DISCUSSION PAPER SERIES

IZA DP No. 1148

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May 2004

Forschungsinstitut
zur Zukunft der Arbeit
Institute for the Study
of Labor

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Discussion Paper No. 1148
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ABSTRACT

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This study reports data from a field experiment that was conducted to investigate the relevance of gift-exchange for charitable giving. Roughly 10,000 solicitation letters were sent to potential donors in the experiment. One third of the letters contained no gift, one third contained a small gift and one third contained a large gift. Whether a potential donor received a letter with or without a gift was randomly determined. We observe strong and systematic effects from including gifts. Compared to the no gift condition, the relative frequency of donations increased by 17 percent if a small gift was included and by 75 percent for a large gift. Consequently, including gifts was highly profitable for the charitable organization. The contribution of this paper is twofold: first, it shows that gift-exchange is important for charitable giving, in addition to the warm-glow motive. Second, the paper confirms the economic relevance of reciprocity by using field data. This extends the current body of research on reciprocity, which is almost exclusively confined to laboratory studies.

JEL Classification: C93, D63, H41

Keywords: charitable giving, field experiments, reciprocity

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1. INTRODUCTION

In recent years numerous laboratory experiments have provided strong evidence in favor of social preferences and gift-exchange. In the so-called gift-exchange game, e.g., it has been shown that by paying generous prices, buyers induce sellers to provide (costly) quality levels above the contractually enforceable level. In particular, the higher the prices (the gift), the higher are the average quality levels (Fehr, Kirchsteiger and Riedl 1993; Fehr, Gächter and Kirchsteiger 1997; Gneezy 2003). Similar results have been obtained from the investment game (Berg, Dickhaut and McCabe 1995) and games that study conditional cooperation (Fischbacher, Gächter and Fehr 2001). These experimental results have typically been interpreted as reciprocal behavior, i.e., the behavioral inclination to reward kind and to punish unkind behavior (for formal models of reciprocity, see Rabin (1993); Levine (1998); Dufwenberg and Kirchsteiger (2004); Falk and Fischbacher (forthcoming) and Charness and Rabin (2000)). Moreover, the presence of reciprocally motivated people has important economic consequences, e.g., in labor relations (Akerlof 1982; Bewley 1999; Fehr and Gächter 2000), in customer relations (Kahneman, Knetsch and Thaler 1986), in bargaining (Camerer and Thaler 1995) or for price setting behavior (Huck and Wallace 2002).

Surprisingly, the current body of research on reciprocity and gift-exchange is almost exclusively confined to laboratory studies. This kind of evidence has often been criticized because of a potential subject pool bias (undergraduate students) or the relatively low stake levels used in experiments. Moreover, it has been pointed out that subjects typically know that they are acting in an experiment and that their actions are observed by an experimenter. In addition, in most economic experiments subjects typically choose numbers or points instead of real prices, quality or effort levels. In light of this critique and given the economic importance of gift-exchange it is important to extend our empirical knowledge and to study gift-exchange not only in the laboratory but also in a setting where people act in a natural environment. This is what the current study does. It reports data from a field experiment that combines the advantage of an experimental set-up (random assignment) with observations coming from a natural environment[1]. Our field experiment was performed in collaboration with a charitable organization. As part of their regular activities the organization sent out roughly 10,000 solicitation letters to potential donors. In order to study gift-exchange we

[1] For an excellent overview on field experiments see List and Harrison (2004). According to their taxonomy, our study is a "Natural Field Experiment".

systematically manipulated the solicitation letters such that one third of the donors received the letter without a gift (no gift condition), one third received the letter together with a small gift (small gift condition) and one third received the letter together with a large gift (large gift condition). Whether a potential donor received no gift, a small gift or a large gift was randomly determined. Thus we perform an experiment observing behavior of a non-student subject pool, where subjects do not know they act in an experiment, where the size of the stakes is not predetermined by an experimenter and where gift-exchange involves "real" gifts and not the choice of abstract numbers.

