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When charities compete: A laboratory experiment with simultaneous public goods☆

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ABSTRACT

What happens when charities compete? We begin to answer this question through a laboratory experiment in which subjects play two public goods games simultaneously. We systematically vary the incentives for contributing in one of the games – investigating the effects of recognition, a bonus conditional on contributing, and non-monetary sanctions – and measure the effect on contributions in both games. Monetary incentives in the form of conditional bonuses increase contributions, even when two games are played simultaneously. However, non-monetary incentives such as recognition and sanctions are less effective than in related literature on games played in isolation. Moreover, we find mixed evidence of a treatment spillover on the un-treated games – bonuses increase contributions initially, recognition decreases contributions, and sanctions have no effect.

1. Introduction

Charitable organizations spend billions on fundraising activities annually in an effort to compete for donor attention (Kelly, 1997); in addition, nearly 50% of U.S. households contribute to more than one charitable organization annually (List, 2011). The use of costly fundraising tactics has been criticized as inefficient as it may only lead to a shift in contributions between charities instead of raising 'new' contributions, yet little consensus exists in the literature about the actual effect of such competition (Rose-Ackerman, 1982). Competition between charities may arise because charities may favor their own output relative to that of other providers. This could also create inefficiencies if the technology used by some charities to produce the public good is dominated by other charities (Schraf, 2014).

Due to this competition in charitable fundraising, individuals are exposed to multiple charitable appeals on a regular basis. Very little evidence exists regarding whether being exposed to a new charity appeal leads to expenditure substitution or an expansion of the 'charitable pie.' One reason is the difficulty in obtaining naturally occurring data from both the supply side and the demand side of the charitable market. In one paper using a novel dataset, Reinstein (2011) found evidence of expenditure substitution. However, Reinstein's data did not allow him to investigate the specific components of an appeal that could affect giving behavior. Indeed, research shows that various types of appeals – from matching grants to donor gifts – have a great deal of influence on the willingness to give to a cause (see Jasper and Samek, 2014, for an overview). In this paper, we are interested in parsing how some of these appeal strategies might affect donations to multiple causes.

Recent research has opened the door to investigating the impact of simultaneous game-play using laboratory experiments (Bednar et al., 2012; Cason, Savikhin & Sheremeta, 2012; Savikhin and Sheremeta; 2012; McCarter et al., 2013). Just as potential donors are exposed to many different 'asks' in the real world, subjects in our laboratory experiment play two public goods games simultaneously, and we are able to control the timing and appeal

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type of each 'ask.' As such, the laboratory environment allows us to control for both the supply and demand sides of the market to investigate the impact of competition between charities on individual giving behavior.

Our contribution is a laboratory experiment in which subjects participate in two public goods games at the same time. We systematically vary the incentives for contributing in one of the public goods games (the 'treated game'), while keeping incentives in the other public good game constant (the 'un-treated game'). We separately consider the effect of providing a monetary bonus for contributing, implementing recognition, and changing the level of within-group communication through sanctions. These incentive mechanisms were chosen for a few reasons. First, these mechanisms have great effectiveness in improving cooperation when implemented on a single public good in the laboratory (e.g., see Andreoni and Petrie, 2004; Samek and Sheremeta, 2014 for effects of recognition; see Fehr and Gachter, 2000; Andreoni Harbaugh, & Vesterlund, 2003; Masclet et al., 2003; Sefton Shupp, & Walker, 2007 for effects of sanctions; see Palfrey and Prisbrey, 1997; Goeree Holt, & Laury, 2002 for changing the cost of contributing; and see Chaudhuri, 2011 for a survey of the literature). Second, similar strategies are implemented with success in the field. For example, the bonus is similar to a conditional gift, which has shown success in the field (Landry et al., 2010). Recognition has also been widely used as a means to encourage contributions in the field, and in fact very few contributions in the real world are done anonymously.

We find that monetary incentives in the form of conditional bonuses increase contributions in the 'treated' game, even when two games are played simultaneously. Surprisingly, non-monetary incentives such as recognition and sanctions are less effective on the treated game than in related literature on games played in isolation. One possible reason for these findings is that social incentives such as sanctions and recognitions are less effective when an alternative opportunity to be pro-social is present (i.e., the 'un-treated' game). We find mixed evidence of the effect of simultaneous game-play – bonuses increase contributions initially in both games, recognition when effective in the treated game decreases contributions to the un-treated game, and sanctions have no significant effect. In addition, only the bonus increased the sum of contributions to both public goods. Our findings add to knowledge about the effects of different incentive schemes when games are played in isolation versus in ensemble. Our findings also speak to the general question of whether competition between charities increases, or decreases, the 'charitable pie.' In fact, the answer is not straightforward, since the impact of competition seems to depend on the type of appeal.

