Category Reporting in Charitable Giving: An Experimental Analysis

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Abstract

Harbaugh (1998a) has shown theoretically that charities can increase the size of donations by publicly acknowledging their donors using categories. In a complementary paper, using the data on the donations given by 146 lawyers to their alma mater law school, Harbaugh (1998b) provided empirical support for this theoretical assertion. Essentially, being acknowledged in categories gives donors some prestige benefits. In this paper, we experimentally investigate the impact of various reporting plans as described in Harbaugh (1998a and 1998b) on the behavior of donors. Our results show that, although the category reporting plan has no significant impact on the size of donations when compared to the exact reporting plan and the no reporting plan, it does significantly alter the charitable behavior of donors. We show that the presence of a category reporting plan induces the clustering of donations on the lower boundaries of categories, which suggests that donors are motivated by prestige. We also discover that in some circumstances the presence of prestige benefits crowds out the warm glow motive for giving.

Keywords: laboratory experiment, charitable giving, reporting plans, prestige, warm glow

JEL Classification: C90, C91, D64, H00

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1 Introduction

In the discourse of economics, human beings are typically seen as rational self-interested individuals seeking to maximize their utility, a utility derived from direct material payoffs. However, in reality human beings do not always behave in that manner. Many of them are willing to give away some of their hard-earned income to charitable causes. For instance, in 2007 Americans donated around US$300 billion to charities. This sum is roughly equivalent to about 1.64% of the US gross national income. Most of these donations came from individual donors (BBC News, 23 June 2008). Likewise, in other countries, despite the varying levels of tax and welfare schemes, it has been well documented that people care about giving to charitable causes (Charities Aid Foundation, 2006).

This apparent inconsistency between the pursuit of individual utility maximization postulated by economic theories and the philanthropic behavior seen in real life has attracted much academic attention. Some possible explanations have been suggested. Kolm (1969), Warr (1982), Roberts (1984), and Bergstrom, Blume, and Varian (1986) argued that people were altruistic. They did inherently care about the well-being of others and obtained positive utility from the public benefits that their donations gave rise to. Andreoni (1989 and 1990) argued that the pursuit of public benefits could not be the only motive for giving. In addition to public benefits, individuals might also obtain direct private benefits from the act of donating itself and would therefore donate in order to obtain these benefits. Andreoni (1989 and 1990) coined the term "warm glow benefit" to describe this phenomenon.

Apart from warm glow benefit, there are other types of non-monetary private benefit that may motivate people to donate. Hollander (1990) pointed to the importance of receiving social approval as a motive for giving. The extent of social approval crucially depends on the difference between one's own donations and the average donations of others in the reference group. Glazer and Konrad (1996) argued that individuals contributed to charities in an attempt to signal their wealth to others. Using contributions as a signal may be seen as more socially acceptable than using other types of signal, such as, for instance, conspicuous consumption. Harbaugh (1998a and 1998b) stressed the importance of prestige in motivating individuals to donate, the prestige being derived from donors having their donations made known to others. In these papers, he argued

that, if indeed donors were motivated by prestige and the objective of charities was to maximize donations, charities could design a fundraising strategy that endowed donors with prestige. Harbaugh demonstrated that reporting donations in categories could realize such a strategy.

With the category-reporting plan, charities publicly announce individual donations according to pre-specified categories that are ranked according to the size of the donation. Those who donate a sum lower than the lowest amount in the lowest category will not have their donations publicly announced, and those who donate an amount that falls within a certain category will have their donations announced and given a certain status. There are many examples of this fundraising strategy in operation. For instance, The Illinois Valley Symphony Orchestra categorizes donors based on the size of their donations.[1] Donors are given a status as a *contributor*, *sponsor*, *patron*, *guarantor*, or *sustainer* if they donate amounts of, respectively, \$25-\$49, \$50-\$99, \$100-\$249, \$250-\$499, or over \$500. Another example is Multiple Births Canada, a Canadian-based charity organization that provides support for multiple birth families and individuals in Canada.[2] Donors are given a status as a donor, supporter, friend of MBC, contributing member, sustaining member, patron, or founding member if they donate amounts of, respectively, \$1-\$249, \$250-\$499, \$500-\$999, \$1,000-\$4,999, \$5,000-\$9,999, \$10,000-\$29,999, or over \$30,000.

Using data on donations given by 146 lawyers to their alma mater law school, Harbaugh (1998b) found empirical evidence showing that donors were indeed motivated by prestige and that the use of category reporting could increase the size of donations. Harbaugh's paper is the only empirical paper to date that systematically evaluates the impact of the widely used category reporting plan on the size of donations and empirically identifies the existence of a prestige motive for giving. The lack of empirical evidence suggests that it is difficult to empirically control for the relevant confounding factors and to isolate the impact of prestige on giving.

Some scholars have therefore resorted to an experimental approach as an alternative verification tool. Andreoni and Petrie (2004) evaluated the use of fund-raising strategies that involved reporting the size of donations and revealing the identity of donors visually in laboratory experiments. They designed experimental treatments that allowed for the size

[1] See http://www.ivso.org/ for more information.
[2] See http://www.multiplebirthscanada.org/ for more information.

of donations to be reported either exactly or by contribution categories. They showed that unmasking the identity of donors and using contribution categories increased the value of contributions. Soetevent (2005) presented a field experimental study on religious offerings in 30 Dutch churches. In the Netherlands the methods employed to collect offerings vary between churches. Some of them use closed collection bags and some others use open collection baskets. Churchgoers can observe the size of offerings made by others when open collection baskets are used. The use of open collection baskets can thus potentially provide social incentives for churchgoers. The study did indeed show that the size of contributions was significantly higher when open collection baskets were used. In a laboratory experiment, Rege and Telle (2004) examined the impact of revealing the identities of contributors in a public good game on the size of contributions. They showed that revealing the identity of contributors increased the size of contributions.

Our paper also presents an experimental study on the role of prestige in stimulating people's incentive to contribute. However, in contrast to the related papers noted above, this paper focuses on the role of category reporting plans as outlined by Harbaugh (1998a and 1998b) and provides an experimental test of his theoretical assertions. In a series of experiments conducted at Fudan University in China, we compared the impact of various reporting strategies on the behavior of donors. Participants were undergraduate and graduate students with various faculty backgrounds. Our results show that, relative to our benchmark plan in which contributions were not publicly announced and full anonymity was preserved, the use of category reporting has an insignificant impact on the size of donations. However, it does change people's charitable behavior. We show that people tend to donate an amount that is equal to the lower boundary of the stated categories. We also show that donors do not behave this way when donation categories are used but contributions are not announced. This result thus provides supporting evidence of the existence of a prestige motive for giving.

The paper is organized as follows. Section 2 briefly discusses the Harbaugh model and its predictions. Section 3 describes our experimental design. Section 4 discusses our main results. Finally, Section 5 concludes the paper.

2 The Harbaugh Model

Harbaugh (1998a) assumed that donors cared about *warm glow*, which is the utility derived from the act of giving itself, and *prestige*, which is the utility derived from having the amount of their donation and the category into which it falls known to others. These are both private benefits of giving and independent of how much others donate. Since a warm glow benefit arises from the act of giving itself, it cannot be exploited by the charity. Prestige benefits, on the other hand, can be exploited by the charity since they are only obtained by donors when their donations are publicly announced.

The model assumes that donors ignore the public benefits of giving. Harbaugh (1998a) offered two plausible justifications for this assumption. Firstly, he argued that small populations were often large enough to diminish the effect of an individual's donation on public benefits to a negligible level. Secondly, many public goods provided using donations do not directly benefit donors. For instance, donors who contribute to the relief effort extended to the victims of a natural disaster taking place far away from their country do not get any direct public benefits from their donations. Likewise, donors who donate to Multiple Births Canada, the non-profit organization mentioned previously, could possibly be childless parents or parents without twins who will not obtain direct public benefits from the public goods provided by the organization.