Our main results lend support in favor of previous laboratory evidence on gift exchange. First, the variation of gifts created strong and systematic effects. Compared to the no gift condition, the relative frequency of donations increased by 17 percent if a small gift was included and by as much as 75 percent for a large one. These differences are highly significant. Second, we show that the additional donations that are crowded in by gift-exchange considerations are slightly lower than those given for reasons of warm glow in the no gift condition. Third, our results indicate that the initiation of a gift-exchange relation was highly profitable for the charitable organization. Given the random treatment assignment we can also estimate the potential gains that would have been realized had every donor received the large gift. Finally we check whether we observe some intertemporal substitution in the donation pattern, i.e., whether the groups of donors who received the gifts and donated more, donated less in the subsequent solicitation. While we see some slight indication of intertemporal substitution it is clearly insignificant.

In addition to extending the research on gift-exchange our study also adds to the understanding of the motives behind charitable giving. The economic importance of investigating theses motives derives from the fact that the amount of donated money is quite substantial in many nations. In the US, for example, almost 70 percent of all households make charitable contributions, exceeding 1 percent of GDP (Andreoni et al. 1996). The motive that has attracted the most attention both in the theoretical and the empirical literature is (impure) altruism or "warm glow", i.e., the internal satisfaction that arises from helping others. Several empirical studies have provided evidence that feelings of warm glow are important determinants in the decision to donate (Andreoni 1995). While the present study confirms the relevance of this motive, it also shows that in addition to warm glow, donors can be significantly affected by gift exchange considerations.

In a related field experiment on charitable giving, List and Lucking-Reiley (2002) demonstrate the behavioral importance of seed money and refund policies. Increasing seed money from 10 percent to 67 percent produced an almost sixfold increase in donations. Likewise, the introduction of a refund policy increased donations by roughly 20 percent. Frey and Meier (2003) study charitable giving to a social fund administered by the University of Zurich. They systematically vary the information about other students' contributions and show that students increase their donations if they believe that others have also donated more.

The remainder of the paper is organized as follows. In the next section we present the details of the field experiment and our behavioral predictions. Our results are contained in section 3, and section 4 concludes.

2. Design of the field experiment and Behavioral Predictions

The study was performed in collaboration with a well-known, large charitable organization operating internationally. The aim of this organization is the support of children in need. Currently the organization is active in 38 countries and engaged in long-term development projects as well as in short-term emergency projects. A branch of this organization regularly sends out solicitation letters in the canton of Zurich (Switzerland). The organization has a list of roughly 10,000 addresses (mainly in the city of Zurich), to whom letters are addressed. This list is a so-called "warm" list, i.e., the general response rate to solicitations is relatively high.

A total of 9,846 solicitation letters were sent out in the "2001 Christmas mailing", almost all to private households[2]. The purpose of this mailing was to collect money for funding schools for street children in Dhaka (Bangladesh). The potential donors were informed about the details of the Dhaka project in the letters and asked to donate. In addition to this letter, some people received either a "small" or a "large" gift. The small gift was one postcard plus envelope, while the large gift consisted of a set of four postcards with four envelopes. The postcards showed colored paintings drawn by children; an example is displayed in the Appendix. Those who received a gift (either small or large) were informed in a short remark at the very end of the letter that the postcards included are a "gift from the

[2] Only 22 of the 9.846 addresses belong to organizations and only one of these organizations actually donated (CHF 50 ~ EURO 35).

children from Dhaka", which "can be kept or given to others". The purpose of this sentence was to assure people that the postcards are a gift for which nothing has to be paid, and to create a gift-exchange relation between the children (the potential receivers of the donation) and the donors. With the exception of this additional sentence, all solicitation letters were completely identical regardless of whether a gift was included or not. All letters were sent out on December 5, 2001.

The treatment assignment was random: With the help of a random number generator we assigned each potential donor listed in the organization's data base to the no gift, the small gift or the large gift condition. Our dependent variable is simply the donation decisions by the potential donors. These were routinely recorded by the organization.

