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### Preferences for efficiency and redistribution: An experiment using charitable donations

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#### Abstract

Understanding the tradeoff between preferences for redistribution and efficiency is a central question in public finance. Existing experimental work examining this question formalize efficiency in "leaky bucket" choice tasks where possible redistribution schemes are exogeneously pre-selected by the experimenter. These design choices place great (negative) emphasis on the cost of redistribution and restrict subjects' ability to express preferences for alternative redistribution schemes outside the set pre-selected by the experimenter. We explore preferences for redistribution and efficiency in an experiment on charitable donations which avoids these issues. We find evidence for redistributive preferences, particularly where "taxation" is focused on the leader, and that preferences for efficiency tend to dominate those for redistribution.

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# 1 Introduction

Understanding preferences for redistribution and efficiency are important questions relating to the design of tax and transfer systems. Laboratory experiments provide a testing ground for understanding these preferences, and this is a growing literature (see, e.g., Charness and Rabin (2002), Beckman et al. (2004), Engelmann and Strobel (2004), Ackert et al. (2007), Pirttilä and Uusitalo (2010), Durante et al. (2014), Kittel et al. (2017), and Ambec et al. (2019)). Existing experimental work investigates these preferences in settings with very specific assumptions about the manifestation of efficiency costs and the structure of the tax and transfer systems.

The standard formalization of efficiency costs are through “leaky bucket” games, where the inefficiency associated with redistribution is through the direct cost of the redistribution system itself. While this is a convenient method for introducing inefficiencies related to redistribution, “leaky bucket” experiments are subject to a number of deficiencies (see, e.g. Amiel et al. (1999) and Cowell (1985)), but in particular, in estimating inequality aversion “it may be that an alternative approach, perhaps placing less direct emphasis on the cost of redistribution, would elicit different responses” (Amiel et al. (1999)). This strong framing of redistribution in the context of losses may be particularly relevant given recent evidence on the importance of gain-loss frames on other-regarding behavior in Dictator games (My et al. (2018)).

The second important issue with experimental studies on redistribution is that the possible “tax” schemes are pre-selected by the experimenter, eliminating subjects’ ability to express preferences for reallocation schemes that differ from the options available in the experiment. As such, a decision to not contribute to a “leaky bucket” is not necessarily an expressed preference against redistribution, just an expressed preference against the specific system of redistribution chosen by the experimenter.

In this paper we conduct experiments that improve along both of these margins to a) examine the robustness of these preferences to alternative choice contexts and b) obtain a better understanding of the types of redistribution schemes (if any) subjects prefer.<sup>1</sup> To do this we conduct an experiment where subjects are asked to distribute money to a set of charities, which will be donated on their behalf.<sup>2</sup> To understand preferences for efficiency and redistribution we conduct different treatments where information about efficiency and relative standing of donations received for each charity is revealed to subjects.

We find that when information about charity efficiency is reported to subjects, donation behavior shifts away from low and towards high efficiency charities, reflecting preferences for efficiency. When information about a charity’s relative standing in total donations is revealed to subjects some redistribution occurs, but the reallocation is non-linear. We find that donations towards the charity leading in donations decline sharply, and thus subjects express a preference for redistribution schemes that seek to limit the share received by the most advantaged group.

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<sup>1</sup>This second margin makes our study related to Ackert et al. (2007), which examines preferences for a head-tax vs. progressive tax. However, our experiment places no restriction on the specific schemes subjects are able to choose.

<sup>2</sup>Though it is not the motivation for our experiment, our results are also relevant to the literature focused on understanding charitable giving behavior (e.g. List (2011))

To understand which of these preferences influences decisions the most, we conduct an additional treatment which provides information on both relative standing and efficiency. Moving from a treatment with information on just relative standing to a treatment with information on both relative standing and efficiency causes changes in donation behavior which favor efficiency. However, moving from a treatment with information on just efficiency to a treatment with information on both relative standing and efficiency generates no clear change in donation behavior, suggesting preferences for efficiency outweigh those for equity in our experiments.

Thus our results provide evidence for the following: efficiency concerns exist in contexts other than those which emphasize the efficiency cost of redistribution; that subjects display preferences for equity but that redistribution attention is focused on reducing the share received by the group leaders; and that these equity preferences seem to be dominated by efficiency considerations.