It is also assumed in the model that warm glow and prestige benefits are independent of social interactions. It is true that a donor may care about his or her social status and is influenced by the donations of others. However, in the simultaneous contribution setting adopted by the model, donors cannot observe the donations of others when making their own donations, and consequently the warm glow and prestige benefits are not going to be affected by social interactions.[3]

Donors have the following utility function, $U = U(x, p, d)$, which is increasing and concave in its arguments. Note that x denotes the consumption of private goods, p denotes the amount of prestige benefit, and d denotes the warm glow benefit. The budget constraint is given by $m = d + x$. It is assumed that there is no income taxation and

[3] In a sequential contribution setting, Vesterlund (2003) shows that past donations can be used as a signal of the quality of a charity when donations are made sequentially. A high quality charity will therefore always announce past donations and be able to obtain larger donations. See also Romano and Yildirim (2001) and Potters, Sefton and Vesterlund (2005) for studies that look at sequential contribution setting and the impact of announcement of past donations on subsequent donations.

that donations are not tax deductible. The prices of private goods and donations are normalized to 1. The utility function can then be re-written as $U = U(m-d, p, d) = V(p, d, m)$.

For a given income and utility level, and for all pairs of p and d, we have the indifference curve shown in Figure 1 for example. The slope of the indifference curve, which is equivalent to the marginal rate of substitution between d and p, is $-\frac{1}{\partial U/\partial p}(\partial U/\partial d - \partial U/\partial x)$. Before the inflection point we have $\partial U/\partial x < \partial U/\partial d$. An increase in d and a decrease in x will increase the total utility. Therefore, p must decrease in order to maintain the same utility level. After the inflection point we have $\partial U/\partial x > \partial U/\partial d$, which implies that an increase in d and a decrease in x will decrease the total utility. In order to maintain the same utility level, p must increase. An increase in income m will shift the indifference curve to the right, while an increase in the utility level will shift the indifference curve upward.

The charity makes a public report r_i about the size of individual i's donation d, and upon observing the report the society rewards this individual with prestige according to $p_i = p_i(\alpha, r_i(d_i))$, in which $0 \leq \alpha \leq 1$ denotes the sensitivity of prestige to reporting. The relationship between p and d is shown in Figure 1.

[INSERT FIGURE 1 HERE]

A charity can employ any one of the following reporting plans. The first is the *no reporting plan* (NR), in which the charity does not report the size of the donations made by the donors. The second is the *exact reporting plan* (ER), in which the charity reports the exact size of the donations made. The third is the *category reporting plan* (CR), in which the charity reports the size of the donations made by the donors in terms of the category they fall into. The charity sets the minimum sum required for a donation to fall into a certain category. The size of prestige benefit obtained from the donation of a certain sum differs between reporting plans. However, the amount of warm glow benefit obtained is independent of the reporting plan. As a utility-maximizing individual, a donor responds differently to different reporting plans. Donors will adjust their optimal donations according to the reporting plan used.

The No Reporting Plan (NR)

Under the NR plan, the charity does not report the donations of individuals. Individuals are confronted with an anonymous donation campaign and therefore will not obtain any prestige. They choose an optimal amount to donate d_0 (see Figure 1).

The Exact Reporting Plan (ER)

Under the ER plan, the charity publicly reports the exact amounts donated by individuals. Thus, we have $r = d$. Donors translate the report made by the charity into prestige according to the relationship, $p = \alpha d$. The sensitivity of prestige p to reporting α increases with factors that could add value to the report made by the charity, such as the fame, credibility, scale, and goodwill of the charity. Donors choose an optimal amount to donate d_e (see Figure 1). Note that we have $d_0 < de$, which implies that the ER plan yields more donations than the NR plan.

The prestige line given by the ER plan and the indifference curve attained by the NR plan under the optimal size of donations d_0 intersect at two points given by the size of donations dm' and dm respectively. A donor will be indifferent to whether he or she donates $d_m^{'}$ under the ER plan or d_0 under the NR plan. Likewise, a donor will be indifferent to whether he or she donates d_m under the ER plan or d_0 under the NR plan.

The Category Reporting Plan (CR)

Under the CR plan, the charity sets the threshold minimum amount for each category. Suppose that the charity only uses one category and the minimum amount of donations to reach this category is set equal to d_b. Donors who donate an amount below this threshold do not get their donations reported publicly and thus will not obtain any prestige. Donors therefore choose an optimal amount for their donation that is exactly equal to the minimum category threshold d_b (see Figure 1).

When the minimum category threshold is set such that $d_b < d_0$, donors will ignore the category and donate an amount of d_0. This is because donating d_b gives them a lower utility than donating d_0. When the threshold is set such that $d_0 \leq d_b < d_e$, donors will donate an amount of d_b. This amount is larger than that received under the NR plan, but is lower than that received under the ER plan. When the threshold is set such that $d_e \leq d_b < d_m$, donors will donate an amount of d_b. This amount is larger than that received under either the NR or the ER plan. Finally, when the threshold is set such that $d_m \leq d_b$, donors will ignore the category and donate an amount of d_0, which is equal

to the optimal size of donation received under the NR plan, and also captures the warm glow motive for giving.

All in all, on the basis of the above model, we have the following empirical predictions: *1)* the ER plan yields more donations than the NR plan; *2)* the CR plan does not yield fewer donations than the NR plan; *3)* the CR plan may yield more or fewer donations than the ER plan, depending on the size of the minimum threshold category d_b; and *4)*, under the CR plan, donors will donate an amount that is equal to the minimum threshold category d_b.

3 Experimental Design and Procedures

We designed and conducted a series of laboratory experiments to verify the empirical predictions of the Harbaugh model.[4] Our experiments were carried out at Fudan University in China.[5] Our participants were undergraduate and graduate students from various faculty backgrounds. They were recruited through a campus-wide bulletin board system. Altogether, we had 141 participants consisting of 51 males and 90 females. In terms of faculty backgrounds, we had 76 participants from the Faculty of Arts, 35 participants from the Faculty of Science and Engineering, and 28 participants from other faculties such as Business, Law, and Computing. Of these 141 participants, 98 were undergraduate students and 43 graduates.

We employed four different reporting plans, namely *1)* the *NR* plan, *2)* the *ER* plan, *3)* the *CR* plan, and *4)* the category no reporting (*CNR*) plan. The CNR plan is a variant of the CR plan without public announcement. Under this plan, we only inform donors privately about the category in which their donations qualify. Essentially, this scheme retains the use of category plan, but removes the prestige channel. Two levels of endowment, i.e. RMB 20 and RMB 50, were given to the participants. We only used one donation category (i.e. the star donor status) for the CR and CNR plans, but we varied the minimum size of donation required to qualify for this category. We used the minimum amounts of RMB 5, RMB 8, RMB 12, and RMB 16 for the CR and CNR

[4] The experimental instructions, in both the original language (Chinese) and the English version, are available upon request from authors. They can also be downloaded from http://www.expernomics.com/yer/research.htm.

[5] Prior to conducting the main experiments, we carried out a pilot experiment at the National University of Singapore with 23 participants recruited among undergraduate students from various faculty backgrounds.

plans with the endowment level of RMB 20, and RMB 5, RMB 20, RMB 30, and RMB 40 for the CR and CNR plans with the endowment level of RMB 50. All in all, we had 10 different treatments for each endowment level. Each participant randomly selected one treatment as the binding treatment to determine his or her compensation at the end of the experiment. Table 1 below summarizes all treatments and their respective codes used in our analysis.

