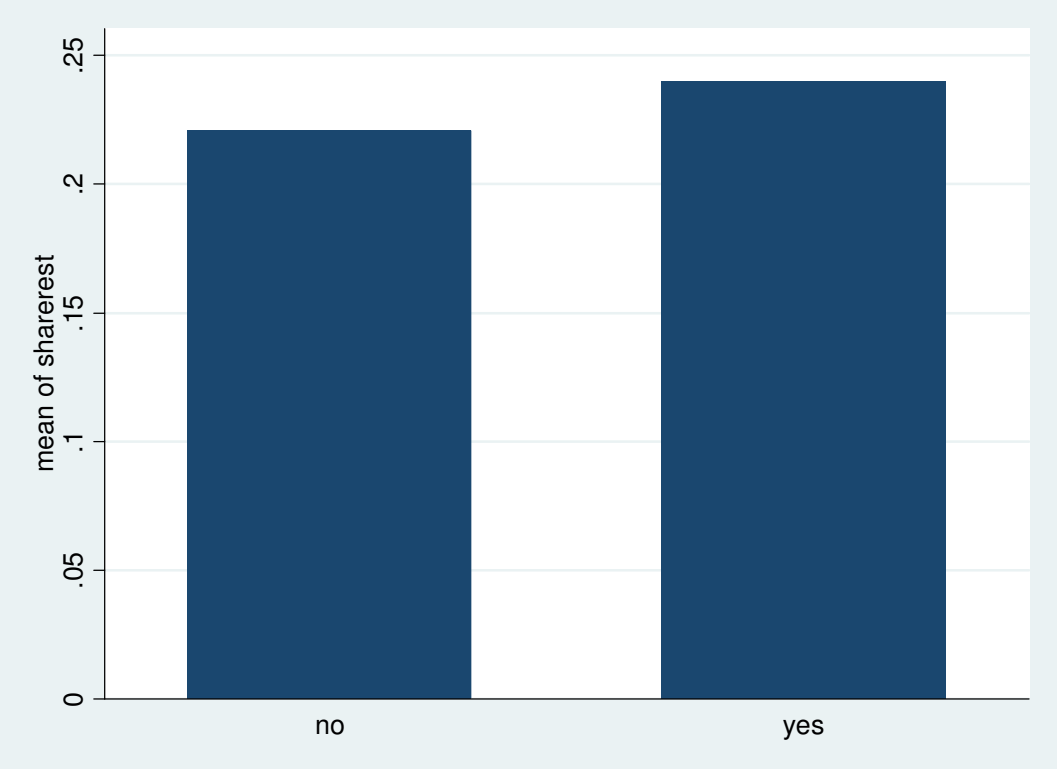
Sharerest (Amount payed back/ Total amount received)	All experiments	Encounter option not available	Encounter option available		
			Trustee's decision to opt for the encounter		
			YES and NO	YES	NO
0	33.03	33.33	32.79	16.67	39.53
0 < sharerest ≤ 0.1	7.34	10.42	4.92	5.56	4.65
0.1< sharerest≤ 0.2	17.43	18.75	16.39	11.11	18.60
0.2< sharerest≤ 0.3	2.75	4.17	1.64	0	2.33
0.3< sharerest≤ 0.4	18.35	14.58	21.31	22.22	20.93
0.4< sharerest≤ 0.5	6.42	6.25	6.56	5.56	6.98
0.5< sharerest≤ 0.6	3.67	2.08	4.92	16.67	0
0.6< sharerest≤ 0.7	7.34	4.17	9.84	22.22	4.65
0.7< sharerest≤ 0.8	0.92	0	1.64	0	2.33
0.8< sharerest≤ 0.9	0.92	2.08	0	0	0
0.9< sharerest≤ 1	1.83	4.17	0	0	0
Total	100	100	100	100	100

Percent values

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

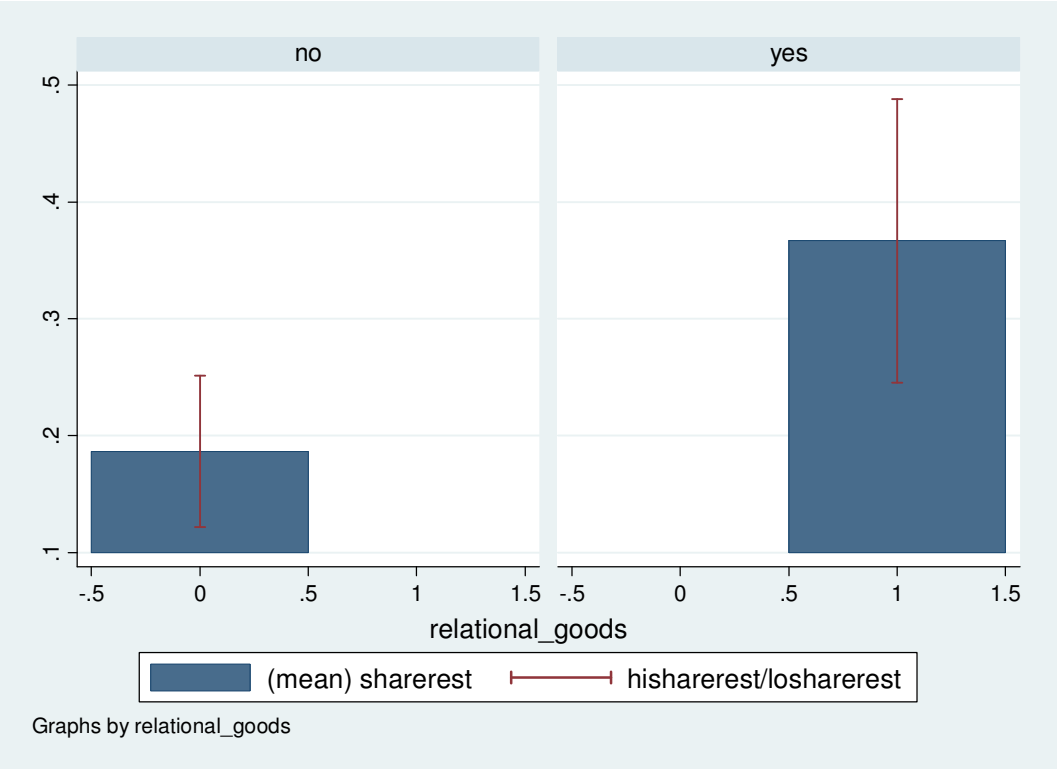
Shareres		Obs	Mean	Std. Err.	[95% Conf. Interval]	
Total Sample (with and without encounter option)		109	0.231	0.024	0.184	0.279
Encounter option not available (treatments TB, MBB, MBA)		48	0.221	0.039	0.142	0.299
Encounter option available (treatments T1A, T1B, M1A, M1B)	Option decision: YES	18	0.367	0.058	0.245 .	0.488
	Option decision: NO	43	0.187	0.032	0.122	0.251
	Option decision: YES and NO	61	0.240.	0.030	0.180	0.300
Survey beforhands (treatments T1B, MBB, M1B)		40	0.263	0.046	0.170	0.356
Survey afterwards (treatments TB, T1A, MBA, M1A)		69	0.213	0.027	0.159	0.266
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