## 2 The Experiment

We conducted our experiment on Amazon’s MTurk platform. We recruited workers with established track records participating in MTurk experiments. Subjects were sorted into one of four different information treatments. Subjects first conducted a comprehension test where they were required to read the information about each charity and the definitions pertaining to efficiency and the distribution of donations received by each charity and answer questions. Subjects who failed the comprehension questions are discarded from the data. In addition, the same reading comprehension questions were chosen regardless of the subsequent information treatment to eliminate any possible confounding influence on behavior.

Subjects were then exposed to one of four different information treatments (between-subject design).<sup>3</sup> After observing this information, subjects distributed 24 cents across five charities in any manner they wish and at the end of the experiment these donations would be made on their behalf. This flexibility in possible distributions is desirable in that it permits subjects to allocate funds in any manner they wish, allowing us to observe the shape of redistribution schemes. Of course, this flexibility comes with a cost of statistical precision as substantial heterogeneity in decisions could, and does, occur.<sup>4</sup> A large part of this heterogeneity is ruled out in existing experiments by restricting the possible redistribution schemes.

The charities were chosen by us in an attempt to generate diversity in the types of causes, avoid any obvious politically sensitive topics, and to choose unfamiliar charities to limit the likelihood that subjects had any knowledge of the charities prior to the experiment. A list of the charities is given in Table I. In the first treatment subjects are only given a short description of each charity’s cause (this treatment will be referred to as No-Info henceforth). This treatment is used to establish the organic preferences towards each charity.<sup>5</sup> These

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<sup>3</sup>Subjects were excluded from participating in the experiment more than once.

<sup>4</sup>See Bellemare et al. (2008) and Ackert et al. (2007) for evidence on heterogeneity in inequity aversion and redistributive preferences.

<sup>5</sup>For example, subjects may donate differently based on perceived charity size. Borgloh et al. (2013) find that subjects in a donation experiment choose to donate to smaller charities more frequently. In addition,

results allow us to control for any charities differences in average donation behavior in the other treatments. The second treatment displayed information to subjects about each charity’s efficiency (this treatment will be referred to as Efficiency henceforth). These metrics for efficiency were taken from CharityNavigator.org and are defined as “the percent of the charity’s total expenses spent on the programs and services it delivers” (Navigator (2017)). The third treatment displayed information to subjects about the share to total donations received by each charity in the experiment. These numbers were computed from the actual donation decisions of subjects during the No-Info treatment. This treatment provided information about each charity’s relative standing in donations and allows us to understand preferences for redistribution.<sup>6</sup> The last treatment displayed information for both efficiency and the share of donations for each charity (henceforth referred to as Total/Efficiency). This additional treatment allowed us to explore the relative importance of efficiency and redistributive preferences.

Table I. *Charities used in the experiment.*

Charity	Referred to henceforth
American Society for the Prevention of Cruelty to Animals	“Animal”
Environment America Research and Policy Center	“Environment”
Children’s Cancer Recovery Foundation	“Cancer
Scholarship America	“Scholarship”
Family Housing Fund	“Housing”

An example of screen shown to subjects is reproduced in Figure A.1 below. Because this is an allocation task, we were concerned that the order in which charities were presented may influence the donations received by each. To control for this, we implemented sub-treatments in each of the four main treatments where a charity’s position in the list is rotated through all of the possible five positions.

The experiments were run online from January to May 2019. There were a total of 322 subjects, with nearly balanced treatments: 82 in No-Info, and 80 in each of Efficiency, Total, and Total/Efficiency. Subjects were paid between \$0.50 and \$1 for participating in the experiment and had 15 minutes to complete the task.<sup>7</sup> The 24 cents available for the

the findings in Bennett (2003) suggest personal values are an important driver of donation behavior.

