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*Groups and Social Norms:  
A Preliminary Experimental Investigation*

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# Groups and Social Norms: A Preliminary Experimental Investigation

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[Preliminary Version]

## Abstract

Economics has not widely investigated the role of group identity in defining social norms. The present experiment considers the interplay between choices having social dimension and a notion of group affiliation based on shared intrinsic characteristics. More specifically, a triadic game setting (Cox, 2004) will be presented to detect trust, reciprocity and other-regarding concerns in choices relevant either for IN-group subjects or OUT-group subjects. What emerges from the experiment is that in general subjects do not conform to a rational self-oriented strategy. Discrimination at the group level is not a generalized pattern in our data but emerges clearly only in games involving exclusively other-regarding concerns. Limitations and directions for future research are discussed.

**Keywords:** Experimental Economics, Social Norms, Group Interaction,  
Social Identity

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# 1 Introduction

Aim of the present contribution is to better understand the influence of group membership on economic decisions involving other individuals. The triadic game setting implied (Cox, 2004) focuses on trust, reciprocity and other regarding concerns. Some exploratory research hypothesis will be tested and some conclusions will be sketched. Social norms in the form of reciprocity, trust and other-regarding concerns are present across all the experimental treatments. Group discrimination is not a stable pattern in our data. More specifically, discrimination is stronger in a simple dictator game where interaction is limited to two players.

The paper is organized as follows: section 2 analyzes the importance of group dimension in the economic context; section 3 provides a description of the experimental setting; section 4 a detailed analysis of laboratory outcomes is provided; section 5 some conclusions are drawn with particular attention to further research opportunities.

# 2 Groups and Economics

Standard Economic literature has traditionally focused on self-oriented, individualistic agents completely devoted to the efficient maximization of their utility given a budget constraint. According to Sugden (2000):” In that theory (theory of rational choice), the only ultimate factors are individual human beings: it is individuals, not groups, which face decision problem. The question ‘What should we choose?’ simply cannot be formulated within the theory” This undersocialized description of economic behavior is deeply rooted in the utilitarian tradition and has become the dominant paradigm in Economics. Social atomization, in fact, is a necessary con-

dition in the perfect competition approach which is characterized by an highly mathematically-formalized analytical apparatus. Granovetter (1985) considers not only the fallacy of an undersocialized approach but also of an oversocialized view of economic life which has characterized some sociological analysis. In this kind of approach the decision maker is influenced by institutions in a mechanical way and shares with the homo-economicus the same atomistic perspective. As a balance between these two extreme perspective the author presents the embeddedness argument which "stresses instead the role of concrete personal relations and structures (or "networks") of such relations". The importance of different groups and institutions in defining the structure of effective incentives has been widely described by (Bowles, 1998): the more transactions are regulated by markets mechanisms the more subject will reveal themselves as individualistic and self-regarding. The bigger the part played by non-market transaction the more other-regarding and socialized will be the agents. The role of trust in originating and sustaining networks (groups) in the economic context has been evidenced by Bowles and Gintis (2000). The authors use the term parochialism to define exclusionary practices between groups characterized by different cultural aspects. Parochialism favors trust in the form of cooperation among individuals when information about trading partners are absent or too costly. Instead of the term "group" the authors employ the concept of network which is defined as a "set of agents engaged in relatively frequent, non-anonymous interactions structured by high entry and exit costs, but lacking centralized collective decision-making institutions". In this perspective the fundamental trade-off between networks (groups) and atomistic processes resides in the gain of control over other's actions versus a loss in exchange opportunities.

More specifically the advantages are to be searched in the possibility of

retaliation and in the acquisition of low cost information on the group members. When this positive attributes of groups overcome losses due to trading limitations groups will exist and constitute an adaptive social device. It must be noticed that, in this perspective, identification which is invoked as the fundamental element of groups might, instead, be considered as a strategic device to easily acquire informations about others' intentions. Groups with a high degree of homogeneity (fan clubs, sport associations, political parties, ...) might thus originate from the consideration made by the chooser that it is easier to infer the action of the other when he is similar to him. This will in turn originate trust inside the group which itself will help in solving coordination problems when contractual bindings are loose. An additional value component of group membership is that it is easier to retaliate against "cheating" members inside a group where relations are closer than when two monads interact occasionally.

