

**The size and distribution of donations:
Effects of numbers of potential recipients**

Emre Soyer¹ & Robin M. Hogarth^{1,2}

¹Universitat Pompeu Fabra, Department of Economics & Business, Barcelona

²ICREA, Barcelona

Abstract

Whereas much literature exists on “choice overload,” little is known about effects of numbers of alternatives in donation decisions. How do these affect both the size and distribution of donations? We hypothesize that donations are affected by the reputation of recipients and increase with their number, albeit at a decreasing rate. Allocations to recipients reflect different concepts of fairness – “equity” and “equality.” Both may be employed but, since they differ in cognitive and emotional costs, numbers of recipients are important. Using a cognitive (emotional) argument, distributions become more uniform (skewed) as numbers increase. In a survey, respondents indicated how they would donate lottery winnings of 50 Euros. Results indicated that more was donated to NGO’s that respondents knew better. Second, total donations increased with the number of recipients albeit at a decreasing rate. Third, distributions of donations became more skewed as numbers increased. We comment on theoretical and practical implications.

Keywords: choice overload; donation decisions; fairness; equality; equity.

Recently, there has been considerable interest in how numbers of alternatives affect satisfaction with choice (see, e.g., Iyengar & Lepper, 2000; Schwartz, 2004; Scheibehenne, Greifeneder, & Todd, 2010). The literature documents adverse effects of “too much choice” for decisions involving, for example, pens (Shah & Wolford, 2007), pension plans (Iyengar, Huberman, & Jiang, 2004), gift boxes (Reutskaja & Hogarth, 2009), and wines (Bertini, Wathieu, & Iyengar, 2010). A recent meta-analysis suggests that the magnitude of effects depends on preconditions, choice moderators and the contexts in which decisions are made (Scheibehenne et al., 2010).

Analogous effects might also occur in other domains. For example, in charitable giving donors decide how much to give and, often, how to allocate donations across competing charities. However, note that this differs from consumption decisions where people typically choose only one of several alternatives. The purpose of this paper is to explore the effects of numbers of alternatives in donation decisions.

Several recent studies have focused on different aspects of the donation process including determinants of donation decisions (Landry et al., 2006; Chang, 2005), the impact of presentation mode (Small, Loewenstein, & Slovic, 2007), the effect of social interactions (Schweitzer & Mach, 2008), herding behavior among donors (Martin & Randal, 2008) and methodologies for measuring altruistic behavior (Bekkers, 2007). However, little attention has been paid to the relation between the number of choices (e.g., charities, NGOs, and campaigns) and subsequent donation decisions.

In fact, we have only been able to locate one pertinent study. Scheibehenne, Greifeneder and Todd (2009) conducted an experiment involving charities while studying possible moderators of choice overload. Specifically, participants (mainly students) were endowed with 1 Euro and had to decide either to donate it all to one charity they could choose from a specified list or to keep the money for themselves. If anything, the findings

suggest that more choices (represented by longer lists) increase the proportion of donors. In addition, people are more likely to give to charities that are better known. Note, however, that this study did not address the issue of allocating donations across alternative charities.

Theoretical considerations

In conceptualizing how donors' decisions are affected by numbers of alternatives (i.e., potential recipients), we consider three issues. First are the reputations of the recipients. Second, we consider the impact of numbers of potential recipients. And third, we hypothesize that as the number of recipients increases, the distribution of donations across recipients changes (becoming more uniform or skewed depending on different assumptions).

Our first point is that people give more to recipients known to have good reputations than to those that are less well known. We consider this statement uncontroversial. It can be backed up, for example, by the fact that many charities and NGOs do much to increase awareness of their activities and "brand names" as well as experimental evidence (see, e.g., Scheibehenne et al., 2009). It leads to our first hypothesis:

H1. The sizes of donations made to specific recipients increase with their reputations.