<sup>6</sup>Since these numbers reveal behavior of earlier participants in the experiment, they also may transmit social information. If subjects are emulators, they may seek to copy the observed totals determined by the earlier participants. This may bias the results against finding a preference for redistribution. In no instance did we find evidence of strict emulators, where subjects replicate the aggregate distribution of donations revealed to them. In addition, the results reported below show that donations declined for the leading charity, which is the opposite of what one would expect from emulation-type behavior. Finally, in the final treatment, highlighted next, we display information on both Totals and Efficiencies. If social information is a major factor influencing decisions, the addition of the Total information in the final treatment should change the donation behavior relative to the Efficiency treatment, and we find that it does not. These findings suggest that any social information that is transmitted through the Totals treatment is having limited influence over subject decisions.

<sup>7</sup>Subject payments were increased from \$0.50 to \$1 to improve participation rates.

donations to the charities was separate from this participation compensation. These are relatively small stakes, but allow us to increase the sample size in our experiments. Recent research also shows that mTurk experiments with small stakes generate comparable behavior to those done in the laboratory, see Amir et al. (2012).

## 3 Results

### 3.1 No Info to Efficiency or Total

To begin, we present results on the impact that either Efficiency or Total have on donation behavior. Figure 1 provides box plots on donations for each charity in the Efficiency treatment relative to their mean donation in the No-Info treatment. Charities are ordered by their respective efficiency metric on the x-axis. The upward sloping feature of this figure highlights that on average low efficiency charities notice a decline while high efficiency charities notice an increase in donations when efficiency information is displayed to subjects. The top section of Table II shows some statistical support for these changes. For example, relative to the No-Info treatment, the average donation for the lowest efficiency charity declined by 2.08 cents (or by approximately 30%) and this is significant at the 1% level. The highest efficiency charity realized an increase in the average donation by 1.4 cents (or by approximately 40%), weakly significant at the one-sided 10% level. Overall, aggregate efficiency (the sum of each charity's efficiency multiplied by their share of total donations) improves from 78.57 in No-Info to 81.08 in Efficiency.

Figure 1. *Box plots for the difference in donations in the Efficiency treatment from the mean in the no-info treatment. Charity efficiencies reported to subjects are displayed on the x-axis.*