[INSERT TABLE 1 HERE]

In the above table, for instance, $CR20\_1$ $(5-20)$ denotes the CR plan 1 with a minimum threshold of RMB 5 and an endowment level of RMB 20. The remaining codes are defined in a similar manner.

Each participant had to decide how much of his or her endowment to donate and how much of it to keep. We conducted 6 experimental sessions, and we systematically distributed all 10 x 2 treatments that we had across these 6 sessions. Table 2 below illustrates the allocation of treatments across sessions and the number of participants involved in each session. The numbers added in front of the treatment codes represent the sessions. Thus, for instance, 3_CR2_1 $(5-20)$ refers to the CR plan 1 treatment with the minimum threshold of RMB 5 and the endowment level of RMB 20 that was conducted in session 3. Note that we randomized the sequence of treatments faced by the participants in each session to avoid any anchoring effect.

[INSERT TABLE 2 HERE]

The presence of *prestige effect* could be deduced from pairwise comparisons between: 1) CR and CNR plans, 2) ER and NR plans, and 3) CR and NR plans. In the CR and CNR plans, participants were informed that when they donated an amount that was at least equal to the minimum threshold amount, they would be given "*star donor*" status.

In the CR plan, the status and identity of donors were publicly announced at the end of the session. In contrast, in the CNR plan, the status of donors was kept confidential. Any significant difference in the size of donations between these two plans could therefore be attributed to the prestige effect.

Next, the main difference between the ER and the NR plans was the presence of a public announcement of the exact size of donations given by each donor. All other things being equal, if the ER plan resulted in larger donations than the NR plan, then the additional size of donations obtained under the ER plan could also be attributed to the prestige effect. Finally, the main differences between the NR and CR plans were the presence of category reporting and the public announcement of donations. The model predicts that, as long as the minimum threshold category is set appropriately, there should be a greater number of donations under the CR plan than under the NR plan, if the donors care about prestige.

By examining the donation pattern of the donors under the NR plan, we were able to observe some natural sizes of donation (i.e. *focal points*). These focal donation points under the NR plan captured the *warm glow motive of giving*.

The main difference between the NR plan and the CNR plan was the presence of categories. Since the prestige channel was muted under the CNR plan, we expected that there should be no difference in the size of donation obtained under either plan. Thus, under the CNR plan, donors should donate an amount equal to any of the existing focal points found under the NR plan.

However, the use of categories under the CNR plan could also possibly have provided a *reference point* to donors concerning how much to donate. If this was indeed the case, we might have expected that the donors would donate an amount equal to this reference point rather than to any of the natural focal points. Consequently, we would have seen different donation patterns under both the NR and CNR plans. Whether or not the CNR plan would have generated more donations than the NR plan depended on the minimum-threshold category. If this was set too low, the size of donation was going to be lower under the former than under the latter.

Finally, under both ER and CR plans donations were publicly announced; however, the announcements were made in different ways. With ER, information on the exact size of donations was provided, while in the latter, only information on those donations that fell within the category was given. The Harbaugh model shows that whether or not the CR plan yields more donations than the ER plan depends on the size of the minimum threshold category to qualify for star donor status.

We ran both between-subject and within-subject analyses. We used the data from the NR treatment conducted in session 1, the ER treatment conducted in session 2, the CR treatments conducted in sessions 3 and 4, and the CNR treatments conducted in sessions 5 and 6 in our analysis. In Table 2, we indicate all the treatments used in the analyses in *bold* fonts.

In the laboratory, each participant randomly picked a seat number as his or her identification (ID) number. Participants were only identified by these ID numbers and not by their personal identifications throughout our experiments. A seating plan was drawn on the blackboard at the front of the laboratory for all participants to see. Participants could also see each other without any obstruction. This was important to make the impact of public reporting more prominent. An instruction sheet, a series of allocation decision sheets, a survey form, and an endorsement letter from the beneficiary of our experiments were placed inside an envelope. We placed one envelope on each seat. After all the participants had been seated, we read the instructions for the experiment aloud to them. Participants were not allowed to communicate with each other.

The beneficiary of our experiment was Fudan Student Home, a campus-wide charitable organization that provides support for the less privileged students of Fudan University. All the donations collected from the experiment went to this charitable organization. The organization intends to use the money to cover its operating costs and to organize some activities for the benefit of less privileged students.

In our experimental sessions involving the ER plan, we announced the exact amount of money donated by each participant and his or her ID number after all the participants had completed their allocation decisions. In our experimental sessions involving the CR plan, we announced the ID numbers of donors who qualified for star donor status.

Participants in a session had to complete several experimental treatments and make several allocation decisions in a random sequence to minimize the anchoring effect.

4 Experimental Results

We mainly focused our analysis on the results obtained from our experiments with the RMB 20 endowment.[6] Table 3 below presents the descriptive statistics of our results.

[6] We also analyzed the results obtained from our experiments with the RMB 50 endowment and found that the results were qualitatively similar. For the sake of brevity, we do not present these results in this

[INSERT TABLE 3 HERE]

4.1 Comparing Average Contributions across Treatments

As can be seen from the above table, average contributions across treatments with the RMB 20 endowment were RMB 8.07, which represented about 40% of the endowment. There were several participants who allocated nothing to recipients, but there were also participants who gave all their endowment away. In what follows, we compare the average contributions across treatments.

The NR Plan vs. The ER Plan

From Table 3, we observe that the average contributions under 1_NR20 and 2_ER20 were RMB 9.17 and RMB 8.68, respectively. According to the theory, they should be equal to, respectively, the optimal size of donations under the NR plan (d_0) and the optimal size of donations under the ER plan (d_e). We ran the Wilcoxon-Mann-Whitney test for the equality of the means of donations. The p value obtained from the test was 0.7001 (see Table 4 below), implying that there was no significant difference between the two means of donations. This result contradicted the theoretical prediction of the model, which says that the sizes of donations should be higher under the ER plan than under the NR plan.

[INSERT TABLE 4 HERE]

The NR Plan vs. The CR Plan

We chose several thresholds of category for the CR plan; they were RMB 5, RMB 8, RMB 12, and RMB 16. In theory, the mean of contributions under the CR plan should be higher than that under the NR plan. We did not, however, find any supporting evidence for this theoretical prediction. The average contributions under the CR plan with the various thresholds were RMB 6.6, RMB 7.48, RMB 8.21, and RMB 8.92, respectively (see Table 3). The Wilcoxon-Mann-Whitney tests for the equality of the means between any of the CR treatments other than 3_CR20_1 $(5-20)$, on the one hand, and the NR plan, on the other hand, yielded insignificant results (see Table 4). Only

paper. They are, however, available upon request from authors.

that of 3_$CR20$_1 $(5-20)$ produced significantly lower average contributions. Thus, our experimental evidence does not lend support to the theoretical prediction.

The ER Plan vs. The CR Plan

From Table 3, we observe that the average contributions under 3_$CR20$_1 $(5-20)$, 3_$CR20$_2 $(8-20)$, and 4_$CR20$_3 $(12-20)$ were lower than the average contributions under 2_$ER20$. Only that of 4_$CR20$_4 $(16-20)$ was higher than the latter. Although these mixed results were in accordance to our theoretical prediction, none of the differences was statistically significant (p values were all larger than 0.05).