Of particular interest for economists is the interplay between identity issues and provision of incentives in firms. The standard approach to agency issues has neglected important concepts like group and identity<sup>1</sup>. However the relevance of the group inside organizations, firms in particular, has been made clear by the seminal contributions of Simon (1991, 1993) and March (1994). The contribution of Simon tries to develop in the economic context the concept of identification. The level of identification is positively correlated with the adaptability of individuals to norms and pressures of the society<sup>2</sup>, which, in some sense, defines also their adaptation to the social landscape. The work of March is characterized by the concept of appropriateness

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<sup>1</sup>see Prendergast (1999) for a survey of economic literature

<sup>2</sup>Simon (1991) uses the term "docility" to connote the level of adaptation of individuals to norms and pressures of the society; "...to be docile means to be tractable, manageable and, above all, teachable."

which represents an alternative to the traditional logic of consequences which dominates decision theory. Instead of considering the expected consequences of actions individuals might follow a rule-based reasoning in which actions are matched to situations by means of rules organized into identities. It is clear that in this kind of perspective the role of the group is fundamental in defining the process leading to the rule of decision. Following this line of reasoning the situation must firstly be recognized, the identity must be established and reference to existing rules considered. An interesting research issue, pursued with the present contribution, is to better define the role of groups in guiding individual cognition during the process of identity formation. The importance of group identity in experimental setting has been evidenced by the pioneering contribute of Dawes (1991). In this work group identity in the laboratory was establishes through communication among people who had never met before (cheap talk). Communication seems to have a considerable impact on the formation of group identity and to orient subject's actions to group-oriented behaviors which are different from self-regarding traditional economic behavior. The role of identity and of groups has been recently formalized in an agency theory perspective by Akerlof and Kranton (2003). The formal model proposed by the authors tries to capture some empirical observed facts which reveal that in some situations economic incentives are not the only determinants of intended actions. The basic idea through which identity is incorporated into a traditional agent-based model is that a subject belonging to a category (group) has an ideal type of someone belonging to that category. The subject derives utility from belonging to a category but loses utility when not behaving like the ideal type". The psychological background of a utility function defined in this way might be searched in a cognitive dissonance mechanism (Festinger, 1957).

The role of teams in preference definition has been considered by Sugden (2000). In the theory presented team preferences are, from a methodological point of view, similar to individual preferences. The latter are considered as a generalization of the former. The aim of the work is to "represent and codify forms of reasoning which people in fact use, perhaps informally or even consciously, when making decisions as collectives"<sup>3</sup>. The author deals with two distinct problems: existence and objectives. The former refers to the recognition made by the individuals that they are members of a group and that they consider this fact when taking decisions while the latter refers to the definition of the group's task. In order to address this two arguments it is fundamental to understand the dimension of team preferences. At the team level team preferences are revealed by the ranking made by the team over a set of opportunities. At the individual level the team preferences derive from a team directed reasoning which defines the strategy to be chosen. Sugden's football players "game"<sup>4</sup> underlights the coordination role of team reasoning. In a situation like the one described individual rationality (*What should I do ?*) does not warrant to reach the higher payoff while team-directed reasoning (*What should we do ?*) points to the Pareto dominant payoff. The present work will focus mainly on the role of identification in the process leading to the definition of social norms both within and between group boundaries. Laboratory evidence on this kind of dynamics might help in better understand real-life situations where

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<sup>3</sup>(Sugden, 2000, p.178)

<sup>4</sup>The situation described is a well-known game: there are two football players, A and B, who are members of a team. A has to pass the ball to B in order to score. Both players have two options: move to the left/right for B and pass to left/right for A. The probability to score is 11% if both choose right, 10% if both choose left, zero otherwise. The Nash equilibrium (pure and mixed) in this game are: L-L, R-R R-r with probability 10=21 and L-L with probability 11=21. The problem is one of equilibrium selection where the payoff dominant equilibrium is R-R

natural groups in form of organizations play an important role.

