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Matching donations without crowding out? Some theoretical considerations, a field, and a lab experiment☆

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ABSTRACT

Is there a way of matching donations that avoids crowding out? We introduce a novel matching method where *the matched amount is allocated to a different project*, present some simple theoretical considerations that predict reduced crowding out or crowding in (depending on the degree of substitutability between the two projects) and present evidence from a large-scale natural field experiment and a laboratory experiment. Similar to findings in the literature, conventional matching for the same project results in partial crowding out in the field experiment and, as predicted, crowding out is reduced under the novel matching scheme. The lab experiment provides more fine-tuned evidence for the change in crowding and yields further support for the theory: the novel matching method works best when the two projects are complements rather than substitutes.

1. Introduction

Matched fundraising, in which a large donor tops up individual donations according to some scheme, is popular among charitable organizations. Recent studies based on lab or field experiments (see, for example, Eckel and Grossman, 2003, Karlan and List, 2007, or Huck and Rasul, 2011) demonstrate, however, that matched fundraising has a downside: it generates substantial crowding out and appears inferior to solicitation schemes that simply announce a lead gift (Huck et al., 2015). One reason why fundraisers might be forced to use matched fundraising nevertheless is competition. Holding everything else constant, donors will always prefer to give money to fundraising drives that offer more matching rather than less (simply notice that with matching a donor's budget set rotates outward.) Hence, the question arises, whether it is possible to design an alternative matching scheme that is attractive to donors and avoids crowding out or perhaps even generates some crowding in. In this paper, we present some simple theoretical considerations that suggest that a matching scheme in which the matched money is allocated to a different project should outperform standard matching for the same project. The model also suggests that the effect of matching improves when the two projects become less substitutable. We test these predictions in the field and in the lab.

In the field experiment, we confirm crowding out for standard linear matching: the average donation given is lower under standard matching than in a pure lead donor treatment that serves as a control. We refer to a "lead donor" environment whenever money offered by a lead donor before a fundraising drive starts is given unconditionally and simply announced, that is, when it is not used for matching. Regarding our main hypothesis, we find evidence for reduced crowding out when the matched amount is allocated to an alternative project. The overall performance of both matching schemes is, however, not significantly different. The reason for these weak differences is probably that the two projects are quite similar such that the advantage of reduced substitutability does not fully kick in.

In order to provide a more fine-tuned test for our theoretical predictions we conduct a laboratory experiment. In the lab we compare standard matching with two versions of the proposed alternative matching: in one version the partner project receiving the matching money is a complement, while in the other version it is a substitute to the base project. We find that, relative to standard matching, donations increase

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significantly when the partner project is a complement to the base project. When the partner project is a substitute, the increase is smaller and the difference to standard matching is non-significant.

These results suggest that charitable organizations might substantially improve their fundraising success through such alternative forms of matching provided they can find a suitable partner project that is not perceived as a close substitute or, ideally, is perceived as a complement.

2. Literature

There has been a multitude of studies employing laboratory and field experiments analyzing matched fundraising. For example, Karlan and List (2007) conclude from a direct mail solicitation to prior donors that the introduction of a simple (1:1) matching scheme significantly increases the probability of giving but reduces the average donation given. The overall return is significantly higher with matching than without. Further increases in the matching rate (2:1 or 3:1) have little, if any, effect. Controlling for the informational role of the presence of a lead donor, Huck and Rasul (2011) show that crowding out is already quite severe with low matching rates (0.5:1). In Eckel and Grossman (2008), the matching schemes (0.25:1 and 0.33:1) generate average donations similar to those without matching but surprisingly reduce response rates for repeat donors. Meier (2007) finds that matching increases participation in the short term but shows that in the long term, when matching ceases to be in place, contribution rates decline such that the overall long-run effect of one round of matching is negative.

