Journal of Public Economics 114 (2014) 29–35

Contents lists available at ScienceDirect

Journal of Public Economics

journal homepage: www.elsevier.com/locate/jpube

Fundraising through online social networks: A field experiment on peer-to-peer solicitation

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ARTICLE INFO

Article history:
Received 11 March 2013
Received in revised form 13 December 2013
Accepted 19 January 2014
Available online 25 January 2014

JEL classification:
C93
D64

Keywords:
Fundraising
Social network
Field experiment
Online giving

ABSTRACT

Two main reasons why people donate to charity are that they have been asked and asked by someone they care about. One would therefore expect that charitable organizations could benefit from peer-to-peer fundraising if they were able to persuade donors to do so for them. However, little is known on the costs and benefits of asking donors to fundraise. We investigate this by implementing a field experiment embedded in an online giving organization's web page. In our experiment, donors who have completed an online transaction were randomly asked to share having donated by posting on their Facebook (FB) wall or by sending a private message to a friend on FB. To further explore the impact of incentives on the willingness to fundraise, donors were also assigned to one of three treatments in which the organization added either $0, $1 or $5 in the donor's name in exchange for sharing the information. We have several findings: (1) Donors respond to incentives: larger add-on donations increase the willingness to post having made a donation. (2) Nuisance costs may be important: willingness to post is over two times higher among those already logged into FB. (3) The type of ask matters: willingness to post via one's wall or via a private message is different. (4) There are benefits to incentivizing peer-to-peer fundraising in increased new donations.

1. Introduction

Andreoni (1988, 1989) shows that warm glow giving can explain the empirical regularities in charitable donations, but also that pure altruistic giving cannot. The model of warm glow emphasizes that people give for *individual* reasons apart from enjoying the benefits from the public good. For instance, people might care for the prestige associated with giving (Harbaugh, 1998) or the image created for oneself or others from donating (Benabou and Tirole, 2006). Indeed, fundraising manuals are replete with examples of how to tap into these other motivations to increase donations. If giving is motivated by reasons other than altruism, there might be additional ways to fundraise. For instance, if our friends enjoy public recognition we might be able to convince them to donate by publicly asking them to do so. But, if our friends donate out of friendship to us and not merely because of the intrinsic value of the charity, we might incur a *social* cost by asking. Indeed, by asking a friend to donate to a charity we care about, we may be asked to return the favor in the future, suggesting that the way in which we ask may also be important. In this paper, we investigate the costs and benefits of encouraging donors to ask their friends to donate in an on-line social media environment.

With over $22 billion donated online in 2010 (approximately 8% of total giving), up from around $7 billion in 2006 (around 2% of total giving), online giving continues to show significant year-over-year growth. Parallel to the increase in online giving has been an increase in the number of platforms and tools that facilitate these donations. Online fundraising platforms are in part driven by peer-to-peer components that encourage solicitation through individual networks. Blackbaud, which provides nonprofit fundraising software, estimated that people who use online tools for fundraising raise six times more than those who only use offline tools.[1] Similarly, the fundraising platform Fundly estimates that friends asking friends to donate increases the likelihood of a gift by 10 times more than other solicitation methods, and the average gift size by 52%.[2]

Given the reduced costs to social interactions brought about by the advent of social media, it appears that increased opportunities for peer-to-peer fundraising might benefit charitable organizations. However, little is known about the costs and benefits of fundraising through social media and what factors determine its success. This paper is a first attempt at evaluating the cost and benefits of the mechanism of peer-to-peer fundraising via social media. We do this by implementing a field experiment embedded in an existing online giving organization's web page.

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http://dx.doi.org/10.1016/j.jpubeco.2014.01.002

[1] See http://www.npengage.com/wp-content/uploads/2011/05/INFOGRAPHIC.png.
[2] See http://blog.fundly.com/2010/10/25/msn-video-on-fundly-and-300-billion-social-fundraising-market/.

In our experiment, donors who have completed a donation online to a charity are asked to post having donated to that charity, and to make an appeal for others to join them, by either posting a message on their Facebook (FB) wall or by sending a private message to a friend on FB. These are two ways in which donors can share information about a charity with friends and solicit donations from them. Posting on one's wall is akin to a diffuse ask to many friends, whereas sending a private message is a direct ask to one friend.[3] To evaluate the cost to donors of engaging in this task, subjects were further assigned to different levels of incentives to post a message. In particular, a donor was randomly assigned to a treatment in which either $0, $1 or $5 was donated to the charity in the donor's name as compensation for completing the post. All the experiments were implemented during the checkout phase of the donation process and after the donor had already completed the transaction. Since knowledge of the add-on donation came after the transaction was complete, the donor could not alter his donation in anticipation of the add-on. Finally, a group of donors was randomly assigned to a control group that experienced the normal checkout procedure.