### 3 Description of the Experiment

#### 3.1 Purposes of the Experiment

Main purpose of the experiment is to investigate reciprocity, trust and other-regarding concerns in an artificially created group context. The experimental setting is a triadic game (Cox, 2004). The triadic design allows to control for other regarding behavior and to isolate trust and reciprocity effect. An investment game, a dictator game and a dictator game with modified endowments are played in a triadic setting. The basic assumption of this setting is that social preferences are stable and exogenous. If this assumption is fulfilled it is theoretically possible to isolate the other-regarding component of an investment game from the trust and reciprocity components. The control game in this setting is a simple dictator game which is supposed to capture the other regarding component in individual behavior. The identification of these components of behavior is quite interesting *per se* but can help in better understanding intergroup bias in the perspective of a recent contribution. The work of Yamagishi (2002) has moved the attention to the concept of generalized reciprocity as a fundamental element of observed intergroup bias (Tajfel and Turner, 1986). This position is deliberately against the well accepted explanation given by Social Identity Theory (SIT) and empirically supported by experiments based on the Minimal Group Paradigm (Tajfel, 1970). According to Yamagishi (2002) generalized reciprocity can take place in a generalized exchange system where what one receives from a partner is not the direct result of what she gave to the matched subject (direct reciprocity) but simply a mediated outcome of a generalized norm-oriented transaction. Reciprocation is expected from a generic member of



the reference group and not necessarily from the interaction partner<sup>5</sup>. The behavior based on generalized reciprocity has been defined by the author as group heuristic. The perspective of SIT is radically different from that of group heuristic. According to SIT the group and the self become an indistinguishable entity and thus favoring an in-group member is a pseudo-altruistic act which derives by an "egocentric" perspective. The utility of the fellows is in some sense embedded into the utility of the individual member of the group through a sympathetic process.

Three hypothesis will be tested with the experiment with the second and the third following from fulfillment of the first:

- **Hypothesis 1** (Main) *Subjects will not follow the rational self-regarding strategy in the investment game of session 1 and in the Dictator Game of session 2 and 3 (zero amount sent).*
  - **Hypothesis 2** *People are not indifferent to group labeling both in terms of trust and reciprocity and in terms of other regarding preferences.*
  - **Hypothesis 3** *Subject will not play the same strategy in the pseudo-investment subsessions (undirect reciprocity) and in the dictator subsessions( other regarding) (sessions 2-3).*

The last hypothesis originates from the consideration that subjects may perceive themselves and group fellows as interchangeable units. If this is true the strategies in the two games will differ and, more specifically, the strategy in the pseudo-investment game will conform to that in the investment game. If participants perceived members of their group as completely different from

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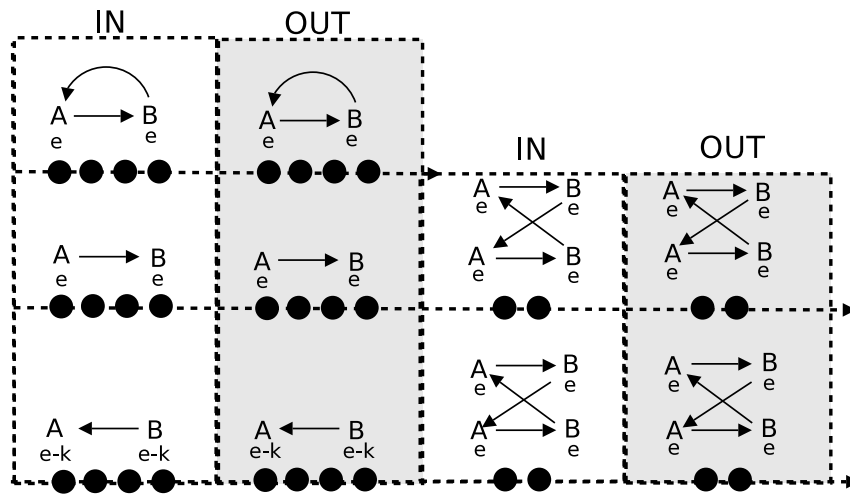
<sup>5</sup>"be nice with a group and the group will be nice with you"

themselves they would play a strategy similar to that of the dictator game. Experimental evidence has already shown that the first hypothesis is in general fulfilled in a laboratory setting (Berg et al., 1995; Cox, 2004) while the authors were not able to find any explicit reference in the literature for what attains the other two hypothesis.

### **3.2 Structure of the Experiment**

The experiment is computer based, with a server-clients architecture. The number of participants is 12 for each treatment (a even number which its half is also even). Total participants are 36. There are 3 different treatments. Groups will be aggregated via an innate characteristic based on zodiacs elements. An important methodological implication of group experiments is that the innate characteristics must not lead to an uncontrolled selection bias. A possible solution to this could be to randomize group membership following the procedure described by Tajfel (1970). Unfortunately, this solution seems to be at odds with the current state of the art of experimental economics. The three sessions are between subjects. The payment will be proportional to decisions in the game and a show-up fee of 3 €.

