Non-reciprocal altruism in dictator games

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Abstract

We carry out a double blind dictator game experiment where the anonymous recipients are randomly drawn from the Swedish general population, and any donations are mailed to the recipients. About a third of the subjects donate some money. © 2000 Elsevier Science S.A. All rights reserved.

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JEL classification: C91; D64

1. Introduction

In dictator games, a dictator divides a sum of money between himself and a recipient that must accept the allocation. The standard game theoretic model of payoff-maximization predicts that the dictator will keep all the money himself and leave nothing to the recipient. This prediction has been refuted in numerous experiments (e.g. Kahneman et al., 1986; Forsythe et al., 1994).

A possible explanation for the deviations from payoff-maximization in dictator games is that subjects have a taste for altruism or fairness. This explanation has, however, been disputed by, among others, Hoffman et al. (1994) and Hoffman et al. (1996). They argued that a main motivation for positive donations in dictator games may be expectations of reciprocity, i.e. by donating some money the subject expects to gain in future interactions with the experimenter, the recipient, or others who know the dictator’s decision. They hypothesized that by decreasing the social distance between the dictator and the experimenter donations would decrease. This was tested using a double blind experimental design where the decision of each dictator would be anonymous both towards other subjects in the experiment and towards the experimenter. The double blind procedure significantly decreased the proportion of subjects that donated anything to 36% and the average donation to 9% of
the amount allocated. Subsequent experiments with the same double blind design have yielded similar results with average donations ranging between 8% and 16% of the amount allocated (Eckel and Grossman, 1996, 1998).

Although the double blind experimental design decreased donations, about a third of the subjects still donated some money to the recipients. The reciprocity between the dictator and the recipient may, however, not have been completely removed with the double blind procedure. The student subjects acting as dictators can infer that the anonymous person is someone like themselves participating in the experiment. Therefore, they may not believe that anonymity can be completely guaranteed. This was also suggested as a possible explanation for the remaining level of donations in the experiment by Hoffman et al. (1996).

In this experiment we increase the social distance between the dictators and the recipients by randomly drawing recipients from the adult general population in Sweden. If money is donated, it is mailed to the recipients, who are unaware that they are participating in the experiment. This design guarantees anonymity between dictators and recipients and removes any possible remaining reciprocity in the double blind design used by Hoffman et al. (1994). If donations in dictator games are motivated solely by reciprocity, donations should therefore drop to zero with this experimental treatment. We also replicate the standard double blind procedure used in recent dictator game experiments (Hoffman et al., 1994; Hoffman et al., 1996; Eckel and Grossman, 1996, 1998). The null hypothesis we test is that the distribution of donations does not differ between the two experimental treatments.

2. Experimental design

2.1. Double blind standard procedure

In this experiment thirty subjects are recruited to room A (the dictator room) and twenty-nine subjects are recruited to room B (the recipient room). The subjects are paid a SEK 50 show up fee, and asked to sit at assigned seats positioned to keep subjects as separate as possible (SEK = Swedish crowns; Exchange rate June 1999 $1 = SEK 8.50). Before the experiment starts the subjects are reminded that there should be no talking during the experiment. The subjects are given the experimental instructions that are read aloud by the experimenter. A monitor is chosen in the dictator room and he/she conducts the experiment and verifies that the procedures are followed as described in the instructions.

Twenty-nine envelopes are randomly distributed to the dictators by the monitor. Twenty-seven envelopes contain five SEK 20 bills and five slips of paper of the same size and the remaining two envelopes contain ten slips of paper. The envelopes with ten slips of paper are included as an additional guarantee of anonymity, since even if no dictator donates any money to the recipients the decision of a single dictator cannot be inferred by the dictator. In private behind a screen, dictators remove five units from the envelope (bills or slips of paper), seal the envelope and then drop it in a box and leave the room. The box with the twenty-nine sealed envelopes is taken by the monitor to room B and the envelopes are randomly distributed to the recipients. The envelopes are opened and the contents are recorded by the monitor. The recipients are given the contents of each envelope and leave the room. The experiment is then over. The procedure is the same as the design used by Hoffman et al. (1994); Hoffman et al. (1996) and Eckel and Grossman (1996, 1998), with some
modifications. We carried out one session of this experiment. Subjects were recruited among undergraduate business and economics students at the Stockholm School of Economics.

2.2. Double-blind with randomly drawn recipients from the general population

In this experiment 30 subjects are recruited to a room. The subjects are paid a SEK 50 show up fee, and asked to sit at assigned seats positioned to keep subjects as separate as possible. Before the experiment starts the subjects are reminded that there should be no talking during the experiment. The subjects are given the experimental instructions that are read aloud by the experimenter. A monitor is chosen and he/she conducts the experiment and verifies that the procedures are followed as described in the instructions.