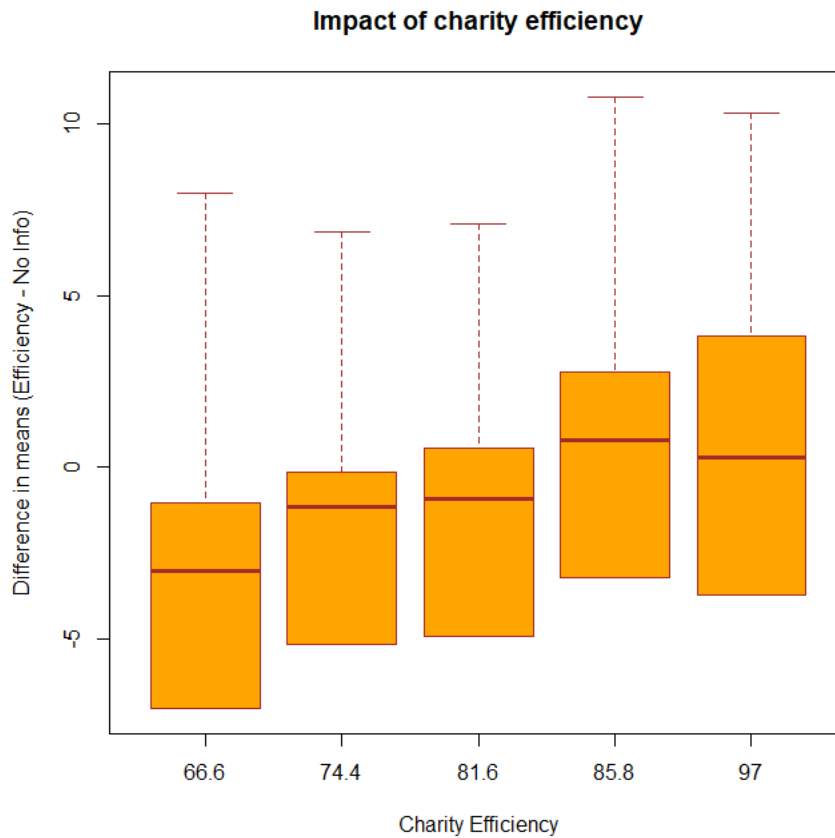


Figure 2 provides box plots on donations for each charity in the Total treatment relative to their mean donation in the No-Info treatment. We see some (weak) evidence of reallocation behavior. Interestingly, the “tax” preference seems to be heavily concentrated on the charity with the leading donations. Reported in the bottom half of Table II, the average donation for the leading charity declines by 1.04 cents (or by approximately 15%), weakly significant at the one-sided 10% level. Interestingly, this money seems to be allocated not towards the charity with the lowest donations, but towards the second and third place charities, increasing their average donation by 0.68 cents (13%) and 0.49 cents (10%), respectively, though the data are too noisy to distinguish these donations from the No-Info treatment. The strong reduction in donations towards the leading charity is an effective way to reduce the inequality of donations in this setting given the reported total donations. Receiving 31.5% of donations puts the Children’s Cancer charity well ahead of the others, with the three lowest charities having shares between 14-16%. In the words of Cowell (2011), it appears that subjects have a preference for “lowering the ceiling”: limiting the share going towards the most advantaged group.

Figure 2. *Box plots for the difference in donations in the Total treatment from the mean in the no-info treatment. Charity's share of total donations reported to subjects are displayed on the x-axis.*

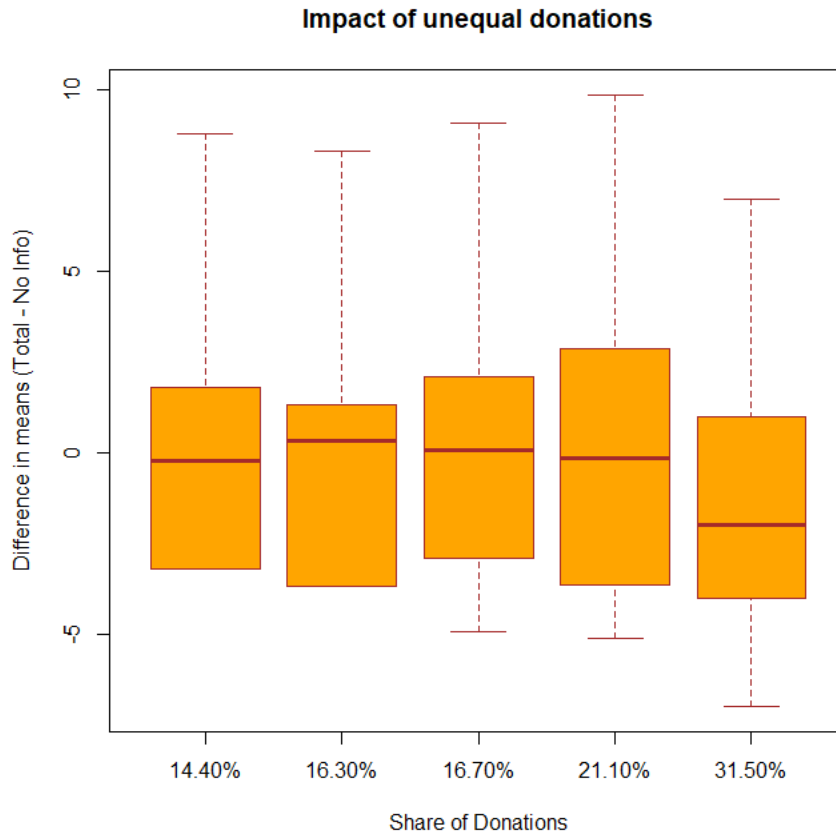


Table II. *Reports mean differences between no info treatment and Efficiency or Total treatments. p-values from Wilcoxon Rank-Sum tests for charity donations between treatments are reported, and \*\*\*, \*\*, \*, † denotes significance at 1%, 5%, 10%, and one-sided 10%, respectively.*

Treatment	Charity				
Efficiency	Cancer	Animal	Environment	Housing	Scholarship
Reported Efficiency	66.6	74.4	81.6	85.8	97
Mean Diff. no-info	-2.08***	-0.30	-0.43	1.41	1.4†
p-value	0.002	0.249	0.639	0.311	0.139
Total	Housing	Scholarship	Environment	Animal	Cancer
Share of Donations	14.4%	16.3%	16.7%	21.1%	31.5%
Mean Diff. no-info	0.081	-0.208	0.486	0.679	-1.04†
p-value	0.937	0.842	0.246	0.518	0.173