The CR Plan vs. The CNR Plan

From Table 3, the pairwise comparisons of average contributions across treatments yielded: 3_$CR20$_1 $(5-20) >$ 6_$CNR20$_1 $(5-20)$, 3_$CR20$_2 $(8-20) <$ 5_$CNR20$_2 $(8-20)$, 4_$CR20$_3 $(12-20) <$ 5_$CNR20$_3 $(12-20)$, and also 4_$CR20$_4 $(16-20) >$ 6_$CNR20$_4 $(16-20)$. The Wilcoxon-Mann-Whitney tests presented in Table 4 show that only the average contributions in 3_$CR20$_2 $(8-20)$ were significantly less than those in 5_$CNR20$_2 $(8-20)$. On the basis of our results, it is difficult to draw a conclusion on whether or not the CR plan dominated the CNR plan.

The Impact of Increasing Category Threshold under the CR and CNR Plans

For the CR plan, we evaluated our results from 3_$CR20$_1 $(5-20)$, 3_$CR20$_2 $(8-20)$, 4_$CR20$_3 $(12-20)$, and also 4_$CR20$_4 $(16-20)$. For the CNR plan, we evaluated our experimental results obtained from the following treatments: 6_$CNR20$_1 $(5-20)$, 5_$CNR20$_2 $(8-20)$, 5_$CNR20$_3 $(12-20)$, and 6_$CNR20$_4 $(16-20)$.

Our experimental results presented in Table 3 show that when the threshold of category was increased, the average level of donations accrued under the CR plan also increased. However, the same pattern was not observed under the CNR plan. The average level of donations increased when the category was increased from category 1 $(4-20)$ to category 3 $(12-20)$, but the level decreased sharply when the category was increased to category 4 $(16-20)$. This might suggest that the absence of a prestige channel under the CNR plan makes the higher category less attractive for donors.

Summary

Thus, in a nutshell, we have the following results. *Firstly*, the NR plan yielded a larger sizes of donation than the ER plan, however the difference was not statistically significant. *Secondly*, the NR plan yielded larger sizes of donation than the CR plans (with various category thresholds), however not all of the differences were statistically significant. *Thirdly*, the CR plans may or may not have dominated the ER plan depending on the size of the category threshold used. However, the differences were also not statistically significant. *Finally*, the level of donations under the CR plans may or may not have been higher than under the CNR plans. Thus, we did not find any evidence of the superiority of the CR plan in terms of generating donations.

4.2 Comparing Donation Distributions across Treatments

In what follows, we compared donation distributions across treatments. We plotted the histograms of donations and their normal density estimates. We also ran Kolmogorov-Smirnov tests to evaluate the equality of distributions. The results of these tests are shown in Table 5 below.

[INSERT TABLE 5 HERE]

The NR Plan vs. The ER Plan

The distribution of contributions under the NR plan and the ER plan are shown in Figure 2. They exhibit a rather similar pattern. Contributions cluster around several notable amounts, such as RMB 0, RMB 5, RMB 10, and RMB 20. The mode of the two distributions is RMB 10. The Kolmogorov-Smirnov test for the equality of distributions between the two treatments showed that there was no significant difference (the p value was 1.000).

The distribution of contributions under the NR plan and the ER plan are shown in Figure 2. They exhibit a rather similar pattern. Contributions cluster on several notable amounts, such as RMB 0, RMB 5, RMB 10, and RMB 10. The mode of the two distributions is RMB 10. The Kolmogorov-Smirnov test for the equality of distributions between the two treatments shows that there is no signifincant difference (the p-value is 1.000).

Several clusters of donations emerged under the NR plan, which was our baseline treatment. These cluster points could be considered as the "*natural focal points*" and they captured the warm glow motive for giving. Interestingly, these natural focal points were also found under the ER plan, suggesting that it was possible that people might not care about prestige under the ER plan. Otherwise, the two distributions would have had different patterns. However, it could also have been that the ER plan did not provide any, or enough, prestige benefits to donors, and consequently they might have ignored the existence of the ER plan and donated according to the natural focal points. Another possible interpretation would be that donors might have felt "uncomfortable" with having the exact size of their donation reported, and might have chosen to ignore the ER plan altogether. This might account for the fact that few charities actually use the ER plan in practice.

[INSERT FIGURE 2 HERE]

The NR Plan vs. The CR Plan

We ran between-subject analyses comparing the NR treatments and the CR treatments under various category thresholds. The distributions of contributions under all these CR treatments are depicted in Figure 3. When we compared Figure 2 and Figure 3, in general we observed that there was a shift in the mode of donations under the CR treatments from a natural focal point into the category threshold. When the category threshold was set at category 1 (RMB 5), which is also one of the natural focal points under the NR plan, the majority of donations were clustered around this threshold. Interestingly, other clusters of donations around the remaining natural focal points under the NR plan became less prominent in our CR treatments. The result from the Kolmogorov-Smirnov test also showed that the two distributions were statistically different (the p value is 0.014).

Recall that the theory predicted that when the category was set too low (such that $d_b < d_0$), donors would ignore the category and prefer to donate an amount that was equal to the amount that would be donated in the absence of any reporting plan. This size of donation also reflected the *warm glow motive* for giving. Under 1_NR20, we find that the majority of donors donated RMB 10 (see Figure 2), which was higher than the category threshold of RMB 5. However, under 3_CR20_1 $(5-20)$, the majority of

donors donated RMB 5. Thus, the donors did not really ignore the category as predicted by the theory. Presumably, they did this because they were attracted by the presence of prestige benefits under 3_CR20_1 ($5-20$). This evidence also suggests that the prestige motive for giving crowds out the warm glow motive for giving.

When the category threshold was increased to category 2 (RMB 8), the majority of donations were clustered around this threshold amount, although we still found minor clusters of donations around other natural focal points (RMB 0, RMB 5, RMB 10, and RMB 20). The result from the Kolmogorov-Smirnov test for the equality of distributions between 1_NR20 and 3_CR20_2 ($8-20$) also confirmed that they were differently distributed (the p value is 0.037).

When we increased the category threshold further to category 3 (RMB 12), the mode of donation remained equal to the category threshold. However, the number of donors who donated at the natural donation points also increased. This was the reason for the insignificant result of the Kolmogorov-Smirnov test for the equality of distributions between 1_NR20 and 4_CR20_3 ($12-20$). The p value obtained from this test was 0.305. The high value of the category threshold, which constituted about 60% of the total endowment, discouraged the donors from obtaining star donor status.

When the category threshold was set at category 4 (RMB 16), we still observed a minor clustering of donations around the threshold amount, although it became much less prominent. Only less than one third of the participants were attracted to obtain star donor status. The remaining participants donated an amount that was equal to any of the natural focal points. If we examine the bottom-right plot depicted in Figure 3, we observe that donations are evenly distributed across the natural focal points and the threshold category. This evidence suggests that, when the threshold category is set "too high," many donors ignore the prestige benefits. As a result, the contribution patterns in both treatments are not statistically different (the p value is 0.902).

[INSERT FIGURE 3 HERE]

Next, we ran probit regressions to evaluate the impact of the CR plan on the probability that donations were clustered around the minimum category amount. The results are presented in Table 6 below. The dependent variable took the value of 1 if the donation

was equal to the minimum category amount (e.g. RMB 5 for category 1), and the value of 0 if it did not equal the minimum category amount. The coefficients of the independent variable (NR dummy) in regressions 1, 2, and 3 were negative and statistically significant, implying that the absence of the category plan (under the NR plan) significantly reduces the probability of clustering around the minimum amount of the category. However, when the category was set at RMB 16, only 1 donor out of 47 donors donated at the minimum category amount. The price of prestige (RMB 16) was deemed too high by the donors.