We have several key findings. First, donors are willing to share their charitable acts and solicit others in the absence of incentives. Across the two message types, we find that the probability that a person posts a message if simply asked is 4.4%. Second, it is costly for donors to engage in fundraising. Posts to FB increases to 12.6% if a donor is compensated with a $1 extra donation in his name and to 16.9% if compensated with a $5 extra donation. All these differences are statistically significantly different from each other.[4] Third, donors care about making generalized requests versus individualized ones. Over 14% of donors asked to post information on their FB wall do it while 8.4% of donors asked to send a personal message to a friend do so.[5] Fourth, nuisance costs or donor heterogeneity could be important. The overall take-up rate of those already logged into FB at checkout is 26.3% while that of those not logged into FB is 11.6%.

More importantly, our data show that when nuisance costs are reduced or more socially-oriented donors are targeted, the marginal return to posting from offering extra incentives is negligible in one ask method but not the other. Donors that are already logged into FB (42.9% of our sample) post on their FB wall at a rate of 37% when offered $1 and at a rate of 39% when offered $5. This difference is not significant (t-test p-value = 0.5450). In this group, 14% are willing to post donation requests even if no extra incentives are provided.[6]

However, looking at the other ask method, sending a private message, donors take up at a rate of 24% when offered $1 and at a rate of 35% when offered $5. This difference is significant (t-test p-value = 0.0036). This increase in take-up when higher monetary incentives are provided is significantly larger for sending a private message than posting on one's wall. It appears that donors need to be compensated more to ask a friend directly rather than diffusely. That is, when we account for the nuisance costs associated with each method of asking a friend, our results are consistent with the idea that there may be higher social costs to asking a friend directly.

In our experiment, sharing information implied posting or sending a message with a link to the charity to which a donation has been made, along with a request for individuals viewing the post to make a donation as well. We use the fact that these links are electronically tagged to evaluate the effectiveness of solicitation requests via social media on fundraising. Admittedly, this is only a partial measure of the impact since those receiving the information might not have used the provided link to donate, and we would, therefore, be unable to tie a new donation to our experimental treatments.[7] Nonetheless, we find that social solicitations have a positive and statistically significant effect on new donations. On average, 1.2% of postings generated by our experiment resulted in a new donation to a charity. The number of new donations is statistically significantly different from zero (t-test = 2.25, p-value = 0.025). The FB wall posts generated new donations, but the private messages did not. The percentage of new donations relative to all the FB wall posts is 1.89% and is significantly different from zero (p-value = 0.025). Finally, the mean of new donations ($49.00) is statistically indistinguishable from the mean of the original donors ($55.73).[8]

A popular way to fundraise is to use matching funds where donors are told ahead of time that their donation will be matched, at a particular rate, with an extra donation to the charity. This can generate donations from current and new donors. Our experiment shows that current donors are willing and able to attract new donors using small incentives. However, our experimental results also show that new donations do not completely compensate for the costs of the incentives to peer-to-peer fundraise. This might be due to the fact that we cannot account for all new donations generated by the experiment or that it truly does not pay to incentivize fundraising. Further research is necessary to better assess the returns to this mechanism. Indeed, our experiment reveals that donors are willing to fundraise on behalf of the charity merely by being asked to do so, even without additional incentives.

The paper is organized as follows. The next section briefly discusses previous research related to our experiment. Section 3 describes the experimental design. Section 4 presents our main results. Section 5 discusses the costs and benefits of the fundraising mechanism. Section 6 concludes.

2. Background

The prevalence of online charitable giving platforms has led fundraisers to increasingly issue two-part solicitation requests from potential donors, asking individuals to contribute both financial and social capital to the charity. The benefits that accrue to the organization when donors solicit their friends on behalf of the organization are thought to be relatively large, however, the empirical evidence is limited. Andreoni and Rao (2011) generally examine "the power of asking" using a dictator game with verbal communication, and show that the act of asking increases empathy in the target. While Andreoni and Rao considered social interaction between random individuals, Meer (2011) uses alumni giving data from a university to examine the effect of social ties on solicitation outcomes. Meer found that peer solicitation has a strong effect on the likelihood of a gift, and the size of the gift. Moreover, Carman (2003) notes that "fundraisers often design their campaigns to leverage the power of social influences," having previous donors solicit additional contributions.

Bekkers and Wiepking (2011) find that the social context in which decisions on charitable contributions are made is one of the most important factors in determining outcomes. They note "social pressure is especially strong when a strong tie makes a request for a donation." Related work has been conducted by Andreoni and Bernheim (2009), who examine audience effects on donation decisions, and by Karlan and McConnell (2012), who test for reputation effects on decision-making using giving circles. Also, information on the giving decisions of others may be influential to the decision to donate (for some

[3] Similar to an email, more than one friend can be included on a private message. However, our experimental treatments requested that individuals only send a message to one friend.

[4] Comparing $0 add-on to $1 add-on yields a t-test p-value = 0.000, $0 to $5 yields a p-value = 0.000, and $1 to $5 yields a p-value 0.0031.

[5] This difference is significant (t-test = 5.3317, p-value < 0.0001).