In our field experiment two distinct behavioral motives may play a role, "warm glow" and gift-exchange. Warm glow has been defined as a feeling of internal satisfaction that arises from helping people who are in need (Andreoni, 1995). The warm glow motive is a behavioral disposition to donate unconditionally, i.e., without getting a reward. Applying the notion of warm glow to our field experiment yields the behavioral prediction that people should donate and that they should donate independently of whether they receive a gift or not. The second potentially relevant motive is gift-exchange or reciprocity. Reciprocity means that "we are *obligated* to the future repayment of favors, gifts, invitations, and the like" (Cialdini 1992, p. 211, emphasis in the original). In contrast to the warm glow motive it is a conditional behavioral disposition, i.e., reciprocally motivated subjects donate because they feel obligated to the repayment of gifts. Since feelings of obligation increase as the value of the gift rises, more subjects should donate in the large compared to the small gift condition[3].

Taken together, the no gift condition informs us about the behavioral importance of the warm glow motive. In both gift conditions, reciprocity is another possible motive in *addition* to feelings of warm glow. The difference between the gift conditions and the no gift condition therefore reveals the potential relevance of gift-exchange considerations. Finally, since the value of the gifts is higher in the large compared to the small gift condition, the

[3] Note that an increase in donations between the no gift and the small gift condition could also be explained by a hypothesis that combines attention and warm glow. According to this hypothesis paying attention to the needs of others is a precondition for acting on altruistic preferences. The included postcard could raise attention and make it more likely for people to donate. Note, however, that this argument cannot convincingly explain possible differences between the small and the large gift condition. It is unlikely that the attention arising from four postcards is much different than the attention arising from one.

gift-exchange hypothesis predicts that we should observe more people donating in the large than in the small gift condition. These arguments can be summarized as follows:

GIFT-EXCHANGE HYPOTHESIS: *The donation probability is lowest in the no gift condition, higher in the small gift condition and highest in the large gift condition*.

3. RESULTS

In this section we first test the gift-exchange hypothesis, i.e., whether including gifts increases the probability of donations. Second, we study whether gift-exchange considerations crowd in higher or lower donations, compared to the donations given for reasons of warm glow. Third we address the question, whether the initiation of a gift-exchange relation is profitable for the organization. To answer the latter question we compare the total amount of money donated in the three treatment conditions with the cost of providing the gifts. Since we have donation data covering the solicitation subsequent to the Christmas 2001 mailing, we can further check whether the observed increase in donations in the gift conditions is followed by lower donations in the subsequent mailing. This would be the case if donors intertemporally substitute their donations.

3.1 Does including a gift increase the frequency of donations?

Table 1 presents the main results. It reports the donations that were given in the time period between December 5, 2001 and the end of February 2002[4] under all three conditions (no gift, small gift, and large gift). The first row of Table 1 shows the absolute numbers of letters sent out in the three conditions. Rows two and three report the absolute and the relative number of people who donated under the three conditions. While the absolute number of people who donate under the no gift condition is 397, this number increases to 465 in the small gift condition and to 691 in the large gift condition. In relative terms, the corresponding numbers are 12, 14 and 21 percent, respectively. Thus including a small gift increases the number of donors by 17 percent and including the large gift even increases the number of donors by as much as 75 percent. These results clearly support the gift-exchange hypothesis.

[4] We stopped collecting data at the end of February because first, there were essentially no further donations after the end of January and second, the next solicitation letter was sent out at the end of February (see section 3.3).

TABLE 1: DONATION PATTERNS IN ALL TREATMENT CONDITIONS

	No gift	Small gift	Large gift
Number of solicitation letters	3,262	3,237	3,347
Number of donations	397	465	691
Relative frequency of donations	0.12	0.14	0.21

Table 2 shows that the observed treatment effects are statistically significant. We report a Probit regression in this table where the dependent variable is a dummy, which takes the value 1 if a person donated and zero otherwise[5]. This donation dummy is regressed on our treatment dummies. The variable "Small gift" is a dummy variable for the small gift condition, while "Large gift" is a dummy variable for the large gift condition. Both coefficients are positive and significant at the 1-percent level. Further analysis also reveals that the increase in donations between the small gift and the large gift condition is also significant at the 1-percent level (Prob>χ^2=.0000). This shows that including a gift in our set-up significantly increases the frequency of donations and that the more generous the gift, the higher the frequency.