**Figure 1** - *Experimental Structure*



Each horizontal line in Figure 1 corresponds to a single session and each black dot corresponds to a game repetition. The schematic representation of the game is reported near the correspondent black dot. Sessions played among group fellows and among subjects belonging to different groups are identified, respectively, by a white and grey shaded area.

### 3.3 Detailed Explanation

Here following each game of the experiment is presented and explained. Attention will be devoted also to the procedure leading to group formation

- *Group Formation*

Before the experimental sessions subjects were recruited to take part to the experiment following the usual procedure employed at the Computational and Experimental Economics laboratory (CEEL) of the University of Trento, Italy. During the recruitment subjects were asked about their day and month of birth and told that this information would have been used to select them. People were also told that they had to wait a call from a represents of the laboratory confirming or

disconfirming their participation to the experiment according to a selection process based on their birth date. No other detail was provided to the subjects. Due to methodological issues group formation through pseudo-similarity, a normal practice in psychological experiments, has been neglected. The group formation procedure we decided to pursue was based on zodiac "affiliation" of the participants. People sharing the same zodiac element (i.e. earth, fire, air, water) were allocated to the same group. We choose this grouping procedure in order to avoid selection bias<sup>6</sup> and to maintain at the same time the perception by the subject of group membership defined through a shared characteristic. With this procedure we tried to mimic the minimal group formation, which represents a reference paradigm in social psychology, and at the same time we wanted to preserve the credibility of our experimental instructions. However, it must be noticed, as a general statement, that is not a simple task to deal with this methodological issue if one wants to maintain an experimental economic perspective. Six groups of six people each were thus formed according to the procedure above described and in each experimental session two of them were considered. The total participants to this experiment were thus 36 students randomly collected and subsequently grouped according to a random procedure. The attention we gave to group formation was justified by the strong bias that could have emerged from a selected sample. Aggregate data coming from the experiment in terms of behavior seem

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<sup>6</sup>obviously those who believe in horoscope will suggest that the membership to an element will have important consequences on the innate characteristics of an individual, even in terms of altruism and social norms in general. We prefer to assume the perspective of the Italian scientist Margherita Hack who said " The computation of planets' position is an observation which has nothing to do with human life and so there are not scientific basis in this practice (to associate planets' position with human events)" (translated by the authors as reported on the web site [www.mediamente.rai.it](http://www.mediamente.rai.it))

to support the hypothesis that selection based on zodiac elements is not characterized by selection bias in terms of behavior.

- *Investment Game*

The first treatment implemented is a typical investment game (Berg et al., 1995). Each subject is endowed with 10 EC (Experimental Currency). Subject A is asked to transfer to an anonymously paired subject B an amount (integer) of money (from 0 to 10 EC<sup>7</sup>). The remaining amount will be kept by the subject in her endowment. Each unit of money transferred to B will be multiplied by 3 and then B will decide how much to keep for himself and how much to return to A (from 0 to the A's transfer multiplied by 3). The subgame perfect strategy is zero transfer by B and consequently zero contribution by A. Subjects will play 4 times the game inside and 4 times outside the boundaries of the group. The role A or B will be randomly assigned at each repetition of the game. Subjects have perfect information on this random coupling procedure.

- *Dictator Game*

In this game only subject A has an active role and decides how much of her endowment to transfer to subject B. The amount transferred is multiplied by 3 and assigned to B. Roles A and B are randomly assigned. The structure of the game is that of a dictator game.

- *Modified Dictator Game*

In this game only subject B has an active role. Initial endowments are assigned in a non-proportional way to subject A and B. Roles A and B are randomly assigned. B is provided with 10 EC. B has

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<sup>7</sup>EC=Experimental Currency

an additional, randomly assigned, endowment equal to what another subject B received in the investment game. The endowment of A consists in what another subject A kept in the investment game. All the endowments are randomly re-assigned. Subjects are informed of the correlation between their endowment and that of the other player. The procedure above described allows for an homogenous comparison between this session and the investment game. Subject B has to decide how much to send to subject A.