[INSERT TABLE 6 HERE]

To sum up, although the CR plan did not seem to generate larger size of contribution from donors than the NR plan, it did change the giving behavior of the donors. The majority of them did care about having their donations reported by the charity and obtaining star donor status and prestige benefits. However, when the threshold category was set equal to category 4, the price of prestige increased substantially and donors would rather give up obtaining the prestige benefits and preferred to donate according to their natural focal points.

The CR Plan vs. The CNR Plan

From Figure 4 we can observe that, when the category was set at category 1 (RMB 5), both 3_CR20_1 $(5-20)$ and 6_CNR20_1 $(5-20)$ yielded a clustering of donations around the threshold amount of RMB 5. Recall that the CNR plan offered no prestige to donors, as their donations were not publicly reported. It also happens that RMB 5 is one of the natural focal points. The result from the Kolmogorov-Smirnov test for the equality of distributions between 3_CR20_1 $(5-20)$ and 6_CNR20_1 $(5-20)$ showed that the two distributions were not statistically different (the p value is 0.777). Given that both treatments yielded a similar pattern, we can conclude that in this particular case the evidence of clustering cannot be attributed to prestige.

[INSERT FIGURE 4 HERE]

Next, when we increased the threshold category from RMB 5 to RMB 8, which is not a natural focal point but is close enough to a natural focal point (i.e. RMB 10), we could

see that the two distributions differed substantially (see Figure 5 below). The p value obtained from the Kolmogorov-Smirnov test was 0.051, which indeed confirmed that the two distributions were statistically different from one another. Under 3_CR20_2 $(8-20)$, the majority of donations were clustered around the threshold category amount (RMB 8). However, under 5_CNR20_2 $(8-20)$, the majority of donations were clustered around the natural focal point of RMB 10. When prestige was offered under the CR plan, the behavior of the donors was altered and they tended to donate on the threshold amount just to qualify for star donor status. However, under the CNR plan which offered no prestige, donors were drawn to the natural focal point of RMB 10. Recall that this point also represented the warm glow motive for giving. This evidence suggests two things. *Firstly*, donors are motivated by prestige when donating. *Secondly*, the presence of prestige benefits crowds out the warm glow motive for giving.

[INSERT FIGURE 5 HERE]

From a casual observation, when the threshold category was increased further to RMB 12 we observed that under 3_CR20_3 $(12-20)$ the mode of the donation distribution was RMB 12, but under 6_CNR20_3 $(12-20)$ the mode was RMB 10, which was a natural focal point. Donors who wanted to donate RMB 10 under 3_CR20_3 $(12-20)$ might have been drawn to the threshold category RMB 12, since their marginal cost of donating was only RMB 2, but by donating at the threshold amount and qualifying for star donor status they could obtain the prestige benefits. Interestingly, this did not happen under 6_CNR20_3 $(12-20)$, where the prestige benefits were absent. However, although the mode of the two distributions differed, the two distributions were not really statistically different. The p value obtained from the Kolmogorov-Smirnov test was 0.344.

[INSERT FIGURE 6 HERE]

Finally, when the threshold category was increased further to RMB 16, donations under 4_CR20_4 $(16-20)$ became more or less evenly distributed across the natural focal points and the threshold category (see Figure 7 below). However, under 6_CNR_4 $(16-20)$ donors did not seem to care about obtaining star donor status. Only 1 donor

out of 22 donors contributed RMB 16. The majority of donors ignored the category and donated nothing or only RMB 5, which was a natural focal point. Presumably, the spending RMB 16 to obtain prestige was deemed too high a price by the donors. When the category threshold was set too high, the two distributions did not differ statistically. The p value obtained from the Kolmogorov-Smirnov test was 0.378.

[INSERT FIGURE 7 HERE]

The NR Plan vs. The CNR Plan

As shown earlier, the donors ignored the presence of category under the CNR plan and tended to donate an amount equal to any of the natural focal points. Accordingly, we should have observed similar patterns of donation distribution under both the CNR and NR plans. This is because the only thing that differed between these two plans was the presence of category. However, unlike the CR plan, the CNR plan did not involve any public disclosure of donations that qualified for star donor status. Consequently, it did not enable donors to obtain prestige. If there was any difference in the donation distributions between the two plans, it could be attributed to the presence of a reference point around the size of donation that donors should have made under the CNR plan.

In order to evaluate this, we ran the Kolmogorov-Smirnov tests for the equality of donation distribution between the two plans. The results are shown in Table 5. In three out of the four category levels that were used in our experiments (i.e. RMB 8, RMB 12, and RMB 16), we did not find any statistical difference in the donation distributions between the NR and CNR plans. The p values obtained from the tests were 0.696, 0.330, and 0.081, respectively. On the basis of these results, we can conclude that, without any public reporting, donors tend to ignore the presence of category and behave in a similar manner to the one observed under the NR plan. This also implies that there is no evidence that the use of category creates a reference point concerning the size of donations that donors should make.

However, for the low level of category threshold (i.e. RMB 5), we did find evidence of a reference point effect. Under 1_NR20, the mode of donations was RMB 10, which is one of the natural focal points. However, under 3_CNR20_1 $(5-20)$, the mode was equal to the threshold category of RMB 5. Under the CNR plan, the majority of the

donors were exposed to a choice between donating an amount that they would naturally have donated in the absence of any category (e.g. RMB 10) and an amount that was equal to the category threshold. The latter may have given a signal to these donors that the charity needed a lesser amount of money than they would initially have thought. Accordingly, many of these donors would have switched from giving RMB 10 to giving RMB 5.

We also ran probit regressions to evaluate the impact of the use of the category plan without reporting on the probability of donations clustering around the minimum category amount. The results are presented in Table 7 below. The dependent variable took the value of 1 if the donation equaled the minimum category amount (e.g. RMB 5 for category 1), and the value of 0 if it did not equal the minimum category amount. It can be observed that the impact of the category plan on the probability of clustering around the minimum category amount is much weaker when the category status is not publicly disclosed compared to when it is publicly disclosed (see Table 6). The impact is significant at the 5% level only in 3_CNR20_1 $(5-20)$. In the other two treatment, it is either marginally significant or not significant at all.

[INSERT TABLE 7 HERE]

Summary

To summarize, we found that when prestige benefits were "*offered*" under the CR plan, and the category threshold was not set too high, donors were attracted to donate an amount that was equal to the category threshold in an attempt to qualify for star donor status. This evidence suggests that donors are motivated by prestige when donating. However, under the CNR plan, where prestige benefits are absent, the majority of the donors tended to ignore the category and donate an amount that was equal to the amount donated under the NR plan, which also captured the warm-glow motive for giving. Interestingly, we found some evidence of the crowding out of the warm glow motive for giving when prestige benefits were present.

5 Concluding Remarks

There are several reasons why people give their hard-earned money away to charitable causes. They may be motivated by a selfless altruistic concern for the well-being of other people.[7] They may also be motivated by the positive utility derived from the act of donating money to others (i.e. the *warm-glow benefit* of giving) and by other *private benefits* of giving.[8]

In particular, Harbaugh (1998a and 1998b) points out the importance of the "prestige" donors derive from having their donations made known to others. Given that donors may be motivated by prestige and that the objective of charities is to maximize the size of donations, charities can design a fundraising strategy that invests donors with prestige. Reporting donations by category and awarding donors star donor status is an example of that fundraising strategy. Using this strategy, charities set some pre-specified categories and publicly announce donors who qualify for star donor status on the basis of their donations. Harbaugh (1998a) showed theoretically that the use of a category reporting plan could generate more donations than the use of either an exact reporting plan, in which the actual sizes of donations were reported, or a no reporting plan, in which donations were kept confidential. In a companion paper, Harbaugh (1998b) showed that, under the category reporting plan, the prestige motive for giving did indeed exist.