[6] It is interesting to note that field studies on the effect of matching funds on charitable donations find a low response to higher rates of matching (Karlan and List, 2007; Eckel and Grossman, 2008; Huck and Rasul, 2011). However, matching funds incentives and the incentives studies in this paper are very different.

[7] That is, if the information provided makes a friend donate but he does so by going directly to the organization's site, we will not be able to link that transaction to our experimental treatments. Nor would we be able to link the donation if he does so after a secondary request in the future. Therefore, our measure of new donations generated will be a lower bound on the actual number of donations spurred by our experimental treatments.

[8] t-Test p-value for difference in means is 0.894.

Table 1
Treatments and number of observations.

	No donation	$1 donation	$5 donation
FB wall	Wall-$0 n = 606	Wall-$1 n = 632	Wall-$5 n = 608
FB private message	Msg-$0 n = 587	Msg-$1 n = 609	Msg-$5 n = 619
Normal checkout (FB wall, email)	Normal-Q Qualified n = 603		
	Normal-NQ Non-qualified (special campaign, multiple projects, previous participant) n = 1323		
Total n = 5587			

Table 2
Descriptive statistics.

Variable	Percentage	N
First-time donor[a]	65.1	3417
Qualified	69.2	2756
Non-qualified	52.1	661
Already logged into Facebook	42.9	2398
Reasons for disqualification[b]		1323
Special campaign	35.4	469
Multiple projects	21.0	278
Multiple reasons	21.5	284
Previous participant	22.1	292

[a] There are missing data on 337 observations for whether a donor is a first-time or repeat donor. Some of these might be anonymous donations.
[b] Gift cards are also disqualified (n = 77). No donation data was collected on these, so they are omitted.

examples, see Frey and Meier, 2004; Shang and Croson, 2009; Andreoni and Petrie, 2004; Soetevent, 2005; Potters et al., 2007). That is, knowing another person has contributed to a public good, the amount of the contribution and who made the contribution have an effect on the probability of contributing and the level of the contribution.

Regarding the effects of incentives on charitable donations, Karlan and List (2007) found that offering a match of any size helped to increase solicitation response rates, and the amount of a donation. In a subsequent study Karlan et al. (2011) examined matches that were $1:$1 and $1:$3, and found only weak evidence that the larger matches worked to increase giving. Eckel and Grossman (2008) conducted a field experiment to compare matching and rebate subsidies, and find rebates to be less effective and no significant increase in donations with a higher match. In a later study, Huck and Rasul (2011) determined that the announcement of a leadership gift without an associated matching scheme is the preferable solicitation strategy, as matches partially crowd out donation levels.

3. Experiment

The experiment was conducted with the cooperation of a large, nonprofit online giving organization. The organization hosts a web site with information on charities and projects that are looking for funding. In addition to providing an easily searchable platform and a secure and convenient way to donate, the organization vets the projects and charities before posting them on the web site to make sure they are legitimate. It has an excellent reputation in the online giving community of properly screening projects. Potential donors can search the site and make a donation by clicking on the project and specifying a donation amount. The donation is put into a shopping cart, and the donor pays the donation at checkout with a credit card, gift card or via Paypal. The organization takes a percentage (15%) of the donation to cover administrative costs, and the process of project vetting and donation transfers is clearly explained on the web site.

In the normal checkout procedure, after payment is complete, a donor sees a screen that allows him to share information with friends about the charity to which he just donated. He can click a button and post a message on his FB wall and click a button to send an e-mail to a friend.[9] When the donor clicks, a new screen or pop-up window appears with a pre-written message about the charity. The pop-up window for the FB wall post has a space to type an additional message, and the donor must click submit to complete the post. The screen for the email share also has space for an additional message, and in addition to clicking to send the email, the donor must also fill in the email address of the friend.

Experimental treatments are outlined in Table 1 and were incorporated into the screen that the donor sees after payment is complete. The treatments were randomly assigned, and prior to completion of their donation, donors did not know that they would be asked to post or given an add-on incentive. So, for example, they could not alter their intended donation amount in anticipation of the add-on. Also, because we wished to observe behavior as it would happen in the natural environment, donors did not know that they were in an experiment.[10] Before they were shown a treatment condition, donors were screened for whether or not they qualified for the experiment. Criteria for qualification are described in detail in the next paragraph. If a donor qualified, he was shown one of six treatments which varied the type of message the donor could send (FB wall post or FB private message to a friend) and the add-on donation amount ($0, $1, or $5) if the donor sent the message. In total, we collected data on six experimental treatment groups, one control group of qualified donors and the group of disqualified donors.