- **Undirect Investment Game**

A subject A has to decide how much to give to a subject B of her own endowment. Then, the subject B has to decide how much to give to a subject A different from the subject A who possibly gave her the amount of money. Both the subjects A involved in the decision of B own to the same group. 4 rounds of this game will be played in a within group setting and 4 rounds will be played in between group setting. Within group in this setting means that players B are members of the same group while between means that players B are members of different groups.

### **3.4 Role Attribution**

In each round of each treatment both coupling and role assignment will be random. Subjects will not know beforehand their role in the following round. This design has been studied in order to prevent strategic reasoning in the game. While the procedure provides some control on strategic reasoning two important drawbacks must be evidenced. First, subject can still compute a matching probability measure. Second, the number of independent observations is low and randomly determined. Finally, it must be evidenced

that anonymity between participants is warranted.

### **3.5 Retribution**

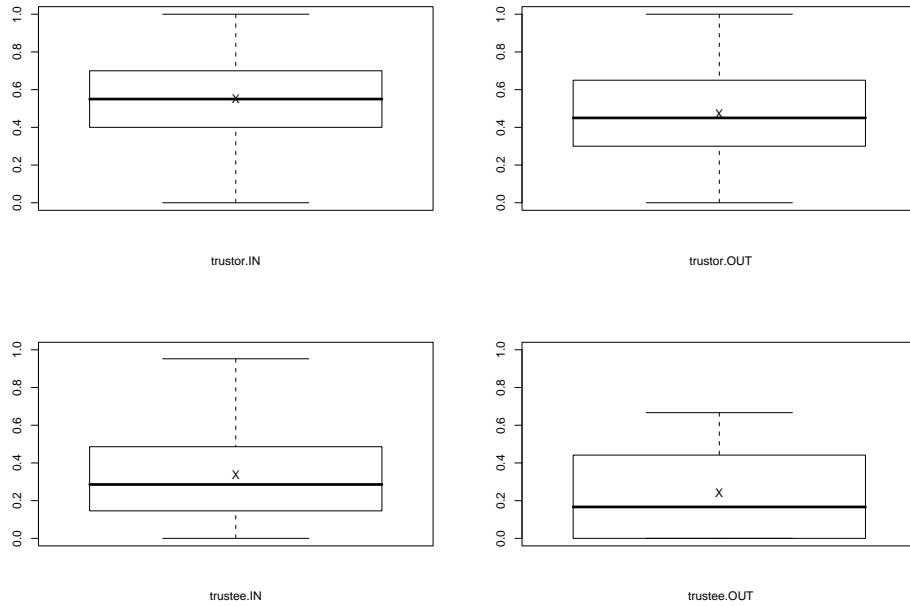
The retribution of the subjects was proportional to the amount collected during the experiment plus a show-up fee of 3 €. Inside the laboratory a conventional experimental currency will be implied. The sum collected at the end of the experiment will be changed in Euro. The maximum amount that was possible to collect was 15 €. The time required for the completion of the experiment was on average 30 minutes.

## **4 Analysis of the Laboratory Outcomes**

### **4.1 Investment Game**

As described in session 3.3 the first session of the experiment was structured as a traditional investment game. Figure 2 reports a summary graph of the distribution of choices both in the IN group and in the OUT group condition. Choices are expressed as a percentage of the available amount both for the trustor and the trustee.