It has also been shown that larger lead gifts increase the success of fundraising campaigns (List and Lucking-Reiley, 2002). However, only few studies hold lead gifts constant and compare several fundraising schemes in order to understand how the initial contribution can be best used to stipulate subsequent "small money" donations. Huck and Rasul (2011) compare standard matching to a pure lead gift environment which allows them to come up with precise estimates of the crowding out effect. Huck et al. (2015) estimate a structural model based on experimental data and show that, in the environment they study, linear matching will never outperform a simple lead donor treatment in which the lead donor offers his money unconditionally and recipients of the fundraising drive are informed about this lead donation. In Gneezy et al. (2014) a lead donor treatment outperforms standard linear matching in every dimension (response rate and average positive donation). Also, they find that a lead donor treatment in which the lead gift is said to cover overhead costs results in even higher total contributions. Rondeau and List (2008) compare, among others, a lead donor (challenge gift) campaign and a (1:1) matching campaign, but they use a different context—a threshold public good setup with a refund in case the threshold is not met. They conclude that announcing a lead donor increases average donations and the probability of giving. In their experiment, matching does not increase the success of the fundraising drive and they conclude that it is inferior to a challenge gift.

3. Some theoretical considerations

Consider a model with three goods: a composite good that captures private consumption y and two charitable goods, a and b, where we assume that donors care about their individual contributions.[1] We restrict our attention to situations where the donor makes only one decision about an out-of-pocket amount, x, that he wants to contribute from his income, I, to a fundraising drive. How x is mapped into a and b depends on the fundraising strategy of the charitable organization.

We assume that donors have a quasi-linear utility function

$$U(y,a,b) = y + u(a,b)$$

where $y = I - x$ is private consumption, and a and b denote the amounts of money generated for the two projects. We assume $u_a', u_b' > 0$ and $u_{aa}'', u_{bb}'' < 0$. Notice that the cross derivative u_{ab}'' is negative for substitutes and positive for complements. For perfect substitutes we would have $u_{aa}'' = u_{bb}'' = u_{ab}''$.

Now consider a fundraising drive where donors make a single decision about x and where matching schemes, $a(x)$ and $b(x)$, are in place that map the donation x into effective contributions to the two charitable goods. Then we can write the donor's utility function as

$$U(x) = I - x + u(a(x), b(x))$$

For linear matching schemes, which we employ in the experiments, we have $a(x) = \lambda x$ and $b(x) = \theta x$. The donor's optimal choice is given by the first-order condition

$$-1 + \lambda u_a' + \theta u_b' = 0$$

We are interested in crowding effects, that is, in how the match rates, λ and θ, affect the donation x. We can easily derive these crowding effects through the implicit function theorem which yields

$$\frac{dx}{d\lambda} = -\frac{u_a' + a u_{aa}'' + b u_{ab}''}{\lambda^2 u_{aa}'' + 2\theta\lambda u_{ab}'' + \theta^2 u_{bb}''}$$

and

$$\frac{dx}{d\theta} = -\frac{u_b' + b u_{bb}'' + a u_{ab}''}{\lambda^2 u_{aa}'' + 2\theta\lambda u_{ab}'' + \theta^2 u_{bb}''}$$

Inspecting the numerators of these derivatives highlights the role of the curvature of the donor's utility function for crowding, while inspecting the denominator underlines the role of substitutability between the two charitable goods.

Let's say that the donor is asked to contribute to good a. Then for matching in the same good (and no matching in the other, that is, for $\theta = 0$) we get

$$\frac{dx}{d\lambda} = -\frac{u_a' + a u_{aa}''}{\lambda^2 u_{aa}''}$$

and we have crowding out, $\frac{dx}{d\lambda} < 0$ (as has been documented by the previous literature), if and only if $-\frac{a u_{aa}''}{u_a'} > 1$.

For matching in the other good, b, we have to consider $\frac{dx}{d\theta}$. Assuming that the two goods are either (weak) substitutes or, in case of complementarity, that u_{ab}'' is not too large we get a simple condition for the absence of crowding out or some crowding in:

$$\frac{dx}{d\theta} \geq 0 \Leftrightarrow -\frac{b u_{bb}''}{u_b'} - \frac{a u_{ab}''}{u_b'} \leq 1 \qquad (1)$$

Inspecting (1) reveals the key insight that we take away from this model sketch: the condition is easier to fulfill *the weaker the substitutability* between the two charitable goods is, hence, the alternative matching scheme will be more effective than standard matching provided the match is allocated to a second project that is not a perfect substitute for the first. Moreover, the effectiveness of the alternative scheme should increase when the degree of substitutability falls.

The considerations presented in this section lead to following testable implications:

1. An alternative matching scheme where the match is allocated to a different project results in less crowding out (or more crowding in) if the two projects are not near substitutes.
2. The alternative matching performs better when the two projects are complements rather than substitutes.

[1] See Huck et al., 2015 for a similar approach.