

Impact of Rebates and Refunds on Contributions to Threshold Public Goods: Evidence from a Field Experiment^{*}

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Abstract

We investigate the impact of rebates and refunds on contributions to threshold public goods using evidence from a field experiment conducted in conjunction with an Australian charity, Life Goes On. We find that offering rebates and refunds has a significant positive impact on both participation and average donations in the absence of seed money. Our results suggest that offering rebates and refunds, and the existence of seed money may, to some extent, play substitute roles in encouraging giving behavior. Seed money has a significant positive effect on participation only. Seed money's impact on average donations may be mitigated by a threshold effect.

Keywords: Charitable giving; threshold public goods; rebates; refunds; seed money; field experiments

JEL Classification: C93; H41

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1. Introduction

Many public goods can be characterized as ‘threshold’ public goods, which can only be provided if their costs are covered. Examples include a bridge, a new university building, and a new playground at a public park. A particular fundraising approach that providers of such public goods can utilize is the provision point mechanism, which includes a commitment to provide the public good if total contributions cover the cost of the public good.¹

Users of provision point mechanisms typically specify what happens to the contributed funds if they exceed or fall short of the cost of the public good. Rebates are commitments to return (or re-direct) excess funds, while refunds are commitments to return insufficient funds.² Given that these are options available to fundraisers, it is important to know their effectiveness. In the theoretical literature, offering refunds has been shown to make it easier to achieve the efficient equilibria where the public good is provided (Bagnoli and Lipman, 1989; Menezes et al., 2001) while offering rebates has been shown not to interfere with the elimination of the inefficient equilibria (Bagnoli and Lipman, 1989). Using evidence from the field, List and Lucking-Reiley (2002) provide support for the theoretical predictions on refunds.³ Using evidence from laboratory experiments, Marks and Croson (1998) provide support for Bagnoli and

¹ For example, a provision point mechanism was used by the Niagara Mohawk Power Corporation of New York in its GreenChoice™ Program and the Australian Indigenous Touch Football Association in financing the participation of two teams in an international competition in New Zealand. For details, see Rose et al. (2002) and www.dreamtime.auz.net/default.asp?PageID=163, respectively.

² See, for example, Compassion International’s appeal for income generating activities in Rwanda (www.compassion.com.au/cmspage.php?intid=445) and Australian Red Cross’ appeal for the Pacific Tsunami (www.redcross.org.au/ourservices_aroundtheworld_emergencyrelief_pacific-tsunami-samoa-tonga.htm). WideAwake.org makes a general statement about how all excess contributions will be handled: “In the rare event that a project happens to receive more money than was requested, any excess will transfer into the Affiliate General Fund.”

³ They find that refunds increase average donations significantly while they have no significant impact on participation. Bagnoli and Lipman’s (1989) predictions on refunds are also confirmed by evidence from the laboratory (e.g., Isaac et al., 1989; Rapoport and Eshed-Levy, 1989; Bagnoli and McKee, 1991; Cadsby and Maynes, 1999; Messer et al., 2008).

Lipman's (1989) prediction on rebates.⁴ Importantly, their study maintains the complete information assumption of Bagnoli and Lipman (1989) in their design.

Hence, it remains to be seen whether the predictions of Bagnoli and Lipman (1989) on rebates would hold in the field, where the assumption of complete information does not hold. Our aim is to fill this gap. In the field, there is incomplete information regarding both donor valuations and charity quality. Under these circumstances, rebates and refunds may play a different role from the one explored in Bagnoli and Lipman (1989), especially in the case of relatively unknown charities. For example, their use may send a positive signal about the quality of the charity.⁵ Hence, we may get different results in the field from those predicted by Bagnoli and Lipman (1989).⁶

We report findings from a fundraising campaign conducted in conjunction with an Australian charity, Life Goes On.⁷ Life Goes On provides a 24-hour telephone counseling service for those affected by serious illness. All of its counselors are volunteers, who go through an extensive training program before they start working at the charity's call center. The goal of the fundraising campaign was to solicit donations to train new Life Goes On volunteers. The training program consists of several modules of equal cost, which allowed us to break the fundraising campaign into smaller

⁴ Spencer et al. (2009) also use laboratory experiments to study the impact of different rebate rules, but they do not compare them to the baseline case of no rebates. Eckel and Grossman (2003 and 2008) use both laboratory and field experiments to study rebate subsidies and matching subsidies. However, they do not consider threshold public goods.

⁵ For example, the signal may be that this is an efficient or a financially stable charity which will not waste the donors' money. Hence, potential donors may update their belief about the type of the charity after seeing a fundraising campaign with rebates and refunds. Bekkers and Wiepking (2011) state that donors who think that their contributions are less likely to be spent on fundraising and overhead costs have more confidence in the charity.