[5] All results are qualitatively the same if we use a linear probability model instead of a probit model.

TABLE 2: TREATMENT DIFFERENCES OF DONATION PROBABILITY

Dependent variable: Donation dummy	
Small gift dummy	0.102***
	(0.039)
Large gift dummy	0.348***
	(0.037)
Constant	-1.167***
	(0.028)
Number of observations	9,846
Prob>χ^2	0.000
Pseudo R^2	0.011

Note: Probit regression with standard errors in parentheses. *** indicates significance at the 1-percent level. "Small gift" is a dummy variable taking the value 1 if the observation comes from the small gift condition and zero otherwise. Likewise, "Large gift" is a dummy variable, which takes the value 1 if the observation comes from the large gift condition and zero otherwise.

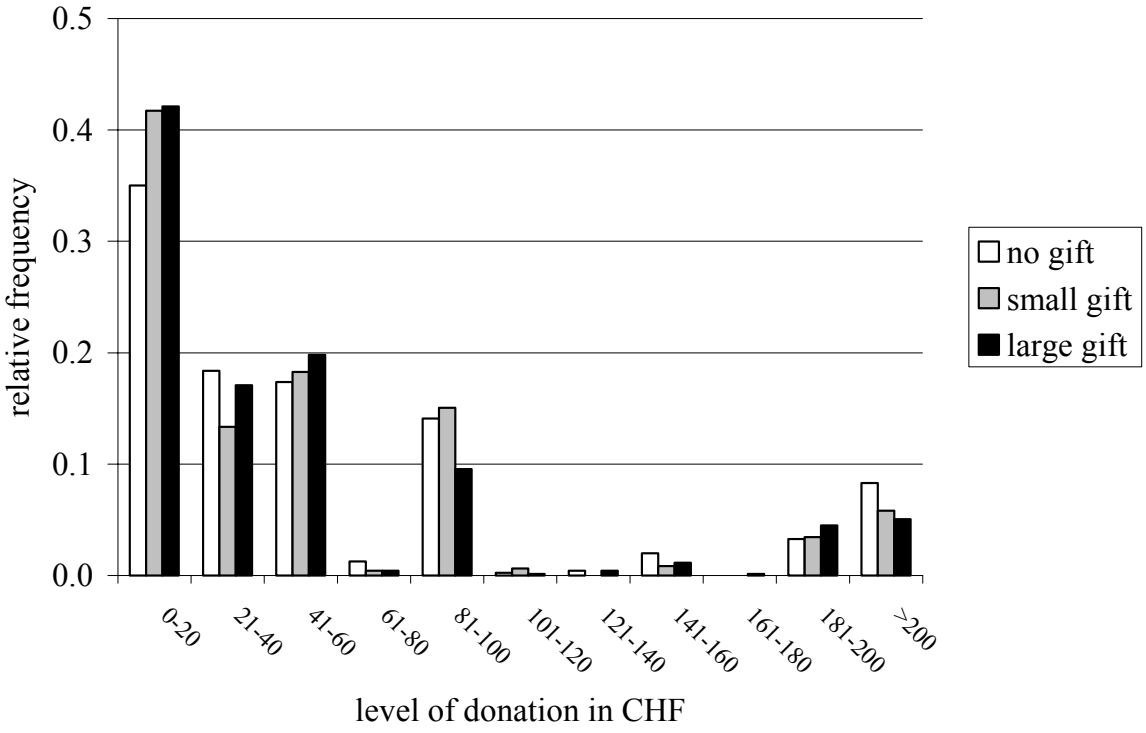
3.2 Does gift-exchange crowd in relatively low donations?