This paper presents an experimental analysis of Harbaugh's theoretical assertion. Through a series of experiments conducted at Fudan University in China, we evaluated the impacts of various reporting plans on the giving behavior of the donors. Contrary to Harbaugh's theoretical assertion, our experimental results showed that, in terms of generating donations, the use of the category reporting plan is not superior to the use of either the exact reporting plan or the no reporting plan.

However, we did find strong evidence in support of Harbaugh's suggestion and empirical finding that donors are motivated by prestige when donating. The use of the category reporting plan changed the charitable behavior of donors. When given an opportunity to obtain prestige benefits by having their donations announced and being given star donor status, donors tended to donate an amount that was equal to the minimum amount that

[7] See for instance Kolm (1969), Warr (1982), Roberts (1984), and Bergstrom, Blume and Varian (1986).
[8] See for instance, Hollander (1990), Glazer and Konrad (1996), and Harbaugh (1998a and 1998b).

would still enable them to qualify for the star donor status, provided that the category amount was not set too high. When the category amount was set too high, donors ignored the category. This also suggests that the demand for prestige is downward sloping. More interestingly, we also discovered that in some circumstances the presence of prestige benefits crowded out the warm glow motive for giving.

Focal points, which essentially captured the warm glow motive for giving, also played an important role in the decision of a donor to donate. When the no reporting plan was used, the donors tended to donate at some natural focal points such as (RMB 0, RMB 5, RMB 10, and RMB 20). When the category was used, but donations were not publicly reported, the donation behavior of donors would be similar to the one found under the no reporting plan, when the category was not set too low. If the behavior had been different in these two settings, it might suggest that the use of category creates a reference point effect. Given that we found a similar behavior under the two reporting plans, we can generally conclude that the use of category does not seem to create any reference point. However, when the category was set too low, at RMB 5, the presence of category did induce many donors to donate an amount that was equal to RMB 5, even though their donations were not publicly reported. In this case, the presence of category may give a signal to donors that the charity only needs a lesser amount of money than the amount they initially thought of. Accordingly, many donors switched from giving RMB 10 to giving RMB 5.

A final caveat is in order. In our experimental setup, we only used one category for the CR plan and one for the CNR plan. In reality, charitable organizations use multiple categories. In future research, it would be interesting to extend our experimental study to one with multiple categories. On the basis of our result, we expect that the donors will self-select a donation category that suits them well. Donations are also going to be clustered around the category thresholds.

Appendix

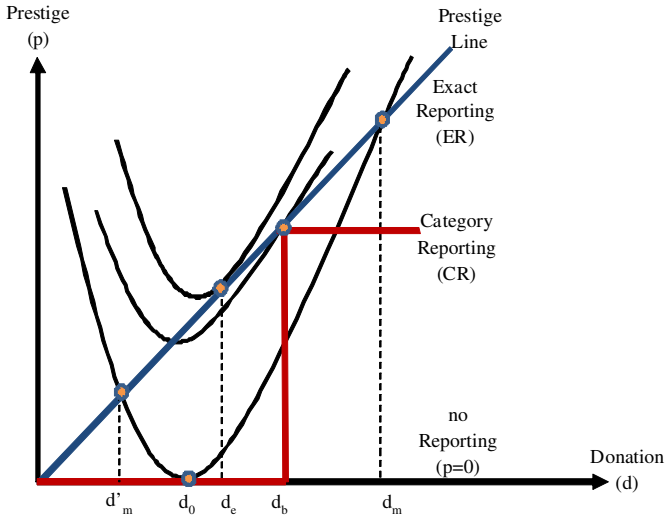

Figure 1: The Optimal Size of Donation under Various Reporting Plans

No.	Reporting Plans	Treatment Codes	
		RMB 20	RMB 50
1.	No Reporting (NR)	NR20	NR50
2.	Exact Reporting (ER)	ER20	ER50
3	Category Reporting 1 (CR1)	CR20_1 (5–20)	CR50_1 (8-50)
4.	Category Reporting 2 (CR2)	CR20_2 (8-20)	CR50_2 (20-50)
5.	Category Reporting 3 (CR3)	CR20_3 (12-20)	CR50_3 (30-50)
6.	Category Reporting 4 (CR4)	CR20_4 (16-20)	CR50_4 (40-50)
7.	Category No Reporting 1 (CNR1)	CNR20_1 (5-20)	CNR50_1 (8-50)
8.	Category No Reporting 2 (CNR2)	CNR20_2 (8-20)	CNR50_2 (20-50)
9.	Category No Reporting 3 (CNR3)	CNR20_3 (12-20)	CNR50_3 (30-50)
10.	Category No Reporting 4 (CNR4)	CNR20_4 (16-20)	CNR50_4 (40-50)

Table 1: Reporting Plans and Treatment Codes

Session 1 (23 participants)	Session 2 (25 participants)	Session 3 (25 participants)
1_NR20 1_NR50 1_CR20_2 (8-20) 1_CR50_4 (40-50)	2_ER20 2_ER50 2_CR20_3 (12-20)	3_CR20_1 (5-20) 3_CR50_3 (30-50) 3_CR20_2 (8-20) 3_CR50_4 (40-50) 3_NR20 3_NR50
Session 4 **(24 participants)**	**Session 5** **(22 participants)**	**Session 6** **(22 participants)**
4_CR20_4 (16-20) 4_CR50_2 (20-50) 4_CR20_3 (12-20) 4_CR50_1 (15-50) 4_ER20 4_ER50	5_CNR20_3 (12-20) 5_CNR50_1 (15-50) 5_CNR20_2 (8-20) 5_CNR50_4 (40-50) 5_NR20 5_NR50	6_CNR20_4 (16-20) 6_CNR50_2 (20-50) 6_CNR20_1 (5-20) 6_CNR50_3 (30-50) 6_ER20 6_ER50

Table 2: The Allocation of Treatments across Sessions

	Treatments	Nr. of. Obs.	Mean	Std. Dev.	Min	Max
1.	All with RMB 20 endowment	234	8.07	5.41	0	20
2.	1_NR20	23	9.17	5.79	0	20
3	2_ER20	25	8.68	6.24	0	20
4.	3_CR20_1 (5-20)	25	6.60	4.09	0	18
5.	3_CR20_2 (8-20)	25	7.48	4.00	0	18
6.	4_CR20_3 (12-20)	24	8.21	5.44	0	15
7.	4_CR20_4 (16-20)	24	8.92	6.77	0	20
8.	6_CNR20_1 (5-20)	22	5.59	4.62	0	18
9.	5_CNR20_2 (8-20)	22	8.75	3.50	0	15
10.	5_CNR20_3 (12-20)	22	10.55	4.22	0	18
11.	6_CNR20_4 (16-20)	22	6.77	7.30	0	20

Table 3: The Descriptive Statistics (with RMB20 Endowment)

		1_NR20	2_ER20	3_CR20_1 (5-20)	3_CR20_2 (8-20)	4_CR20_3 (12-20)	4_CR20_4 (16-20)	6_CNR20_1 (5-20)	5_CNR20_2 (8-20)	6_CNR20_3 (12-20)	5_CNR20_4 (16-20)
	Average Contribution	9.17	8.68	6.6	7.48	8.21	8.92	5.59	8.75	10.55	6.77
1_NR20	9.17		0.7001	0.0501**	0.1355	0.9398	0.8794	0.0174**	0.8582	0.1761	0.0871***
2_ER20	8.68			0.1269	0.2401	0.7003	0.9674	0.0380***	0.7969	0.0879***	0.1150
3_CR20_1 (5-20)	6.6				0.0694***	0.3814	0.2387	0.2907			
3_CR20_2 (8-20)	7.48					0.4595	0.4356		0.0258**		
4_CR20_3 (12-20)	8.21						0.7154			0.0258**	
4_CR20_4 (16-20)	8.92										0.2656
6_CNR20_1 (5-20)	5.59								0.0038*	0.0005*	0.4119
5_CNR20_2 (8-20)	8.75									0.0106*	0.0726***
6_CNR20_3 (12-20)	10.55										0.0354***
5_CNR20_4 (16-20)	6.77										