⁶ This was the expectation of our charity partner, Life Goes On, and other charities such as the Salvation Army that we talked to during the design stage of our study. Their prediction was that offering rebates in addition to refunds would increase giving.

⁷ Life Goes On merged with Home Hospice in 2011 to form LifeCircle.

components. We solicited donations from 24,000 households via direct mail for the campaign. These 24,000 households came from a ‘cold list’ of potential donors purchased from a list broker recommended by charities.

Half of the treatments we ran had seed money.⁸ We did this for two reasons. First, it has been stressed in the literature that seed money may be a signal of high quality (Vesterlund, 2003; Andreoni, 2006). Since we were interested in the potential role of rebates and refunds as signals of high quality, we wanted to see how they perform in the presence of seed money (and vice versa). If our conjecture is true, then one would expect rebates and refunds to have a different impact on behavior in the presence of seed money. Testing for robustness in this way was especially important because seed money is frequently used by charities. Second, since we ran our fundraising campaign during the Global Financial Crisis, we were worried about the impact of the crisis on the response rate. There exists strong field evidence on the positive impact of seed money on participation (List and Lucking-Reiley, 2002; Rondeau and List, 2008; Verhaert and Van den Poel, 2012; Gneezy et al., 2014).

We find that offering rebates and refunds has a significant positive impact on both participation and average donations in the absence of seed money.⁹ Seed money has a significant positive effect on participation only. It has no statistically significant impact on average donations on its own and has a significant negative impact on average donations in the presence of rebates and refunds. We conjecture that seed money’s impact on average donations may be mitigated by a threshold effect. Our

⁸ Seed money refers to contributions raised and announced prior to a general public fundraising campaign.

⁹ In a similar vein, List and Lucking-Reiley (2002) find that the impact of offering refunds is stronger at lower seed amounts.

results suggest that offering rebates and refunds, and the existence of seed money may, to some extent, play substitute roles in encouraging giving behavior.

The existing evidence on the impact of seed money on average donations is mixed. While Rondeau and List (2008) and Verhaert and Van den Poel (2012) find that seed money has no significant impact on the average donation size, List and Lucking-Reiley (2002) find a positive significant impact. Our results are in line with Rondeau and List (2008) and Verhaert and Van den Poel (2012) in the case when seed money is used without rebates and refunds. We extend the results in the literature by showing that if seed money is used in conjunction with rebates and refunds, then it has a significant negative impact on the average donation size.

The remainder of our paper proceeds as follows. Section 2 describes the experimental design and procedure. After presenting the results in Section 3, we discuss their implications in Section 4, emphasizing how they can be used to extend the existing theories of charitable giving and how fundraising practitioners can benefit from our study.

2. Experimental design

We looked for a charity partner which wanted to raise funds for a number of identical public goods, all with a predetermined cost. We also wanted to have a partner which was financially constrained so that we could credibly communicate to the potential donors that, unless sufficient funds were raised, the goods would not be provided. Life Goes On, being a small Australian charity, satisfied both of these criteria.

Life Goes On wanted to raise funds to train a new group of volunteers for its telephone counseling service. Their training program consists of several modules with

the same cost, which is spent on printed documents distributed to the volunteers and the expert speaker hired for the module. We received permission to design Life Goes On's fundraising campaign, which was conducted in June 2009 and September 2009. These dates were chosen specifically to coincide with the end of the financial year in Australia and the pre-Christmas fundraising season. We ran a total of 12 separate fundraisers, each one corresponding to a single training module. Each fundraiser was allocated to one of the six treatments we have in our experimental design.

In the design of these treatments we had two questions in mind: (i) What is the impact of offering rebates and refunds as opposed to nothing? (ii) What is the impact of offering rebates in addition to refunds? Investigating (ii) was important because according to Bagnoli and Lipman (1989), offering rebates in addition to refunds does not help with the elimination of inefficient equilibria.¹⁰ In addition, we ran treatments with and without seed money in order to capture whether its presence affects the impact of rebates and refunds on donor behavior.

Table 1 shows the treatments included in the study. The first column shows the three-letter codes used to represent the different treatments. The first letter states whether a refund is offered (R for refund or N for no refund), the second letter states whether a rebate is offered (R for rebate or N for no rebate), and the third letter states whether seed money is offered (S for seed money or N for no seed money). For example, RNS stands for the treatment which contains a refund offer and seed money, but no rebate. As shown in the second column, for each treatment, we collected data from two different groups of 2000 potential donors each. Since both the list broker and

¹⁰ We did not run any treatments where only rebates were offered for two reasons. First, the charities we consulted said that they would not consider running rebate-only fundraising campaigns because offering to return excess funds without offering to return insufficient funds would adversely impact their credibility. Second, in the theoretical literature, the focus has been on mechanisms either with refunds only or with both rebates and refunds.

the charities we consulted during the design stage of our study mentioned that we should not expect a response rate more than 1-2%, we contacted a total of 4000 people for each treatment. The remaining columns in Table 1 state the information summarized in the treatment codes and the date at which the different treatments were conducted.