The results shown in Tables 1 and 2 support the gift-exchange hypothesis, i.e., gifts crowd in donations, which would not have been given in the absence of these gifts. It is interesting to study whether these additional donations are qualitatively similar to those given under the no gift condition. In particular one might hypothesize that feelings of obligation to repay the gift, crowd in rather low donations: If the only reason to donate is to get rid of a "bad conscience" a donor might choose a donation level which just compensates the organization for its expenditures. Since the material value of the postcards is rather low, donations might be low as well.

To address this issue Figure 1 shows a histogram of donations for all treatment conditions. The figure reveals that overall the distributions are similar. In all conditions 86 to 89 percent of the donations are below CHF 100 with peaks at values such as CHF 10, 20, 30, 50 or 100. A closer inspection of the donation patterns shows, however, that there are some small differences. For low donations up to CHF 60, the cumulative frequency of donations is highest in the large gift condition (79 percent), followed by the small gift condition (74 percent) and the no gift condition (72 percent). Put differently, relatively low donations are more frequent under the large gift condition than the no gift condition. Likewise, relatively

large gifts (> CHF 200) are more frequent under the no gift condition compared to the gift conditions. This suggests that feelings of obligation may in fact crowd in relatively low gifts. To test this claim more directly, we performed two different distribution tests. The Kolmogorov-Smirnov test rejects the null hypothesis that the donation distributions of the no gift and the large gift conditions are the same (p=.049). Comparing the other distributions yields no significant differences (no-gift/small-gift p=.262; small gift/large gift p=.184). These results are supported by the non-parametric Median test, which tests the null hypothesis that two samples are drawn from populations with the same median. Again, there is a significant difference between the no gift and the large gift condition (p=.031) while the other distributions are not significantly different (no gift/small gift p=.532; small gift/large gift p=.122). Taken together the data suggest that at least some of the additionally made donations in the gift conditions are lower than those in the no gift condition. These differences are small, however.

FIGURE 1: HISTOGRAMS OF DONATIONS FOR EACH TREATMENT



3.3 Is the initiation of a gift-exchange profitable for the organization?

From the charitable organization's perspective, the relevant question is whether including gifts is a profitable strategy. To answer this question, we now examine the absolute amounts donated under each condition. In doing so, we restrict our analysis to all donations equal or below CHF 500. This excludes 39 donations (2.5 percent of all donations). These observations are excluded for two reasons. First, they completely blur the analysis of the absolute donation levels. To illustrate this, note that there was an extremely high donation of CHF 20,000 in the small gift condition, for example. Second, it seems rather unlikely that very high donations are affected by the treatment variations[6].

Table 3 (first row) shows the absolute amount of money collected in the three treatment conditions. It amounts to CHF 24,673 in the no gift condition, CHF 27,106 in the small gift condition, and CHF 40,877 in the large gift condition. Thus as it holds for the relative frequency of donations (see Table 1), the sum of donations is lowest in the no gift condition, higher in the low gift condition and highest in the large gift condition. The quantitative differences are quite substantial. There is a 66 percent increase from the no gift condition to the large gift condition, for example.

TABLE 3: ANALYSIS OF ABSOLUTE AMOUNTS OF DONATION AND POSSIBLE SUBSTITUTION EFFECTS

	No gift	Small gift	Large gift
Sum of donations *Christmas 2001 mailing* in CHF	24,673	27,106	40,877
Mean donation *Christmas 2001 mailing* in CHF	7.56	8.37	12.21
Sum of donations *February 2002 mailing* in CHF	14,023	13,206	13,165
Sum of *Christmas* and *February mailing* in CHF	38,696	40,312	54,042

Note: All donations smaller or equal CHF 500 (~ EURO 350)

[6] Please note that there is nothing special about the cut-off value of CHF 500. All results reported in this section are qualitatively the same if we consider a different cut-off value, e.g., donations below CHF 600, CHF 400, CHF 300 etc.