### 3.2 Redistribution vs. Efficiency

To get a better sense of whether preferences for redistribution or efficiency dominate, we conduct a fourth treatment where both information on a charity’s efficiency and their share of total donations is reported. We compare the results of this treatment to the results from both the Total and Efficiency treatments to understand which piece of information (efficiency or the share of total donations) has a larger impact on donation behavior.

Table III. *Reports mean differences between Total/Efficiency and the Total treatments. p-values from Wilcoxon Rank-Sum tests for charity donations between treatments are reported, and \*\*\*, \*\*, \*, † denotes significance at 1%, 5%, 10%, and one-sided 10%, respectively.*

	Charity				
	Cancer	Animal	Environment	Housing	Scholarship
Reported Efficiency	66.6	74.4	81.6	85.8	97
Share of Donations	31.5%	21.1%	16.7%	14.4%	16.3%
Mean Diff. from Total	-0.638	-0.900 <sup>†</sup>	-1.075 <sup>†</sup>	0.238	2.4**
p-value	0.226	0.195	0.174	0.890	0.02

Table IV. *Reports mean differences between Total/Efficiency and the Efficiency treatments. p-values from Wilcoxon Rank-Sum tests for charity donations between treatments are reported, and \*\*\*, \*\*, \*, † denotes significance at 1%, 5%, 10%, and one-sided 10%, respectively.*

	Charity				
	Housing	Scholarship	Environment	Animal	Cancer
Share of Donations	14.4%	16.3%	16.7%	21.1%	31.5%
Reported Efficiency	85.8	97	81.6	74.4	66.6
Mean Diff. from Efficiency	-1.09	0.800	-0.1875	0.075	0.40
p-value	0.419	0.577	0.7795	0.613	0.409

Examining the impact of moving from Total to Total/Efficiency in Table III shows similar changes in donation patterns as moving from No-Info to Efficiency. Even with information about donation shares present, subjects respond in a way that rewards high- and punishes low-efficiency charities. Alternatively, moving from the Efficiency Treatment to the Total/Efficiency treatment yields no statistically significant changes in donation patterns and these results are reported in Table IV. Thus, the revelation of a charity’s relative rank in donations does not appear to alter donation behavior when information about efficiency is present. Since we do see some important changes in donation behavior when moving from No-Info to Total and none when moving from Efficiency to Total/Efficiency, these results suggest that preferences for efficiency tend to dominate those for redistribution. This relative importance of efficiency over equity is generally consistent with the findings in the existing literature (e.g. Durante et al. (2014)), and thus appears to be robust to an alternative framing which places less negative emphasis on the cost of redistribution.



### 3.3 The Distribution of Donations

Further insights regarding allocation behavior can be highlighted by examining the distribution of donations each specific subject makes. This helps to illuminate a) whether the treatment effects are being driven by the intensive or extensive margin, and b) how strongly subjects display a preference for a specific charity. As a concise measure of the distribution of donations we plot empirical cumulative distribution functions (ECDF) for the maximum donation to a charity by each subject in the No Info, Total, and Efficiency treatments. These are presented in Figure 3.

Figure 3. *Empirical cumulative distribution functions for the maximum donation of each subject in the No-Info, Total, and Efficiency treatments.*