**Figure 2** -*Choices in the Investment Game*



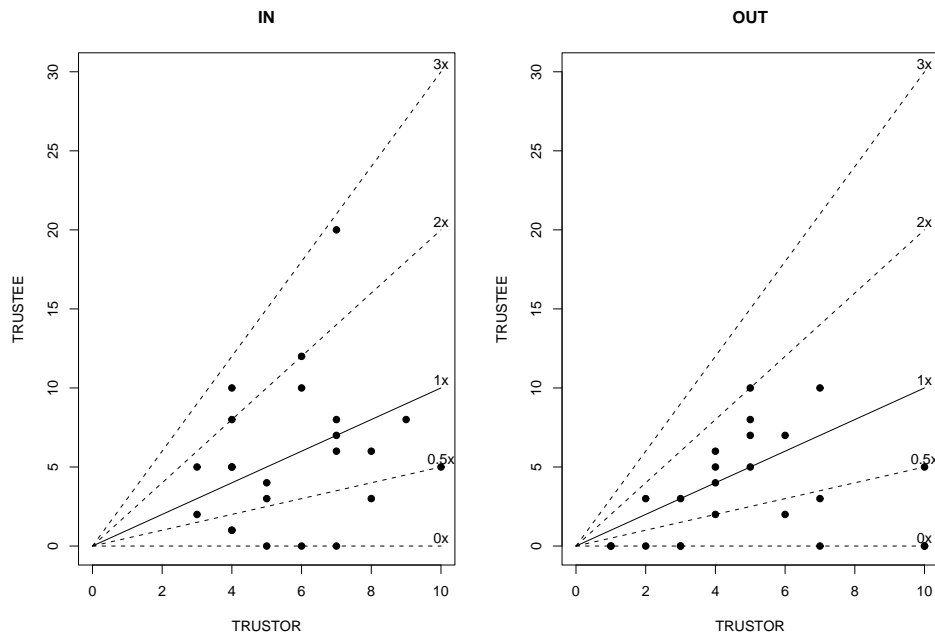
Following a clockwise order from the top the first two box plots refer, respectively, to the choices of the trustor in the IN and OUT conditions. What emerges from the graph is that no significant difference between the two conditions is registered. Under both conditions choices of the trustor are almost equally distributed around the central value of the distribution of possible choices. For what attains the trustee's behavior what emerges is that in the OUT condition choices tend to span over lower values of the distribution. However, a non-parametric test (Wilcoxon rank sum test) does not allow to reject the null-hypothesis that the two distributions in the IN and OUT condition both for the trustee and the trustor are identical (p-values: trustor IN vs. OUT=0.204; trustee IN vs. OUT=0.2543).

In order to better understand behavior in this session it is useful to consider individual behavior. Graph 3 provides a representation of choices of B in response to choices of A. Each point refer thus to a couple in each round of the Investment Game. On the horizontal axis choices of the trustor are



reported while on the vertical axis choices of the coupled trustee are considered. Choices of the trustor equal to zero are omitted from the analysis. The lines reported on the graph identify different reciprocity regimes. Values above the continuous line are associated with a positive repayment of the investment while values below the continuous line are associated with a negative repayment.

**Figure 3** -*Individual Choices in the Investment Game*

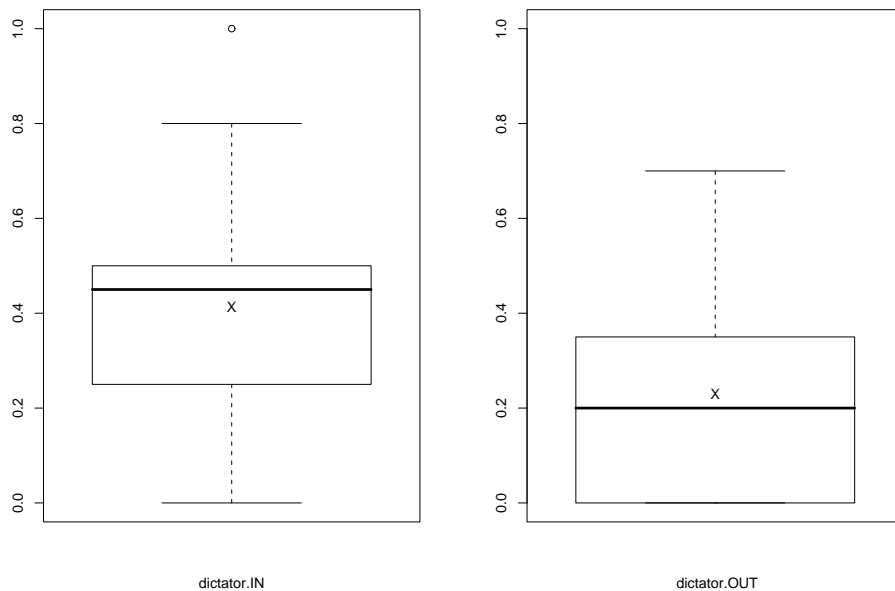


The distribution of individual choices under the two conditions is quite similar even if observations in the 2x-3x region are observed only under the IN condition. Couples of choices are dispersed around the unitary repayment line and more conspicuous investment seem to be on average retributed at an higher rate.

## 4.2 Dictator Game

As described above the first 8 rounds of session 2 were composed by a simple dictator game. In this session only role A is active. On the vertical axis the percentage of the maximum amount that can be sent is reported. On the left hand side the choices expressed under the the IN condition are reported while on the right hand side choices in the OUT condition are considered.