Twenty-nine envelopes are randomly distributed to the dictators by the monitor. Twenty-seven envelopes contain five SEK 20 bills and five slips of paper of the same size and the remaining two envelopes contain ten slips of paper. In private behind a screen, dictators remove five units from the envelope (bills or slips of paper), seal the envelope and then drop it in a box and leave the room. The monitor is given a box with twenty-nine stamped and addressed envelopes. Each envelope in the box has been provided with the address to a randomly selected person in the Swedish population between the ages 18 and 74 years, who does not know that he/she has been randomly selected for the experiment. The monitor chooses one addressed envelope and one envelope from the box with the dictators’ envelopes. The dictactor envelope is opened by the monitor and its contents recorded. If the envelope contains any money, the monitor puts the money in the addressed envelope and seals the envelope. If the envelope does not contain any money, the monitor discards the addressed envelope. The monitor continues until all the envelopes have been opened. The monitor then takes the sealed envelopes with money in and, together with the experimenter, goes to a mailbox and mails the envelopes. The experiment is then over. The exact instructions for this experiment are reproduced in Appendix A. We carried out two sessions of this experiment. Dictators were recruited among undergraduate business and economics students at the Stockholm School of Economics.

3. Results

The results are summarised in Table 1, showing the percent of decisions for each amount donated. In the double blind standard procedure 33.34% of the dictators donate some money and the mean donation is SEK 13.33 (13.33% of the amount allocated to the dictators). In the other experimental

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1We use a larger group size (thirty subjects rather than fifteen in the dictator room). Another difference is that the amount allocated to the dictators in the previous experiments was $10, whereas it was SEK 100 ($12.5) in this experiment. The use of SEK rather than US dollars also means that the possible divisions of the money will differ. In the previous experiments ten one dollar bills were used, whereas we used five SEK 20 bills (SEK 20 is the smallest denomination of bills in Sweden).

2Since six subjects did not arrive on time in the dictator group the number of subjects was twenty-four rather than thirty in the dictator room. The number of subjects was accordingly reduced to twenty-three in the recipient room.

3The random sample of recipients was provided by a survey research firm (SEMA-Gruppen). They provided a random sample of all persons registered in Sweden in the ages 18 to 74 years (drawn from SPAR, the person and address register of the state). The only individuals excluded from the random draw were individuals with ‘protected addresses’ (due to that they are exposed to some threat) which is very uncommon (about 0.01% of the population), and persons that have asked to be excluded from all direct mail advertising (about 2% of the population).
Table 1
Percent of decisions for each amount donated

<table>
<thead>
<tr>
<th>Amount donated</th>
<th>Double blind standard procedure</th>
<th>Double blind with randomly drawn recipients from the general population</th>
</tr>
</thead>
<tbody>
<tr>
<td>SEK 0</td>
<td>66.66</td>
<td>68.52</td>
</tr>
<tr>
<td>SEK 20</td>
<td>14.29</td>
<td>22.22</td>
</tr>
<tr>
<td>SEK 40</td>
<td>14.29</td>
<td>5.56</td>
</tr>
<tr>
<td>SEK 60</td>
<td>0.00</td>
<td>3.70</td>
</tr>
<tr>
<td>SEK 80</td>
<td>0.00</td>
<td>0.00</td>
</tr>
<tr>
<td>SEK 100</td>
<td>4.76</td>
<td>0.00</td>
</tr>
</tbody>
</table>

Average donation (STD) SEK 13.33 (24.77) SEK 8.89 (15.38)
Number of observations 21 54

A group with randomly drawn recipients from the general population 31.48% of the dictators donate some money and the mean donation is SEK 8.89 (8.89% of the amount allocated to the dictators). Table 2 contains results from six statistical tests (Table 2 in here). We carry out the tests both for the entire distributions of donations and the distributions conditional on giving (donating something). We fail to reject the null hypothesis of no difference between the experimental groups at the 10% level for all the statistical tests.