2. Experimental environment, design and procedures

The experiment was conducted at the Vernon Smith Experimental Economics Laboratory (VSEEL) at Purdue University. Subjects were recruited via email from a subject pool of undergraduate students using ORSEE (Greiner, 2015). A total of 192 subjects participated in 12 sessions, with 16 subjects participating in each session. The computerized experimental sessions used z-Tree (Fischbacher, 2007) to record subject decisions. Instructions were read out loud by the experimenter at the beginning of each session (see Appendix A for instructions).

While the link between the public goods game in the laboratory and social organizations in the field is imperfect, public goods games have been studied extensively to answer questions about charitable giving and contributions to social communities (e.g., Ledyard, 1995; Andreoni and Petrie, 2004; Landry et al., 2006; Chen et al., 2010). In the simple linear public goods game we employ (Groves and Ledyard, 1977), n identical individuals choose a portion of their endowments e to contribute to a public good. Individual i's contribution c_i to the public good is multiplied by m and given to each of n individuals in the group, where $0 < m < 1$ and $m \times n > 1$. The payoff of each individual i is $\pi_i = e - (1-m)c_i + m\Sigma_{j \neq i} c_j$. The Nash equilibrium prediction of the linear public goods game is to contribute nothing (free-ride), i.e. $c^* = 0$. However, behaviorally motivated theories of social preferences suggest possible reasons for the contributions of $c > 0$ that are observed in the empirical literature.

Since our goal was to investigate the potential spillover effects when individuals make decisions about contributions to more than one charity, we used a two-neighborhood design similar to that used in related laboratory experiments on simultaneous game-play (Falk Fischbacher, & Gächter, 2010; McCarter et al., 2013). Within each session, each participant was randomly assigned to a group of $n = 4$ players for one game and to a different group of $n = 4$ players for the other game, such that no participant played one game with any of their group members from the other game. Group composition remained fixed for all 20 periods of the experiment. The treatment was conducted on exactly one of the games in the set played by the individual – we call this the 'treated' game. We call the other game played simultaneously the 'un-treated' game.[1] The two games were also economically independent, as subjects received a separate endowment to use in the treated game and a separate endowment to use in the un-treated game.

The un-treated linear public goods game proceeded in the following way. At the beginning of each period, each individual received an endowment of $e = 80$ experimental francs and was asked to choose his or her contribution c to the public good. Each individual's contribution to the public good was multiplied by $m = 0.4$ and the total of all contributions given to each of the 4 individuals in the group. Each individual kept the remainder of the 80-franc endowment that he or she did not allocate to the public good. Individuals did not know others' decisions before making their own decisions. In addition, in each round, we also elicited individuals' beliefs about the sum of all other contributions in each group.[2]

In addition to the un-treated public goods game, all individuals also participated in a treated public goods game. This game was displayed side by side with the un-treated game on the same screen (see Fig. 1).[3] Again, each individual received an endowment of $e = 80$ and could choose how much to contribute to the public good. For the treated game, we conducted four variations of the un-treated game as summarized in Table 1: A Baseline treatment, in which the treated game was exactly like the un-treated game; a Bonus treatment, in which subjects received 0.2 of an experimental franc for each 1 franc contributed to the public good; a Recognition treatment, in which subjects' names and photos were linked to their contribution in each round[4]; and a Sanctions treatment, in

[1] Assignment was done by first randomly assigning each subject to a computer station. To complete the group assignment, suppose computer stations are arranged in a 4 × 4 grid in consecutive order. Each computer station's row position indicates the assignment to the 'un-treated' game group and each computer's column position indicates the assignment to the 'treated' game group.

[2] We used an incentive-compatible belief elicitation. Subjects received 25 francs if they were within 10 francs of the correct group contribution, 20 francs if they were within 20 francs, 15 francs if their guess was within 30 francs, 5 francs if their guess was within 40 francs, and 0 francs otherwise. The decision space was 0 to 80 * 3 = 0 to 240.

[3] In half of the sessions, the un-treated game appeared on the left and the treated game on the right; in the other half we reversed the order. Also, so as not to alert subjects to the treated game, we used neutral titles for the games. As in Savikhin and Sheremeta (2012), one of the games was called GREEN and the other BLUE.

[4] At the beginning of each session of the Recognition treatment, subjects have their photo taken. This digital photo is displayed on the outcome screen above each subject's contribution in the treated game only.

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