The criteria for qualification for the experiment are as follows. Our treatments require that the donor send a message about a donation to a specific project, so donors that donated to multiple projects, bought gift cards or responded to special campaigns initiated by the organization for certain projects were disqualified from participation.[11] This means that, after payment was complete, any donor who fell into any of these categories was shown the normal screen with the option to share information about the charity on FB or via email. Also, any donor who previously participated in the experiment was excluded from participating again and was shown the normal screen. If a donor did not fall into one of the categories for exclusion, he was randomly assigned to one of seven conditions: the six experimental treatment conditions or the normal checkout procedure. We included this latter control condition to see whether the qualified group differed from the disqualified group in any measurable way when faced with the normal screen after checkout. Thus, we gathered data on the posting behavior of all eight groups: the six treatments (2 message × 3 add-on donation amounts), qualified donors who were randomly assigned to see the normal screen after checkout (FB wall post and email), and disqualified donors who see the normal screen after checkout (FB post share and email).

The six treatments are based on a 2 × 3 design (2 messages × 3 add-on donation amounts). Across all treatments, after completing payment for the donation, the donor sees the same screen as in the normal checkout procedure, but the post option is restricted to one of two (either FB wall share or FB private message) and sees one of three add-on

[9] Screen shots of the checkout screen are in the on-line Appendix A.

[10] Our experiment would be classified as a natural field experiment (Harrison and List, 2004).

[11] The organization would sometimes run special campaigns aimed at boosting donations to specific projects through matching grants and the like. We eliminated these donors from the experiment since this donor traffic may differ in substantial ways from normal traffic to the web site.

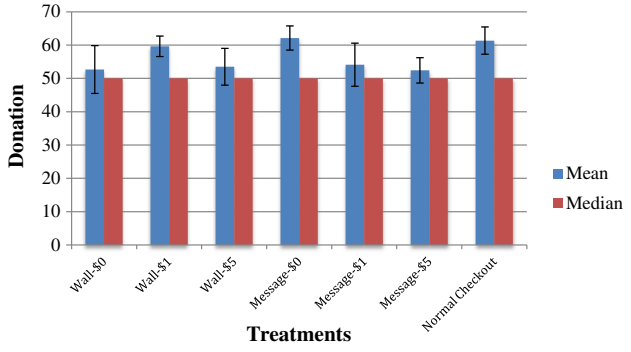

Fig. 1. Donation at checkout (mean and median).

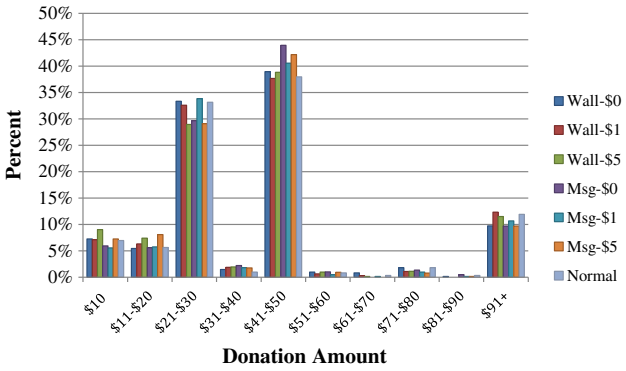

Fig. 2. Distribution of donation at checkout.

donations. The message that appears on the screen for the treatments with no add-on donation is either "Click below to post to your Facebook feed" or "Click below to send a private message to one friend on Facebook." If a $1 add-on donation is included, the message reads "Click below to post to your Facebook feed and we'll give an extra $1 to [the name of the charity which received the donation] on your behalf," or "Click below to send a private message to one friend on Facebook and we'll give an extra $1 to [the name of the charity which received the donation] on your behalf." If a $5 add-on is included, the messages are the same but $5 is stated in the message.[12]

If a donor clicks the button to post in any treatment, a pop-up window appears with the message "I made a donation to [the name of the charity which received the donation]. Join me in donating too." If the donor is currently logged into FB, the pop-up window appears. If the donor is not currently logged in, he is prompted to do so or to create an account if he does not have one. In the pop-up window, there is a short blurb about the charity and a hyperlink to the web page for the charity. In the wall post treatments, there is also a space to add an additional message and the donor must click to complete the post. In the private message treatments, there is a space to add an additional message, and in addition to clicking to complete the post, the donor must type the friend's name to whom the message will be delivered.[13] Only when the donor clicks to complete the post is the add-on donation made to the charity. The donor then sees a screen confirming this, and the experiment is complete. All completed posts with add-on donations were paid to the charity from a research fund.

Data were collected on take-up rates of wall and private message posts for donors in the six treatments and of wall posts and emails sent in the two groups who faced the normal screen after checkout. Completion rates of posts were also recorded, as was additional information on the donor, the charity to which the donor made the contribution and the donation amount. Because of privacy considerations, we did not extract information on donors from their Facebook accounts.[14]

As shown in Table 1, in total, we have 5587 donor observations across the eight groups. The experiment was run from mid-January through the end of February 2013. For disqualified donors, we have 1323 observations, and for qualified donors, we have 4264 observations. Among the qualified donors, 606 were in the FB wall treatment with no add-on donation, 632 were in the FB wall treatment with $1 add-on donation, 608 were in the FB wall treatment with $5 add-on donation, 587 were in the FB private message treatment with no add-on donation, 609 were in the FB private message treatment with $1 add-on donation, 619 were in the FB private message treatment with $5 add-on donation, and 603 were qualified for the experiment and presented with the normal screen after checkout (FB wall post or email). Total costs for the experiment were $1192 (157 × $1 add-on donation + 207 × $5 add-on donation).