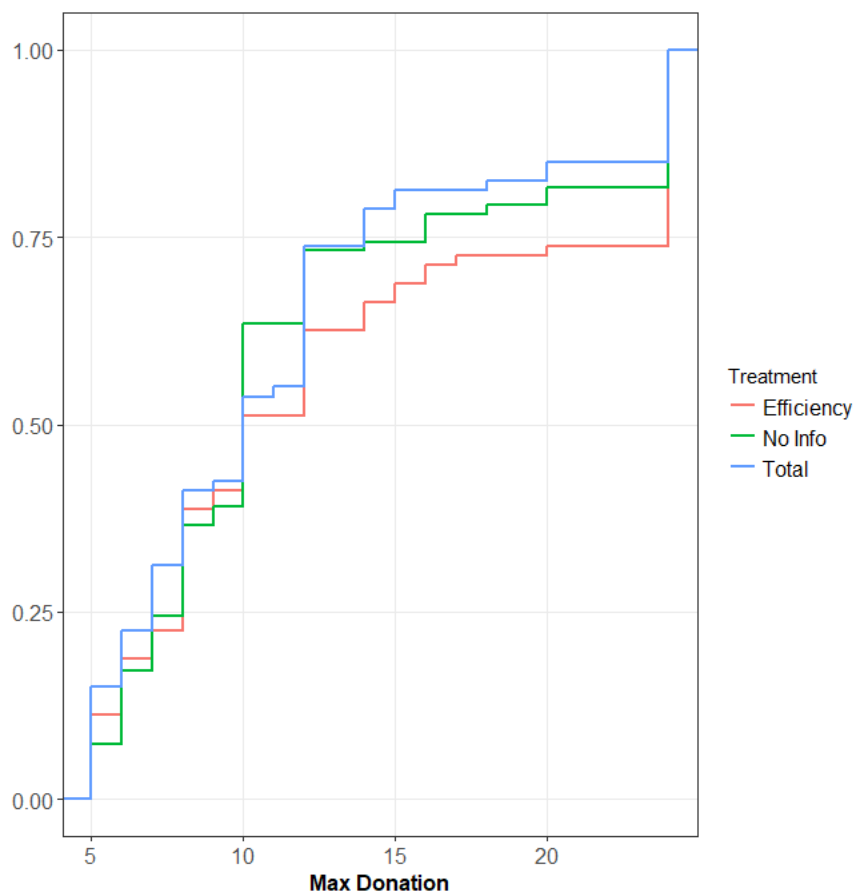


Figure 3 reveals a number of interesting patterns. The first is that subjects tend to spread their donations around to many different charities. At least 73% of all subjects donate to at least two charities in all treatments. In addition, in all treatments, more than 50% of subjects give a maximum donation of less than 11 cents, which means they are donating to at least three of five charities. This suggests a) an organic desire to have some degree of equity in their distribution behavior and b) specific charities/causes do not appear to elicit many unitary donations.

The second interesting result from Figure 3 relates to the distribution of maximum do-

nations across treatments. In the Total treatment, maximum donations tend to be lower. In all but the 11 to 12 cent maximum donation bin the ECDF of Total is above that of No Info, and across all bins the ECDF of Total is above Efficiency. These lower maximum donations suggest that subjects in the Total treatment spread their donations more evenly to charities. Thus, it appears the reallocation behavior documented above in the Total treatment stems from intensive donation adjustments. If the reallocation behavior was driven purely by the extensive margin (i.e. which charity to donate to) no differences across the ECDFs would emerge. Similarly, the Efficiency treatment appears to elicit the most unitary donations: approximately 27% of donations are the maximum 24 cents available. This share of unitary donations falls to approximately 20% in the No Info treatment, and still further to approximately 16% in the Total treatment. Thus, when given information on a charities' relative efficiency, subjects are more likely to give highly concentrated donations.

## 4 Discussion

We conduct an experiment with an alternative method to examine preferences for equity and efficiency. Our method differs from existing “leaky bucket” experiments that place great negative emphasis on redistribution and allows subjects to freely express any reallocation scheme. We find evidence for preferences towards efficiency: high efficiency charities are rewarded with more donations. We also find some evidence of preferences for redistribution, however the attention is focused on limiting the share received by the most advantaged party. Consistent with earlier experimental work, we find that concerns for efficiency seem to carry more weight than those for equity. Overall, our results show that the general findings about preferences for equity and efficiency present themselves in very different choice tasks. However, our results also suggest that a richer set of reallocation schemes ought to be explored in these types of experiments. The focus on reducing the share of the most advantaged parties is typically not a reallocation scheme explored in leaky-bucket experiments, where the attention is mostly given to proportional tax rates (e.g. Durante et al. (2014)), and our results suggest preferences for more progressive schemes. These issues remain worthy of further experimental investigation.

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