Second, three issues are important in considering effects of numbers of potential recipients. First, donations are limited in that donors face budget constraints. Second, we hypothesize that donors obtain more personal satisfaction the larger their donations. However, this satisfaction increases at a decreasing rate. Third, we assume that decisions to make donations are sensitive to perceived needs of recipients. Thus, factors that signal perceived need are important. One such factor is the number of potential recipients. Our rationale is simple. If a single NGO is seeking funds for a specific cause, that cause might be seen as important and worthy of support. However, if several NGOs are seeking funds for the

same (or similar) cause, the need will be perceived as even greater. These three issues can be summarized by our second hypothesis:

H2. Donations increase with the number of potential recipients but at a decreasing rate.

Our third point focuses on how donations are distributed across potential recipients. We assume that donors seek to be “fair” in these decisions but, in doing so, implicitly deal with two different concepts of fairness. In one, allocations reflect the relative inputs or merits of recipients. This is known as the “equity” rule and, in the present case, knowledge of NGOs can be taken as a measure of merit. Second, although equity is sometimes assumed to dominate judgments of fairness, people are also sensitive to considerations of “equality.” That is, a rule whereby all recipients receive equal allocations (Sarbaugh, Dar, & Resh, 1994).

Independent of the number of recipients, equity would always imply skewed, and equality uniform distributions. However, we maintain that for the decision maker, implementing the rules involves different cognitive and emotional costs and these can interact with the number of potential recipients. Donors may thus not always follow the same rules in their allocations.

With few recipients, donors can probably discriminate between recipients and employ the equity rule. However, relative to the equality rule, equity is costly to implement in cognitive terms and becomes even more taxing as the numbers of recipients increase. A cognitive cost argument would therefore imply switching from the equity to equality rule as the numbers of potential recipients increase thereby resulting in more uniform allocations.

From an emotional perspective, we assume that donors want to satisfy recipients. Thus, using the equity rule and explicitly denying/disappointing some is both emotionally hard and salient when there are few potential recipients. However, when there are many potential recipients, it is emotionally easier to ignore the less “deserving” and apply the

equity rule. From this perspective, therefore, allocations should become more skewed as the numbers of recipients increase.

The cognitive and emotional cost arguments lead to alternative hypotheses:

H3a. The distribution of donations becomes more uniform across potential recipients as their numbers increase (the cognitive argument).

H3b. The distribution of donations becomes more skewed across potential recipients as their numbers increase (the emotional argument).

We next present an experiment that tests our three hypotheses.

Experiment

Participants, design, and procedure

Participants were members of the general public in Spain using an online environment. Fifty-four percent of the 145 respondents were female with a mean age of 34.9 (median 34, minimum 15, and maximum 69). Most participants had at least a university degree.

At the beginning of a 40-minute market survey on an unrelated topic, they were informed that, in addition to the fixed remuneration for their participation, they had been entered in a lottery and had the chance of winning 50€ (expressed as 500 points) at the end of the experiment. They were further notified that, if they wished, they could “donate” as much as they wanted of their lottery winnings (from 0 to 500 points) to certain specified NGOs, split between recipients in any way they desired. The online setup guaranteed anonymity of responses. After making their choices, one person was to be chosen at random and given the extra 50€, less the amount of her/his donations. Thus, if the winner of the lottery gave away 0, s/he would get to keep 50€; if s/he gave away, say, 30€, s/he would get to keep 20€. The money donated would go to precisely those NGOs specified by the winner.

The names of the NGOs were provided along with the information that their common agenda is to aid underprivileged children. The respondents were allocated at random to three groups where they faced an alphabetical list of:

- 3 NGOs (Condition A with 54 respondents)
- 8 NGOs (Condition B with 43 respondents)
- 16 NGOs (Condition C with 48 respondents)

The specific NGOs were selected after searching in the internet and popular media for international organizations with a charity agenda involving underprivileged children. The names of NGOs presented in these three conditions are shown in Table 1.