4. Results

In this section, we give some descriptive statistics on donors and report take-up rates across experimental conditions. We evaluate the costs and benefits of this type of fundraising mechanism in the next section.

The majority of donors are donating for the first time.[15] Table 2 shows that about two thirds (65.1%) are first-time donors, with donors who were not qualified for the experiment more likely to be repeat donors (47.9%) than those who qualified for the experiment (30.8%). Over 42% of donors were already logged into FB at checkout. Out of the 1323 observations on donors not qualified for the experiment, the most common reason for disqualification was because they had participated in a special donation campaign sponsored by the organization (35.4%). Other reasons for disqualification included multiple projects (21%), multiple reasons (21.5%) and being a previous participant in the experiment (22.1%).[16]

As a check on random assignment of treatments, in Figs. 1 and 2, we show the mean, median and distribution of donation amounts at checkout across our six treatment conditions and the qualified group that saw the normal screen after checkout. Fig. 1 shows that the median donation ($50) is identical across all seven groups. The mean donation varies, but the variance is large enough that there is no systematic significant difference across treatments. Fig. 2 shows the distribution of donation at checkout across treatments. There are a large number of donations at $25 and $50 across all groups.[17] The similarity of donor behavior prior to random assignment to treatment

[12] Screen shots for the two message treatments can be found in the on-line Appendix A.

[13] While the donor can add an additional message in the text box for both the wall post and the private message, the scripted message, "I made a donation to…", the blurb about the charity and the hyperlink cannot be edited. We could not record if the donor added an additional message in the text box, nor the text of the message, because of privacy restrictions on Facebook.

[14] Because of privacy restrictions on Facebook, we could not access or record information on donors from their Facebook accounts in the absence of the donor's consent. Since we did not want the donor to know he/she was in a field experiment, we did not ask donors permission for additional data that was not already publically available. Therefore, unless a donor had set his/her Facebook account for public viewing (this is just a small percentage of donors), we do not have data on, for example, a donor's location, sex, or the text of any additional message in the wall post or private message, etc. Also, we did not record the number of friends a donor has. The limited information we do have on donors is provided by the online giving community. This information includes the amount the donor gave at checkout, the project number to which he gave money and whether he was a previous donor. The organization did not give us donor names, so we cannot try to infer the sex of the donor.

[15] The organization labeled donors as first time or repeat donors, according to their records. Because some donors donate anonymously, we do not know if they are first-time or repeat and therefore have missing data in these cases.

[16] Multiple reasons can include any combination of the other reasons (e.g. special campaign, multiple projects, previous participant).

[17] The lumping at $25 and $50 is probably a reflection of the fact that the information page for the charity/project typically has 4–5 suggested donation amounts that a donor can easily click to choose as a donation, in lieu of typing an amount in.

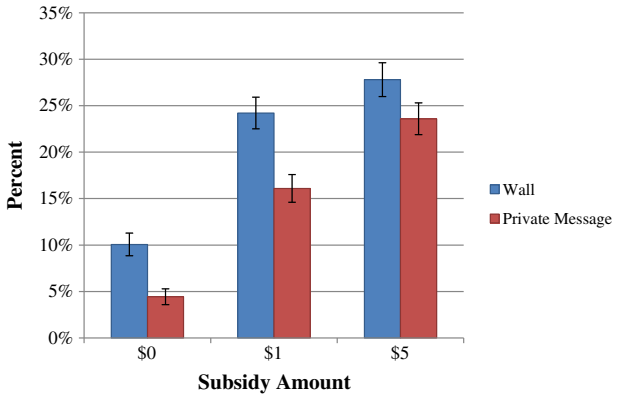

Fig. 3. Click to post take-up rates. Note: standard error bars are standard errors of the mean.

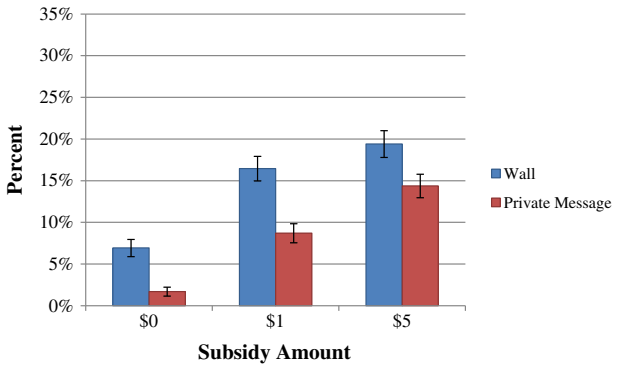

Fig. 4. Completed the post rates. Note: standard error bars are standard errors of the mean.

assures us that differences across treatments are unlikely due to donor selection.