The numbers in the above cells denote the p-values obtained from the two-sample Wilcoxon-Mann-Whitney tests for the equality of the means.*

* Significant at the 1% level

** Significant at the 5% level

*** Significant at the 10% level

Table 4: Comparing Average Contributions: Wilcoxon-Mann-Whitney Tests

	1_NR20	2_ER20	3_CR20_1 (5-20)	3_CR20_2 (8-20)	4_CR20_3 (12-20)	4_CR20_4 (16-20)	6_CNR20_1 (5-20)	5_CNR20_2 (8-20)	6_CNR20_3 (12-20)	5_CNR20_4 (16-20)
1_NR20		1.000	0.014**	0.037**	0.305	0.920	0.033**	0.696	0.330	0.081***
2_ER20			0.037**	0.078***	0.118	0.856	0.033**	0.390	0.134	0.163
3_CR20_1 (5-20)				0.006*	0.058***	0.115	0.777	0.000*	0.001*	0.075***
3_CR20_2 (8-20)					0.027**	0.115	0.019**	0.051**	0.003*	0.046**
4_CR20_3 (12-20)						0.259	0.043**	0.043**	0.344	0.360
4_CR20_4 (16-20)							0.102***	0.185	0.344	0.378

The two-sample Kolmogorov-Smirnov test for the equality of distributions. The numbers in the above cells denote the p-values.

* Significant at the 1% level.

** Significant at the 5% level

*** Significant at the 10% level

Table 5: The Kolmogorov-Smirnov Tests for the Equality of Distributions

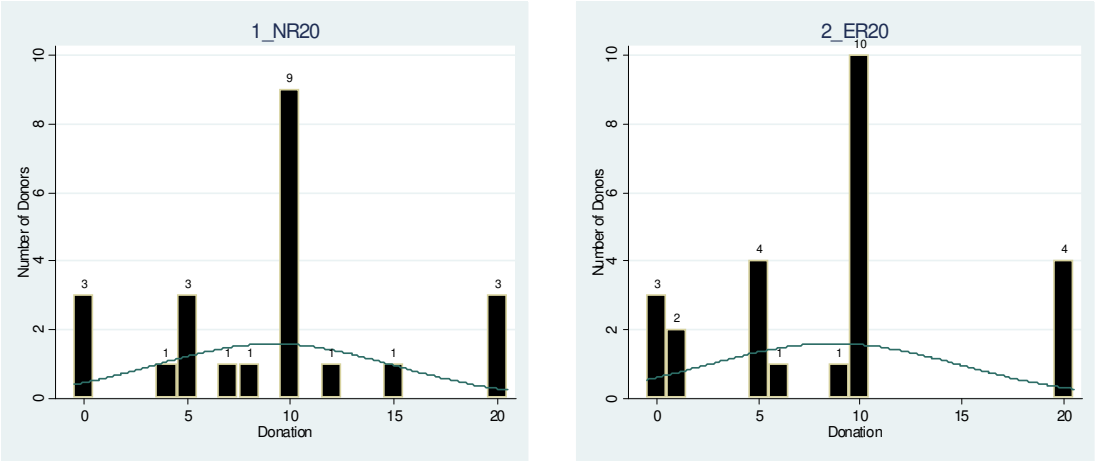

Figure 2: The Distribution of Donations under 1_$NR20$ and 2_$ER20$

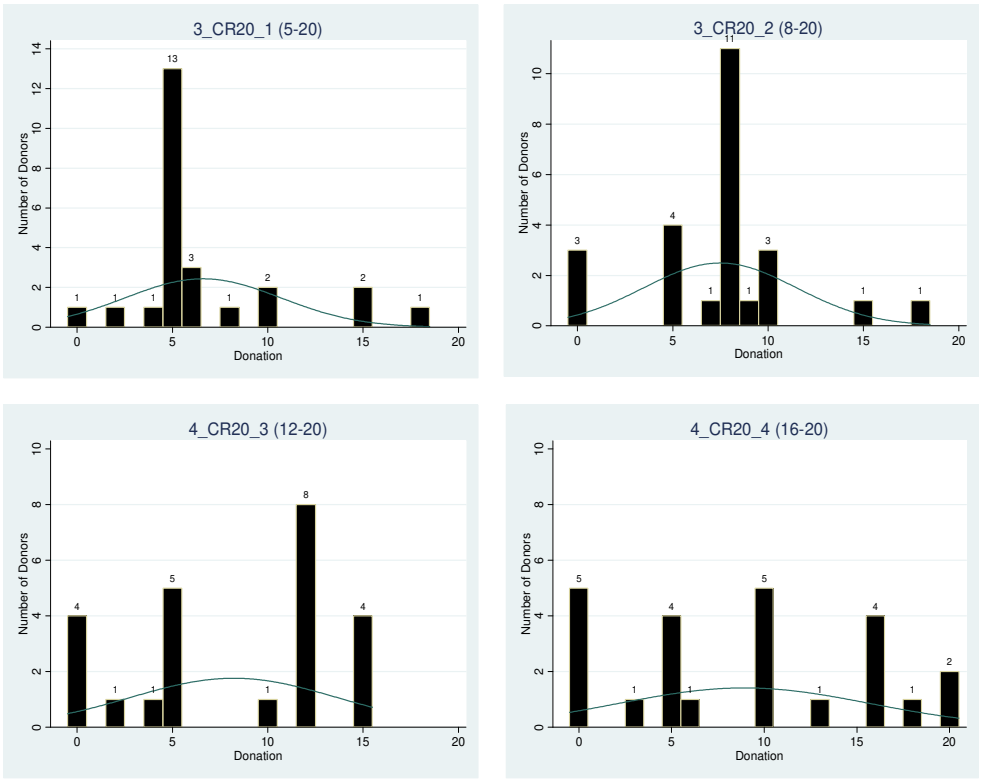

Figure 3: The Distribution of Donations under the CR Treatments

Probit Regressions
Dep. Variable: Pr(Donations are Clustered around the Minimum Category Amount)

INDEPENDENT VARIABLE	Models			
	1	2	3	4
	NR vs. CR1	NR vs. CR2	NR vs. CR3	NR vs. CR4
Constant	0.0502	-0.1510	-0.4307	
NR dummy 1 if NR 0 if otherwise	-1.1745* (0.4154)	-1.5607 * (0.5254)	-1.2809 ** (0.5318)	N.A. +
Observations	46	48	47	
Pseudo-R^2	0.1420	0.2123	0.1553	

Note:

- We compare the following; 1) 1_NR20 vs. 3_CR20_1 (5-20), 2) 1_NR20 vs. 3_CR20_2 (8-20), 3) 1_NR20 vs. 4_CR20_3 (12-20), 4) 1_NR20 vs. 4_CR20_4 (16-20).
- Standard errors are in parenthesis.
- * Significant at the 1% level.
  ** Significant at the 5% level.
- + There is only one observation of clustering around the minimum category amount out of 47 observations, implying that the CR4 plan never induces any clustering around the minimum category amount. The probit regression predicts failure perfectly.