After making their decisions, respondents rated all 16 NGOs by indicating how much they knew about each prior to the experiment as follows: “0” implied that they had not heard of it, “1” that they had heard of it, “2” that they knew it, and “3” that the NGO is “very famous.” Only 6 respondents claimed to have heard of all 16 NGOs. Moreover, 4 of the 16 NGOs received average ratings of 1 or above on what we call the “knowledge score.” These data suggest that 16 NGOs represented a large choice set.

(Insert Tables 1 and 2 about here)

Results

Table 2 presents the results of the experiment. The different NGOs are listed in the order of their mean popularity scores that are indicated in the column on the right. The knowledge scores make sense within the Spanish context of the study. Unicef has a sponsorship deal with the Barcelona football club that is very popular in the region where the study took place. Mercy Corps, on the other hand, is not well known within Spain. The intermediate columns of Table 2 show the mean donations in points in the three experimental conditions – A with 3 NGOs, B with 8 NGOs, and C with 16 NGOs.

Results in Table 2 support Hypothesis 1. Mean knowledge scores of the NGOs correlate (in an ordinal sense) with mean donations (the better known NGOs receiving substantially larger contributions). Spearman's rho is 1.00 ($p < .01$) for A; 0.64 ($p = .09$) for B; and 0.47 ($p = .06$) for C.

Our second hypothesis ($H2$) is that, overall, donations should increase with the number of recipients but at decreasing rate. This is the case. The mean donation in condition B (8 NGOs) is greater than in condition A (3 NGOs) (314.21 vs. 236.20, $t = 1.91$, $p = .059$, Cohen's $d = .52$); and the mean for condition C (16 NGOs) at 326.35 is also greater than condition A ($t = 2.23$, $p = .028$, Cohen's $d = .54$). The mean for condition C (16 NGOs) is greater than for condition B (8 NGOs) but the difference is not statistically significant (326.36 vs. 314.21, $t = 0.283$, $p = .78$, Cohen's $d = .42$).

Further evidence that donations increase with the number of potential recipients can be seen at the foot of Table 2 where we provide data characterizing individual contributions. As the number of potential recipients rises, so does the proportion of participants who donate their total endowment of 500 points – from 24.1% (3 NGOs) to 37.2% (8 NGOs) to 50.0% (16 NGOs). (The difference between 16 and 3 NGOs is significant, $t = 2.8$, $p < .01$). Moreover, note that whereas 29.6% of participants donate nothing when there are only three NGOs, this figure drops to 18.6% and 18.7% for the cases with 8 and 16 alternatives.

Hypotheses 3a and 3b make contrary predictions – more uniform distributions as the number of recipients increase as opposed to more skewed distributions. The data support the latter hypothesis. In condition A with three NGOs, all receive substantial donations albeit varying with their knowledge scores. In condition B with 8 NGOs, four (or 50%) receive 76% of the contributions, and in condition C with 16 NGOs, four (or 25%) receive 92% of the contributions. Figure 1 shows the evolution of cumulative donation proportions by

numbers of potential recipients. (Skewness coefficients for donations in conditions A, B and C are -.81, 2.01, and 2.42 respectively).

(Insert Figure 1 about here)

These overall trends are also supported by the individual data summarized at the foot of Table 2. Whereas 24.1% of participants adopt the strategy of giving the same non-zero amounts to all participants when there are three NGOs, this figure is zero for the case with 16 NGOs.

Discussion

Our first result – that donations are affected by knowledge of recipients – is neither surprising nor controversial. However, it interacts strongly with the number of potential recipients and, in particular, the fact that the distribution of donations becomes more skewed as the number of recipients increases.

Consider the donations made to the three NGOs in condition A, namely Unicef, Oxfam, and Mercy Corps. In condition A, two well-known NGOs, Unicef and Oxfam, receive large mean donations (100.28 and 83.26), and even the little known Mercy Corps receives 52.37. As the numbers of recipients increase, Unicef – the best known NGO – maintains its share of total donations (some 40%) and so benefits in absolute terms as overall donations grow. On the other hand, both Oxfam and Mercy Corps see reductions. In the case of Mercy Corps, the drop-off is dramatic: from 52.37 (A) to 15.67 (B) to 0.42 (C).