We next examine take-up rates across the six experimental conditions. Fig. 3 shows the proportion of donors who clicked the button to share via a FB wall post or a FB private message across the six treatments. Two main results can be seen. First, take-up rates are significantly increasing in the size of the add-on donation. For example, 10% of donors clicked to post to their FB wall when asked with no add-on donation, and that proportion increased to 28% with a $5 add-on.[18] Second, take-up rates are uniformly and significantly higher for wall posts compared to private messages.[19] More than twice as many donors click to post to their FB wall compared to sending a private message with no add-on donation. With a $5 add-on, roughly 18% more donors click to post on their wall compared to sending a private message.

The pattern in Fig. 3 is consistent with the idea that solicitation carries a social cost. For example, if it is more costly to ask a friend directly, compared to posting a message on one's FB wall, then we should see a lower take-up rate in the private message treatment, as we do.[20] Finally, donors may find it burdensome to decide to whom to send a message so may be more likely to take-up a wall post. We investigate these explanations later in this section.

Take-up rates do not seem to be driven by differences in donors as proxied by donation amount. The click to post take-up rates are not significantly different across treatments for those with a donation of $\leq$$50 (median donation) versus those with >$50.[21]

While a large proportion of donors click to start the process of posting a solicitation message, a smaller proportion complete the process and actually post to FB. There is about a one-third roll off rate across all treatments. Fig. 4 shows the proportion of donors in each treatment who completed the post. Comparing completion rates in Fig. 4 to click to post rates in Fig. 3, we can see that completion rates are lower. For example, in the treatment of no add-on donation and posting to one's FB wall, the click to post rate is 10%, but the completion rate is 7%. In other words, 70% of those donors who clicked to post followed through and completed the process. Similar reductions exist across the remaining treatments.

Thus far, we see that donors are clearly responding to add-on donation incentives and do not consider all types of FB communication as the same. They are more likely to click to post as the size of the add-on donation increases, and for any given add-on, they are more likely to solicit via a wall post than send a private message.

In thinking about how these mechanisms work, nuisance costs, in addition to the aforementioned social costs, could be an impediment to fundraising. Simply logging into FB, or registering for an account, could be a nuisance. Sending a private message might be a nuisance, in addition to carrying a social cost, because the donor needs to think about and type in a friend's name. To investigate this and remove one possible cost to posting, we split the data into two groups with different nuisance costs: those already logged into FB and those that are not. Those already logged into FB merely need to decide to whom to send the message. Those not already logged in would also need to log in, if they have an account, or create an account, if they are not currently on FB. Being logged into FB may also indicate someone who is more socially oriented. We examine whether take-up rates across message types for these two groups are different.

Fig. 5 compares take-up rates for those already logged into FB at the time of checkout compared to those who are not. Levels are lower across all treatments for those not logged into FB. For those already logged into FB, take-up rates are significantly higher between wall postings and private messages for $0 or $1 add-on donations ($t$-test for difference in means p-values are 0.003 and 0.001 respectively). But, take-up rates are no different for the $5 add-on (p-value = 0.3776).

Within an ask method, the nuisance costs of posting, either clicking to post to one's wall or thinking of and finding a friend to ask, are constant. So, we can examine the differential increase in take-up as monetary incentives change across ask methods to examine the residual, cost of asking for each method. Take-up rates increase significantly across the $0 to $1 and $1 to $5 add-on incentives for the private message treatment, but not so for the wall post treatment. In other words, by giving donors a $1 incentive, take-up increases by 18 percentage points in the private message treatment and 23 percentage points in the wall treatment. Adding another four dollars increases take-up by 11 percentage points and 2 percentage points respectively. The differential increase in take-up rates when $1 is added is not significantly large in the private message compared to the wall treatment. However, it is significantly larger in the private message treatment when 4 more dollars are added.[22] This suggests that, once we control for the nuisance costs of a particular method of asking, it appears to be more costly to send a private message. This is consistent with it being more socially costly to ask a friend directly or differences in the underlying distribution of nuisance costs for each ask method.

[18] t-Test for difference in means p-value is 0.000.

[19] p-Values for the two-sided t-test for difference in means across wall and private message is 0.000 for $0 add-on, 0.000 for $1 add-on, and 0.0916 for $5 add-on.

[20] The pattern may also be consistent with a notion of efficiency of solicitation because wall postings reach a larger audience.

[21] p-Values for the two-sided t-test for difference in means across those with above median donation or below median donation are 0.1996 for Wall-$0, 0.4237 for Wall-$1, 0.8646 for Wall-$5, 0.4408 for Msg-$0, 0.6821 for Msg-$1, and 0.3793 for Msg-$5.

[22] If we run a regression on take-up rates and include a dummy variable for being in the wall treatment, the subsidy amount and an interaction term of the two, the interaction term coefficient has a p-value of 0.314 in the $0–$1 comparison and 0.111 in the $1–$5 comparison.