**Figure 4** - *Choices in the Dictator Game*

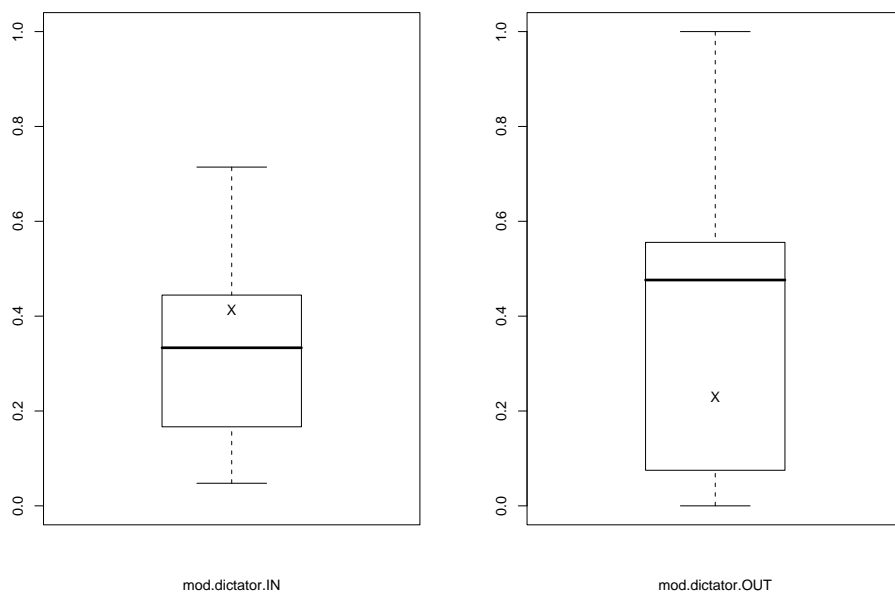


Choices under the OUT condition span over the lower values of the support of possible choices while choices under the IN condition are distributed around the central values. A Wilcoxon rank sum test confirms that the two distributions are significantly different at conventional statistical levels (p-value: 0.012)

### 4.3 Modified Dictator Game

As described above the first 8 rounds of session 3 were structured as a dictator game but with differences in the subject's endowment (see section 3.3 for a detailed explanation of how the endowments have been determined).

**Figure 5** - *Choices in the Modified Dictator Game*



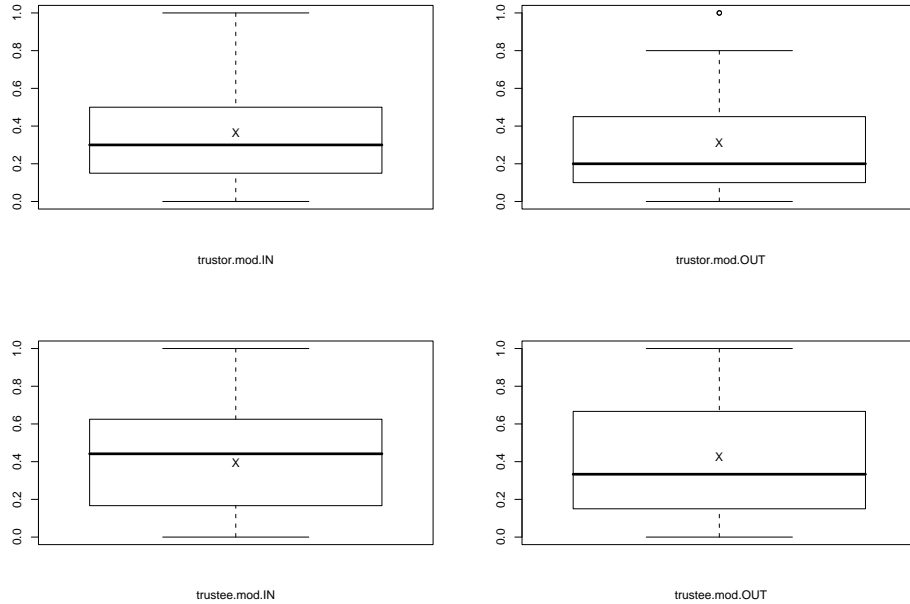
The average choice under the OUT condition is considerably lower than that under the IN condition but a Wilcoxon rank sum test does not allow to reject the null hypothesis that the two distributions are identical (p-value: 0.667)

### 4.4 Undirect Investment Game

The last 4 rounds of both session 2 and session 3 were devoted to play an Undirect Investment Game (see above for a more detailed description). The 4 graphs reported in Figure 6 represent the choices of the "Trustor" and the

”Trustee” in the modified IG.