Our second hypothesis assumes that people are sensitive to cues that signal need and adjust the level of their donations accordingly. Moreover, the number of potential recipients is one such cue. In fact, our data show that donations increase with the number of potential recipients albeit at a decreasing rate. Moreover, this is in accordance with our hypothesis that the satisfaction donors obtain from giving increases with the size of their donations, also at a

decreasing rate. Of course, donors are subject to budget constraints and thus, as the number of potential recipients increase, cannot increase donations beyond a certain point.

Our third hypothesis contrasted two views on the fairness of allocating amounts to different recipients. It was argued that allocations based on rules of equity and equality are affected by the cognitive and emotional costs to the decision maker of following the rules. Specifically, following a cognitive (emotional) argument the distribution of donations should become more uniform (skewed) across recipients as the numbers of potential recipients increases.

In fact, we found increasing skewness of donation allocations as the numbers of potential recipients increased. For example, it was significant that whereas about one quarter of participants explicitly followed the equality principle for conditions A and B (3 and 8 NGOs), none used it when confronted by 16 options. However, although our results support an emotional as opposed to cognitive argument for explaining the pattern of data observed, this does not of course exclude all cognitive considerations. For example, cognitive factors could have played a role in ignoring some alternatives when there were many.

The innovative contribution of the present work is to consider how the number of potential recipients affects donation decisions in terms of both amounts and distributions across alternatives. That there are such effects is important from both theoretical and practical viewpoints. From a theoretical viewpoint, we have opened the door to illuminating how cognitive and emotional considerations might interact in donation decisions. At a practical level, our results emphasize the importance of the reputation of NGOs and the size of the markets in which they compete for funds. If market size is captured by the number of potential recipients, then it pays for leading NGOs to seek large “markets.” Lesser known NGOs, however, should avoid competition.

Acknowledgements

The authors are grateful for comments from Paul Slovic as well as seminar attendants at the Universitat Pompeu Fabra and TEMA, Turkey. The research has been supported by the Spanish Ministerio de Ciencia e Innovación, grant numbers SEJ2006-14098 and EC02009-09834.

References

- Bekkers, R. (2007). Measuring altruistic behavior in surveys: The all-or-nothing dictator game. *Survey Research Methods*, 1(3), 139-144.
- Bertini, M., Wathieu, L., & Iyengar, S. S. (2010). *The discriminating consumer: Product proliferation and willingness to pay for quality*. Working paper, London Business School.
- Chang, W. (2005). Determinants of donations: Empirical evidence from Taiwan. *The Developing Economics*, 43(2), 217-234.
- Iyengar, S. S., Huberman, G., & Jiang, W. (2004). How much choice is too much? Contributions to 401(k) retirement plans. In O. S. Mitchell & S. Utkus (Eds.), *Pension design and structure: New lessons from behavioral finance* (pp. 83-95). Oxford, UK: Oxford University Press.
- Iyengar, S. S., & Lepper, M. R. (2000). When choice is demotivating: Can one desire too much of a good thing? *Journal of Personality and Social Psychology*, 79(6), 995-1006
- Landry, C. E., Lange, A., List, J. A., Price, M. K., & Rupp, N. G. (2006). Toward an understanding of the economics of charity: Evidence from a field experiment. *The Quarterly Journal of Economics*, 121(2), 747-782.
- Martin, R., & Randall, J. (2008). How is donation behavior affected by the donations of others? *Journal of Economic Behavior & Organization*, 67, 228–238.
- Reutskaja, E., & Hogarth, R. M. (2009). Satisfaction in choice as a function of the number of alternatives: When “goods satiate. *Psychology & Marketing*, 26(3), 197-203.
- Sarbagh, C., Dar, Y., & Resh, N. (1994). The structure of social justice judgments. *Social Psychology Quarterly*, 57(3), 244-261.