Figure 6 Difference in the amount sent by the trustor when the option of the encounter is available or not



Two-sample Wilcoxon rank-sum (Mann-Whitney) test z = -0.720 Prob > |z| = 0.4713

Figure 7 Difference in the amount sent between trustees who opted for the encounter and those who did not



Two-sample Wilcoxon rank-sum (Mann-Whitney) test z = -2.701 Prob > |z| = 0.0069

Table 8 The determinants of trustee contribution

Method	***OLS***	***Tobit***	***OLS***	***Tobit***
Relgoods	0.190	0.246	0.170	0.235
	(0.064)***	(0.086)***	(0.079)**	(0.106)**
Male	0.005	-0.037	0.002	-0.032
	(0.057)	(0.079)	(0.073)	(0.100)
Nmembers	0.033	0.034	0.058	0.069
	(0.028)	(0.039)	(0.039)	(0.054)
Income			-0.003	-0.022
			(0.027)	(0.038)
Constant	0.052	-0.010	-0.026	-0.066
	(0.123)	(0.170)	(0.172)	(0.231)
Adj R-squared	0.129		0.249	
Pseudo R^2		0.173		0.155
Root MSE	0.218		0.091	
Prob > F	0.013		0.091	
Prob > χ^2		0.019		0.108
Number of obs.	60	60	47	47

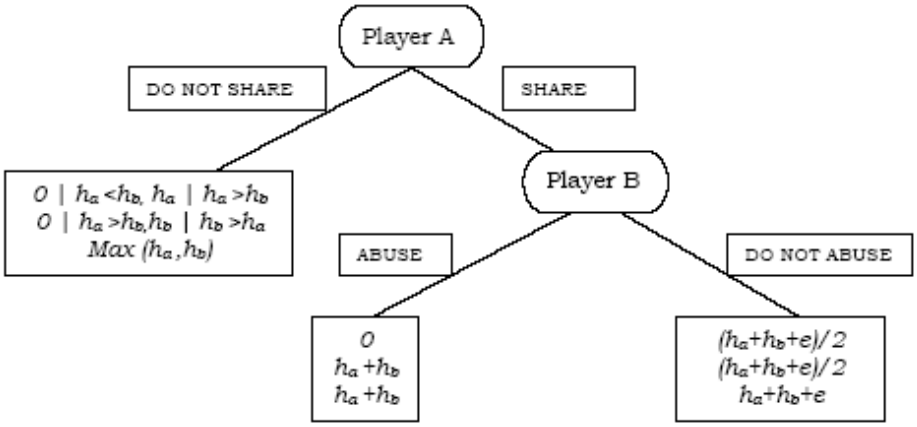
Legend: dependent variable: the share of the amount paid back by trustees on the total amount received. Relgoods dummy which takes value of one if the trustor opts for the encounter for individuals participating to the treatment in which the option is available. *Male*: gender dummy taking the value 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

Table 9. The determinants of the trustee's contribution (Treatment regression model)

Dep. Var.	Sharerest	Decision to meet the trustee
Male	-0.041	
	(0.072)	
Nmembers	0.027	
	(0.037)	
Selfint		-0.409
		(0.162)**
Sport		0.992
		(0.378)***
Gencon		0.291
		(0.175) *
Year		0.209
		(0.114) *
Decision to meet the trustee	0.323	
	(0.150)**	
Constant	0.068	-417.095
	(0.147)	(227.537) *
Number of obs.	57	
Log likelihood		-14.170

Dependent variable: the share of the amount paid back by trustees on the total amount received. *Male*: gender dummy taking the value of one if the subject is a male. *Nmembers*: number of family members *Selfin* belief that most people in life are purely self interested (it takes integer values from 1- complete disagreement - to 10 – complete agreement). *Sport*: number of sport practiced by the subject. *Gencon*: belief that being generous with others is convenient since others tend to reciprocate (it takes integer values from 1 to 10). *Year*: birth date.
* significant at 10%; ** significant at 5%; *** significant at 1%; Standard errors in brackets

Figure 8 The one-shot corporate trust game



Source: Becchetti- Pace (2006).