**Figure 6** - *Choices in the Undirect Investment Game*



What emerges from the graphs reported in Figure 6 is that distributions of choices of the Trustor and the Trustee are quite similar in the IN and in the OUT condition. A Wilcoxon rank sum test confirms that the distributions are not different (p-values: trustor IN vs. OUT = 0.115; trustee IN vs. OUT = 0.943). It is interesting to notice that subjects playing as ”trustee” are not self-oriented even if their behavior does not affect the status of the matched trustor.

#### 4.5 Outcomes across Sessions

Assuming that the behavior of the Trustee and of the Trustor are characterized either by other-regarding concerns or, respectively, by reciprocity or trust and that these preferences are given and stable it is possible to gather information on these preferences from the comparison of different sessions of

the experiment (see Cox (2004) for a description of this methodology). The difference between decisions of the Trustor in the IG and the Dictator in the Dictator Game (see section 3.3) provides a measure of trust. Both in the IN group and in the OUT group condition positive trust has been registered (mean: IN = 0.14166; OUT = 0.245) and in both conditions the net difference is statistically significant (p-value: IN = 0.044; OUT = 0.002). The comparison of choices revealed by the Trustee in the IG and the Dictator in the Modified Dictator Game provides a measure of reciprocity. Quite surprisingly, both in the OUT and IN condition on average negative reciprocity is registered (mean: IN = -0.005 ; OUT = -0.170). It must however be noticed that only in the OUT condition the difference is significant according to a Wilcoxon rank sum test (p-value: IN = 0.612; OUT = 0.050)

## 5 Conclusion

A tendency to discriminate between IN-group and OUT-group subjects has been observed in most of the experimental sessions. However in most of the sessions this observation has shown to be weak and in one of them (role B in session 3) the discrimination is in favor of OUT-group members. The only session which registers a considerable and significant discrimination is the one having the structure of a standard Dictator Game. One possible explanation of the observed behavior is that whenever the game is not played only among two players but a third real player or an exogenous chooser subjects is added identification with the group becomes weaker. "Exclusive" interaction might be a fundamental element in defining identity in a laboratory environment.

Subjects to whom a positive amount of money is allocated in the indirect investment game tend to return, on average, a positive amount of money.

This evidence may be associated either with undirect reciprocity or with other-regarding concerns.

Another relevant pattern which emerges from data is that no discrimination á la Tajfel has been observed in the sense that subjects do not play deliberately against OUT-group subjects but are simply less favorable towards them. One of the possible explanation of this observation might be found in the presence of generalized reciprocity in all the sessions. Another plausible explanation might reside in the fact that with real rewards subjects are less prone to "punish" members of the other group.

The isolation of trust and reciprocity from other regarding behavior is quite problematic given the triadic setting underlying the experiment. Relying on this procedure in fact negative reciprocity emerges and more trust goes to OUT-group members. At the same time altruistic preferences are observed. These joint finding is not only surprising but also quite difficult to support in the perspective of previous contributions. A problem of identification emerges in our experiment due to the low number of independent observations available for each treatment. Real preferences might thus be perturbed by "noise" in the data. One alternative explanations is that subjects do not have stable social preferences but that preferences are embedded in the game that is going to be played. In this sense preferences are endogenous and strongly related to the game played<sup>8</sup>. Looking at data of Berg et al. (1995) it emerges that the average amount given on average in investment game by subject A is 0.52 % of her possible choice and by subject B is 0.30 %. The outcomes in our experiment are 0.55 % in the IN-group and 0.47 % in the OUT-group for subject A and respectively 0.34 % and 0.24 %

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<sup>8</sup>referring to Bowles (1998) games might be seen as an institution. Games which replicate a market structure may activate more self-regarding preferences while games less market oriented might favor altruistic preferences

for the subject B. In both situations the data collected by Berg et al. are situated between the IN-group and the OUT-group data. While this observation seems to confirm the existence of group effect further research will be devoted to identify the net effect of generalized reciprocity comparing a purposely built control experiment replicating that of Berg et al. (1995) and an experiment without group labeling. Only with this procedure the real generalized reciprocity effect will be detected theoretically.

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