- Scheibehenne, B., Greifeneder, R., & Todd, P. M. (2009). What moderates the too-much-choice effect? *Psychology & Marketing*, 26(3), 229–253
- Scheibehenne, B., Greifeneder, R., & Todd, P. M. (2010). Can there ever be too many options? A meta-analytic review of choice overload. *Journal of Consumer Research*, 37(3), 409-425.
- Schwartz, B. (2004). *The paradox of choice: Why more is less*. New York: Eco/Harper-Collins Publishers.
- Schweitzer, F. & Mach, R. (2008). The epidemics of donations: Logistic growth and power-laws. *PLoS ONE*, 3(1): e1458. doi:10.1371/journal.pone.0001458
- Shah, A. M., & Wolford, G. (2007). Buying behavior as a function of parametric variation of number of choices. *Psychological Sciences*, 18, 369-370.
- Small, D. A., Loewenstein, G. & Slovic, P. (2007). Sympathy and callousness: The impact of deliberative thought on donations to identifiable and statistical victims. *Organizational Behavior and Human Decision Processes*, 102, 143–153.

Table 1: The choices of NGOs in Experiment 1

Condition A	Condition B	Condition C
Mercy Corps	Children’s Network International	Care
Oxfam	Every Child	Children in Crisis
Unicef	Global Fund for Children	Children’s Network International
	Mercy Corps	EveryChild
	Oxfam	Global Fund for children
	Stop Child Poverty	Médicins sans Frontières
	Unicef	Mercy Corps
	United Children’s Fund	Oxfam
		Plan International
		Serving Our World
		Save the Children
		SOS Kinderdorf International
		Stop Child Poverty
		Unicef
		United Children’s Fund
		World Emergency Relief

Table 2: Donation decisions by knowledge and number of alternatives

NGOs	Mean donations in points (stdev)			Mean knowledge score	
	<i>Condition</i>	<u>A</u>	<u>B</u>		<u>C</u>
	<i>N</i>	54	43	48	
	<i>No. of NGOs</i>	3	8	16	
Unicef		100.28 (96.7)	127.51 (162.7)	141.56 (181.1)	2.59
Médicins sans Frontières		x	x	78.85 (156.9)	2.30
Oxfam		83.26 (79.7)	66.95 (117.8)	51.98 (102.0)	2.01
Save the Children		x	x	28.54 (53.4)	1.32
Global Fund for Children		x	26.14 (46.0)	0.42 (2.0)	0.44
Mercy Corps		52.37 (64.9)	15.67 (24.6)	0.42 (2.0)	0.39
Plan International		x	x	0.42 (2.0)	0.39
United Children's Fund		x	18.09 (27.5)	2.29 (14.5)	0.37
SOS Kinderdorf International		x	x	8.96 (39.0)	0.24
Children's Network International		x	16.74 (27.2)	1.46 (7.4)	0.21
Serving Our World		x	x	2.92 (14.7)	0.21
Stop Child Poverty		x	25.07 (50.9)	2.50 (14.5)	0.20
EveryChild		x	18.02 (27.6)	1.46 (7.4)	0.19
Care		x	x	0.42 (2.0)	0.17
World Emergency Relief		x	x	2.71 (14.7)	0.17
Children in Crisis		x	x	1.46 (7.4)	0.16
	Total	236.20 (198.6)	314.21 (200.7)	326.35 (208.7)	

Proportions

	<u>A</u>	<u>B</u>	<u>C</u>
% of participants giving equal non-zero amounts	24.1	23.3	0.0
% of participants giving away 0 points	29.6	18.6	18.7
% of participants giving away all 500 points	24.1	37.2	50.0

Figure 1: Cumulative distributions of donations for different number of potential recipients