Table 6: Probit Regressions - The NR Treatments vs. The CR Treatments

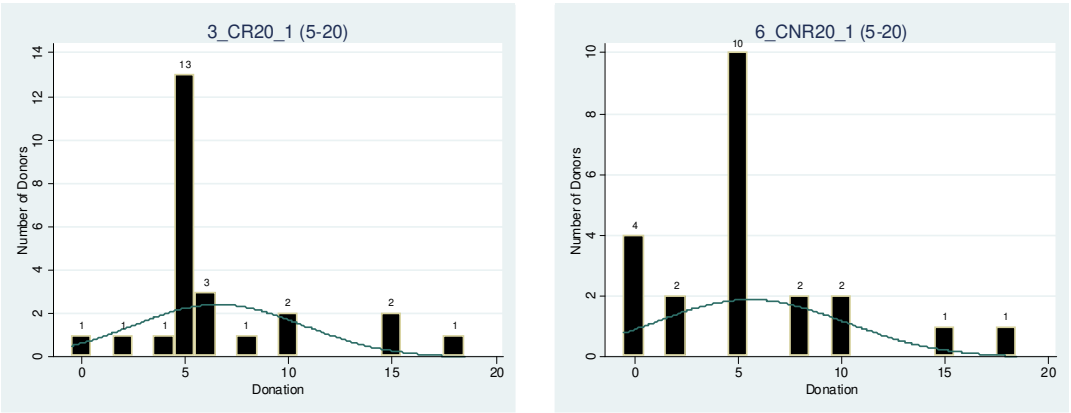

Figure 4: The Distribution of Donations under 3_$CR20$_1 $(5-20)$ and 6_$CNR20$_1 $(5-20)$

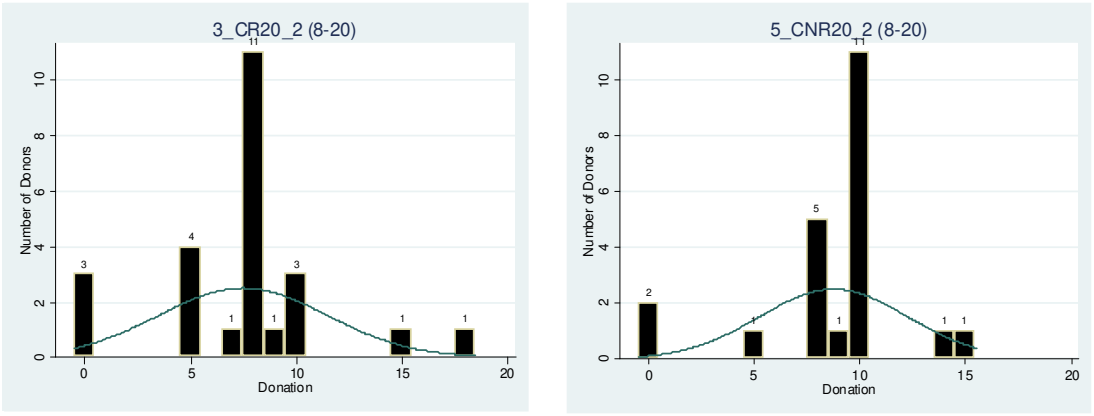

Figure 5: The Distribution of Donations under 3_$CR20$_2 $(8-20)$ and 5_$CNR20$_2 $(8-20)$

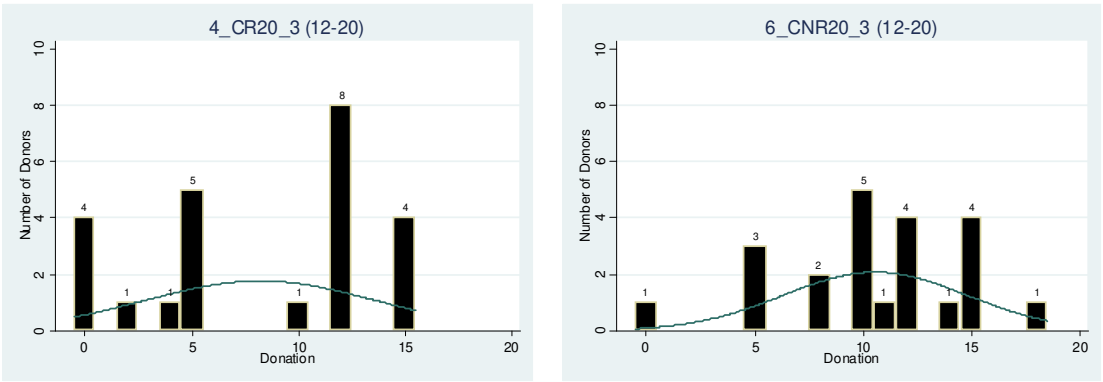

Figure 6: The Distribution of Donations under 4_$CR20$_3 $(12-20)$ and 6_$CNR20$_3 $(12-20)$

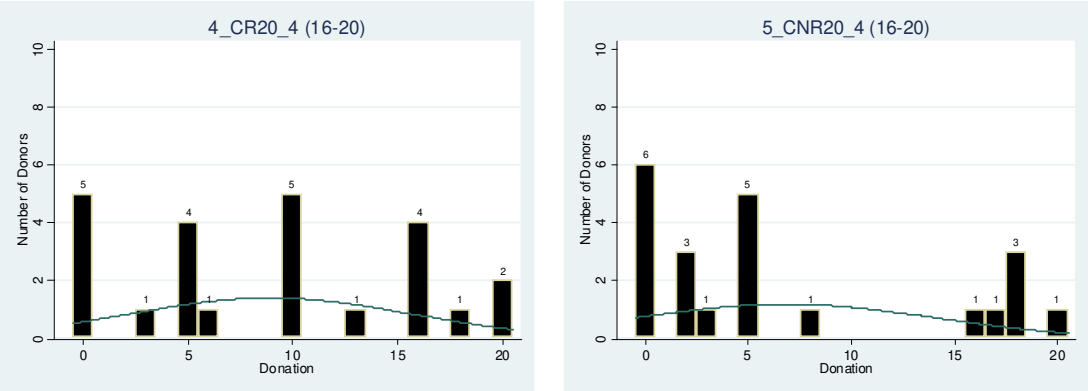

Figure 7: The Distribution of Donations under 4_$CR20$_4 $(16-20)$ and 5_$CNR20$_4 $(16-20)$

Probit Regressions
Dep. Variable: Pr(Donations are Clustered around the Minimum Category Amount)

INDEPENDENT VARIABLE	Models			
	1	2	3	4
	NR vs. CNR1	NR vs. CNR2	NR vs. CNR3	NR vs. CNR4
Constant	-0.1142	-0.7479	-0.9085	
NR dummy	-1.0102*	-0.9638**	-0.8032	N.A. +
1 if NR	(0.4259)	(0.5481)	(0.5565)	
0 if otherwise				
Observations	45	45	47	
Pseudo-R^2	0.1104	0.0999	0.1553	

Note:

- We compare the followings; 1) 1_NR20 vs. 3_CNR20_1 (5-20), 2) 1_NR20 vs. 3_CNR20_2 (8-20), 3) 1_NR20 vs. 4_CNR20_3 (12-20), 4) 1_NR20 vs. 4_CNR20_4 (16-20).
- Standard errors are in parenthesis.
- * Significant at the 5% level.
  ** Significant at the 10% level.
- + There is only one observation of clustering around the minimum category amount out of 47 observations, implying that the CNR4 plan never induces any clustering around the minimum category amount. The probit regression predicts failure perfectly.

Table 7: Probit Regressions - The NR Treatments vs. The CNR Treatments

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