4. Concluding remarks

In our dictator experiment according to the standard double blind procedure about a third of the dictators made positive donations, and the mean donation was 13% of the total amount allocated. This result is similar to the results of previous studies in the US with the same design, where the mean

Table 2
Statistical test results

<table>
<thead>
<tr>
<th>Test description</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>t-test of equal average donations</td>
<td>0.45</td>
</tr>
<tr>
<td>t-test of equal average donations, conditional on giving</td>
<td>0.33</td>
</tr>
<tr>
<td>Chi-square test of equal medians</td>
<td>0.88</td>
</tr>
<tr>
<td>Chi-square contingency table test that donations are independent of the experimental group</td>
<td>0.26</td>
</tr>
<tr>
<td>Chi-square contingency table test that, conditional on giving, donations are independent of the experimental group</td>
<td>0.16</td>
</tr>
<tr>
<td>Mann–Whitney test of donations distributions</td>
<td>0.70</td>
</tr>
<tr>
<td>Mann–Whitney test of donations distributions, conditional on giving</td>
<td>0.24</td>
</tr>
<tr>
<td>Kolmogorov–Smirnov test of donations distributions</td>
<td>0.99</td>
</tr>
<tr>
<td>Kolmogorov–Smirnov test of donations distributions, conditional on giving</td>
<td>0.84</td>
</tr>
<tr>
<td>Logit analysis of probability of donating</td>
<td>0.88</td>
</tr>
</tbody>
</table>
donation has ranged between 8% and 16% of the amount allocated (Hoffman et al., 1994; Hoffman et al., 1996; Eckel and Grossman, 1996, 1998).

We also introduced a variation in the double blind design to remove any remaining reciprocity between the dictators and recipients. The anonymous recipients were randomly drawn from the Swedish general population and any donations were mailed to the recipients. Also with this experimental treatment about a third of the dictators made positive donations. The mean donation was 9% of the total amount allocated, which is slightly lower than with the standard double blind procedure. This difference was, however, not statistically significant and we could not reject the null hypothesis of no difference between the experimental groups.

We conclude that after removing any possible reciprocity between dictators and recipients, about one third of the dictators still deviated from the standard assumption of pure selfishness and donated some money. We interpret this as evidence of other-regarding behaviour not motivated by reciprocity.

Acknowledgements

We are grateful to an anonymous referee for helpful comments.

Appendix A. Instructions for ‘double-blind with randomly drawn recipients from the general population’

You have been asked to participate in an economics experiment. We have paid you SEK 50 in cash for your participation. You may also earn an additional amount of money during the experiment.

In this experiment each of you will be paired with a different person who has been randomly selected from the Swedish population between the ages 18 and 74 years. You will not be told who these people are, either during or after the experiment. You will notice that there are other people in the room with you who are also participating in the experiment. You will not be paired with any of these people.

One of you will be chosen to be the monitor for the experiment. The monitor will be paid SEK 100 in addition to the SEK 50 already paid. The monitor will be in charge of the envelopes as explained below. In addition the monitor will verify that the instructions have been followed as they appear here.

The experiment is conducted as follows: Twenty-nine unmarked envelopes have been placed in a box. Twenty-seven of these envelopes contain five SEK 20 bills and five blank slips of paper of the same size. The remaining two envelopes contain ten blank slips of paper. The monitor will call one person at a time and hand each person an envelope from the box. The person who was called will take the envelope and go behind the screen at the end of the room. The envelope will then be opened privately behind the screen.

Each person in room A must decide how many bills and how many slips of paper to leave in the envelope. The number of bills plus the number of slips of paper must add up to five. The person then pockets the remaining dollar bills and slips of paper. Example: (1) Leave SEK 20 and four slips of paper in the envelope and pocket SEK 80 and one slip of paper; (2) Leave SEK 60 and two slips of paper in the envelope and pocket SEK 40 and three slips of paper. These are examples only; the actual
decision is up to each person. Also note that no one else, including the experimenter, will know the personal decision made by each person.

Once you have made your decision you will seal the envelope behind the screen and then place it in the box at the front marked ‘return envelopes’. You may then leave the room.

After all twenty-nine envelopes have been returned the monitor will be given another box. This box is marked ‘addresses’ and contains twenty-nine stamped envelopes. Each envelope has been provided with the address to a randomly selected person in the Swedish population between the ages 18 and 74 years. This person does not know that he/she has been randomly selected for the experiment. In each envelope there is also a letter that describes this experiment. The monitor will then choose one envelope from the box with ‘return envelopes’ and one envelope from the box with ‘addresses’. The monitor will then open the envelope from the box with ‘return envelopes’ and record its contents. If the envelope contains any money the monitor will put the money in the envelope from the box with ‘addresses’ and seal the envelope. If the envelope does not contain any money the addressed envelope will be discarded, i.e. it will not be mailed to the randomly selected person in the population. The monitor will continue until all the envelopes have been opened. The monitor will then take the sealed envelopes with money in and together with the experimenter go to the closest mailbox and mail the envelopes. The experiment is then over.

References