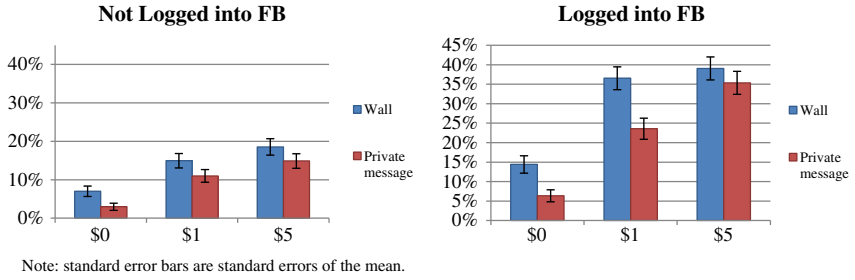

Fig. 5. Click to post take-up rates of those not already logged into Facebook versus those who were. Note: standard error bars are standard errors of the mean.

Finally, we examine whether restricting options matters to take-up rates by comparing the treatment with no subsidy and the option to post to a FB wall to the qualified donors who faced the normal screen after checkout. Restricting options seems to increase take up rates slightly but this is not significant. The take-up rate for wall posts is 10% when only one option is available compared to 9% when both the wall post and sending an email are available.[23] In addition to examining the effect of restricting options on take-up rates, this comparison can also speak to whether being able to credibly signal having made a donation affects take-up. In the normal checkout procedure, the automated FB wall post does not state that the donor made a donation, whereas the treatment FB wall post does. That there is no difference in take-up rates across these two conditions suggests that being able to credibly signal having made a donation may not increase take-up rates. Of course, this is not a strictly clean comparison because the normal checkout also has the additional option of sending an email.

5. Costs and benefits of the fundraising mechanism

We now turn to examining the costs and benefits of the mechanisms used in our experimental treatments. We can track whether a wall post or private message yielded a visit to the online giving web site or a further donation by using the reference URL attached to the post. So, if a friend clicks on the post link and makes a donation, we can track this. However, if a friend comes to the organization's web site and donates on his own, without accessing the site via the link, we cannot attached that visit or donation to the experimental treatments. So, our measure of generated visits and donations is a lower bound on the treatment effects.

The first question that we can answer is how our treatments differed in terms of generated web traffic. In Table 3, the first two columns show the number of times the reference link in the FB post was clicked by treatment. The data show a similar pattern to the take-up rates in Fig. 3. There are more clicks in the wall treatments compared to the private message treatments, and clicks increase as the size of the add-on increases. The last two columns show the number of clicks as a proportion of completed posts by treatment. We see that, while clicks increase across add-ons and across ask methods, the proportion of clicks is relatively constant at 42%.

The second question that we can answer is whether the solicitations generated significantly more donations. We find that, on average, 1.20% of peer-to-peer solicitations in our experiment resulted in a new donation to a charity.[24] The number of new donations is statistically significant different from zero (t-test = 2.25, p-value = 0.025). As noted at the beginning of this section, this estimate is potentially a lower bound of the amount of new donations since some donations are likely done through other means and take place in the future.[25] Regarding the amounts donated by new donors, the average new donation is $49.00, and this is not significantly different from the average donation of the donors in our experiment ($55.73).[26]

Our results suggest that the method of asking within a social network might affect fundraising. Only FB wall posts generated new donations. Private messages did not. The percentage of new donations relative to wall postings is 1.89% and is significantly different from zero (p-value = 0.025). This suggests that postings on one's FB wall could be most effective for fundraising. Further research is needed, however, to understand what factors give rise to these differences.[27]

Random assignment to treatments allows us to identify the effectiveness of different fundraising methods. Additional monetary incentives to solicit within one's network by posting on one's wall are not significant for those already logged into Facebook (43% of the donors). Those receiving a $1 add-on donation take up the post at a 37% rate while those receiving a $5 add-on take up at a 39% rate (t-test p-value = 0.5450). This means that if $1 is offered only to the donors already logged into FB the charity would generate 15.5% (0.43 × 0.37) of postings from the total population of donors. If the charity instead offers $5 to the remaining population (57% of donors), it would generate 11% (0.57 × 0.19) of new postings, since these donors take-up the share 19% of the time. This suggests that the charity may wish to target those already logged into FB.

Finally, we consider the cost effectiveness of these mechanisms. A straight comparison of spending $100 on add-on donation incentives to doing nothing shows that the organization loses money. To see this, suppose the organization spends $100 on a $1 add-on for posting to a FB wall. This would result in 100 posts. Assuming the return to wall postings is constant at 1.89% and using the average new donation of $49.00, we get that $92.61 in new donations would be generated. This implies that the $100 invested lost $7.39. Given the take up rate of the $1 add-on incentive of those already in FB (37%), the charity would have to wait for about 270 donors to spend $100 in incentives. If instead the charity simply asked these 270 donors to post on FB without offering any add-on incentive, assuming a take-up rate of 14% without add-on, a 1.89% constant return from wall postings and an average donation of $49, the charity would receive $35.19 (= 270 * 0.0189 * 0.14 * $49) in additional donations. This suggests that there are benefits to asking donors to use social media to ask friends to donate too.