It is possible to calculate the organization's (potential) net benefits given these absolute numbers. Note first that total revenue across all three conditions was CHF 92,656. Simple extrapolation suggests that if no one had received a gift, the revenue would have been much lower. If we take the average donation under the no gift condition (see Table 3, second row) and multiply it by the total number of letters sent out, we get a hypothetical amount of CHF 74,472. Since the cost of the postcards was roughly CHF 2,000[7], the net gain of the manipulation amounts to CHF 16,184, an increase of about 22 percent. Of course revenues could have been even higher if everyone had received the large gift. In this case gross revenues would have been CHF 120,248 (average donation under the large gift condition as shown in the second row of Table 3, multiplied by the total number of letters). Subtracting CHF 4,800, which would have been the cost of sending a large gift (four postcards) to all potential donors, yields a net gain of CHF 40,976 or 55 percent when compared to the situation where no one receives a gift. Of course these numbers are hypothetical and should not be taken at face value. However, they indicate the potential benefits of establishing gift-exchange relationships.

From the organization's point of view, one important question remains to be answered. So far we have shown that including gifts substantially increased donations in the Christmas 2001 mailing. However, it could be that the two gift treatments have an *adverse* effect on subsequent mailings. This would occur if donors intertemporally substitute their donations, i.e., if those donors who donated more in the Christmas 2001 mailing would donate less in the next mailing. In this case the organization would not necessarily benefit from sending out gifts. We can address this question because we have the donation data of the solicitation that followed the Christmas 2001 mailing. It took place at the end of February 2002. Its purpose was to collect money in support of needy mothers with little children. The list of addresses was the same as for the Christmas mailing.

If there is intertemporal substitution one would expect that the donation probability following the February 2002 mailing should be highest for the group of those donors who had not received a gift in the Christmas 2001 mailing, second highest for those who had been in the small gift condition and lowest for those who had received the large gift. In fact the donation probabilities are 9.6, 8.9 and 8.6 percent for the group of donors who had been in the no gift, the small gift and the large gift condition, respectively. Thus, the donation

[7] This amount was actually donated by the University of Zurich.

probabilities do vary in line with the intertemporal substitution argument. However, the differences are rather small, in particular if one compares these differences with the differences that occurred in the different treatments of the Christmas mailing. Moreover these differences are insignificant. This is shown by a simple Probit regression where we regress a donation dummy for the February 2002 mailing on our treatment dummies (exactly as in Table 2). The coefficients as well as the whole model are insignificant (p=0.353 for the "Small gift" coefficient and p=0.126 for the "large gift" coefficient; for the whole model Prob>χ^2=0.3034).

As it holds with the donation probabilities, the absolute amount of money donated in the February 2002 mailing was highest in the no gift condition, followed by the small and the large gift conditions (see the third row of Table 3). Again, these differences are relatively small and insignificant. This is revealed by an OLS-regression, which regresses all donations of the February 2001 mailing on our treatment dummies (p=0.467 for the "Small gift" coefficient and p=0.846 for the "Large gift" coefficient; again the whole model is insignificant: Prob>F=0.7563). Table 3 (fourth row) also shows that if one adds the donations of the Christmas 2001 and the February 2002 mailings, the strong treatment effects of including gifts in the Christmas mailing persist. Taken together, it is possible that some intertemporal substitution occurs. However, this effect is quantitatively small and insignificant.

4. CONCLUDING REMARKS

In this paper we have reported the results of a field experiment on gift-exchange. In the experiment potential donors are randomly assigned to receiving no gift, a small gift or a large gift, respectively. In line with results from laboratory experiments we find strong and systematic evidence in favor of gift-exchange. Our study complements the existing lab evidence and shows that gift-exchange is not an artifact of the laboratory.

In light of our results, it is tempting to conclude that the inclusion of gifts is a quite efficient strategy for charitable organizations for collecting additional money. This conclusion, however, may be too optimistic. It is likely that the successful initiation of a gift-exchange relation depends on various and interacting factors. One important aspect concerns the nature of the gift and the message conveyed with it. If we had included gifts which were completely unrelated to the purpose of the solicitation or which were considered

inappropriate, the response might have been weaker or even negative. Another question is whether a gift-exchange relation can be repeatedly initiated. Surprise may be a key factor. Once donors get used to getting gifts, they might not feel obliged to their repayment anymore. More field experiments are needed to answer these questions.

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Appendix: An example of the included postcards