[23] The p-value for the t-test of difference in means is 0.4480. The take-up rates for sending a private message are more difficult to compare because in the normal checkout, the donor can send an email and in the restricted case the donor can send a private message via Facebook. Take-up rates are 4% in the restricted Facebook private message treatment compared to 2% in the unrestricted email option.

[24] Five donations can be tracked to donors treated in our experiment. All were generated by postings by donors in the Wall-$1 treatment: $100, $90, $25, $20, and $10. Four of these were generated from a wall post by one donor.

[25] We have a record of new donations occurring during the experiment and up to seven months after data collection ended. Most of the observed donations occurred within a week or two of the original posting.

[26] A t-test of difference in means yields a p-value of 0.8940. Median donations differ though: the median new donation is $25 and the median donation by donors in our experiment is $50.

[27] Given the low percentage of posts that yielded new donations (1.2%) and the number of observations we have in each treatment cell, we could be underpowered to detect significant differences between the two delivery methods.

Table 3
Web traffic.

	Number of times hyperlink clicked in FB post		Clicks as a proportion of completed posts	
	Wall	Msg	Wall	Msg
$0	21	9	50%	90%
$1	45	22	43%	42%
$5	50	30	42%	34%

Data in the table is taken from Google Analytics count of clicks on the posted hyperlink.

6. Conclusions

We set out to investigate the costs and benefits of the mechanism of peer-to-peer fundraising through online social networks. To do this, we implemented a field experiment within an online giving organization in which we altered the incentives and ways in which current donors could ask friends to donate via post messages that shared information about their act of giving. Incentives were paid in additional donations to the charity and made in the name of the cooperating donor. All the asking and information sharing was done through Facebook (FB). Our experiment therefore allows us to estimate the costs and benefits to charitable organizations of incentivizing donors to fundraise from their friends. Equally important, in our experiment, we are able to track whether appeals made by donors to members of their networks generated extra donations from friends. Our experiment gives us a view of the benefits relative to costs of incentivizing peer-to-peer fundraising through social media.

Our results show that donors find it costly to engage in peer-to-peer fundraising. Donors that are simply asked to post having donated and ask their friends within their network to donate too comply 4.4% of the time while those that are offered add-on donations made in their name comply 12.6% of the time when the add-on is $1 and 16.9% when the add-on is $5. Part of the explanation why donors do not post information could be the nuisance costs to posting. Those who are already logged into FB comply 130% more than those who are not, or do not have a FB account, when asked to post having donated with their network. The logged-in group has no additional cost to post by having to sign in or may just be predisposed to post since they are already logged into FB. Indeed, we find that, under certain circumstances, even larger monetary incentives are ineffective for this group. This is in accordance with the research on matching funds in charitable donations (Karlan and List, 2007; Eckel and Grossman, 2008; Huck and Rasul, 2011) where larger monetary matches are not more effective than smaller matches.[28] We also find evidence that donors need a stronger monetary incentive to make a direct, rather than a diffuse, ask to friends. Our experiments show that an online charity trying to increase peer-to-peer fundraising should target incentives to those who have the smallest cost to fundraise online (e.g. those already logged into FB). Furthermore, asking for general, non-targeted appeals to friends appears to be the preferred strategy, however, additional study around message content is needed to more broadly validate this observation.

Regarding the benefits of online peer-to-peer fundraising, our experiments confirm that asking friends on one's network to donate generates new donations. Charities can increase donations by simply asking donors to share that they have donated. This can potentially increase the number of new donors a charitable organization has access to at virtually no cost. However, we find that all the incentives we use in our experiment exceed the potential amount they could raise. This could be due to the fact that we cannot perfectly track all donations generated by our experimental treatments.

The mechanism we study was offered to donors after they had completed their donation, so the donor could not anticipate the add-on money and reduce his current donation. This is different from a matching donation, which is announced prior to the donor completing his donation and could crowd out the original intended donation amount. As long as the add-on donation remains a "surprise," crowd out along this dimension would be small.

While little is still known on the way cooperation and charitable fundraising occur in networks, our results help explain the recent explosive growth of online charitable activities and suggest new ways to fundraise that leverage the social connections of donors. They also support Andreoni's (1988, 1989) argument that donors have alternative motives to altruism and suggest that the ways in which one asks friends to donate can therefore vary in costs and effectiveness. Future work studying online peer-to-peer solicitation strategies will be beneficial to practitioners as they continue to explore ways to effectively leverage social media platforms for fundraising.

Appendix A. Supplementary data

Supplementary data to this article can be found online at http://dx.doi.org/10.1016/j.jpubeco.2014.01.002.

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[28] While Eckel and Grossman (2008), Karlan and List (2007) and Huck and Rasul (2011) measure the elasticity of donations with respect to the match, our results speak to the elasticity of the propensity to share on Facebook with respect to the add-on donation. We thank a referee for pointing this out to us.