In all of the treatments, prospective donors were informed that the fundraiser sought to fund a training module, which could only be provided if at least \$2000 were raised. In half of the treatments, \$1000 of seed money (50% of the total threshold amount) was raised prior to the fundraiser being conducted and, therefore, we required the donors to provide us with the remaining \$1000.¹¹

In line with Life Goes On's previous fundraising campaigns, we solicited donations via direct mail. We purchased the names and addresses of 24,000 households in Victoria, Australia from Prime Prospects, a list broker recommended by multiple charities. We deliberately did not include Life Goes On's existing donor base in our sample since we did not want their repeat donors to bias our results.¹² The names and addresses of the 24,000 Victorian households that we purchased were randomly assigned to the six treatments in our design.

Each household in our database was mailed a solicitation pack. The pack contained an information brochure about the charity, a treatment-specific solicitation letter with a donation slip printed on the charity's letterhead, and a reply-paid envelope that donors could use to make their donations. The information brochure introduced

¹¹ The seed money was raised from a few individuals who have close ties with Life Goes On and are among their frequent donors.

¹² We restricted our mail-out to households in the state of Victoria in Australia because Life Goes On is based in Melbourne, Victoria. The population of Victoria in Australia is about 5.4 million. Since Life Goes On's existing donor base has only 600-700 names in it, we were not too concerned with the potential overlap. After collecting our data, we were able to confirm that there was indeed no overlap between our list of donors and Life Goes On's list.

Life Goes On and outlined its activities and purpose. A copy of this information brochure can be found in the Appendix.

The solicitation letter reiterated the benefits of the charity and outlined the key points of the fundraiser. It was designed to be engaging and simple to understand. The text of the solicitation letter was identical across the different treatments, except for two paragraphs which gave information about the treatment conditions. In these two paragraphs, we explained how much the training module costs, what the seed, rebate and refund conditions were, and how many households were being contacted. The most crucial sentences within these two paragraphs were underlined to ensure that they caught the attention of the reader. For example, for treatment RRS, these two paragraphs read:

“Currently, we end up turning away many callers every month because several volunteers are awaiting training. We are writing to ask for your help in training these volunteers by making a donation. Each training module costs \$2000 to run. An anonymous donor has already agreed to cover 50% (\$1000) of the cost of our next module if we raise the remaining \$1000.

You are one of 2000 households we are contacting. If we fail to raise the \$1000 from these 2000 households we will not be able to run the module and will refund your money to you. If we raise at least \$1000 we will run the module. Any additional money we raise above \$1000 will be refunded to you. Your refund will be proportional to your contribution.”

A full copy of the solicitation letter for treatment RRS can be found in the Appendix.

These two paragraphs were modified for each treatment. In the treatments without rebates, we implemented a no rebate policy by informing the donors that their money will be channeled to the charity’s ongoing expenses.¹³

¹³ In Marks and Croson (1998), a no rebate policy means that excess contributions are discarded. They suggest that in the field, a ‘no rebate’ can be interpreted as a literal wastage of excess contributions by the charity, or it can be interpreted as the charity spending the funds on goods which provide the charity itself with utility but the donors with no utility (such as decorating the charity’s office) (pp. 196-197).

A donation slip was placed at the bottom of the letter, which allowed donors to fill in their donation amounts, payment methods, and contact details. All of the solicitation packs were prepared and mailed by a mail house we hired, 'Direct Mail Corporation.' At the end of the mail-outs, all donors were sent a letter thanking them for their donation and notifying them of the total amount raised. In addition, if the donor was receiving a rebate or a refund, we stated the amount in the letter.

3. Results

3.1 Overview of the results

Across the six treatments, we received a total of 150 donations. This represents an overall participation rate of 0.63%, significantly lower than the expected rate of 1-2%.¹⁴ Table 2 shows the participation rates, total donations collected, and the average donation size (conditional on giving) in detail at the treatment and group level. The participation rate was the lowest (0.20%) in NNN1 and the highest (1.00%) in RRS1 and RNS2. The participation rates were higher in the treatments with seed money than they were in the treatments without seed money. However, the impact on the participation rates of rebates and refunds were considerably larger in the treatments without seed money. In the absence of seed money, participation increased by 90.91% (from 0.28% to 0.53%, p-value = 0.077) when a rebate and a refund were offered. In the presence of seed money, offering rebates and refunds did not seem to have a

Hence, we implemented a no rebate policy by informing the donors that their money will be channeled to the charity's ongoing expenses. All of the charities we talked to indicated that donors are unwilling to make donations to fund ongoing expenses. Tinkelman and Mankaney (2007) present evidence in support.¹⁴ The low response rate may be due to the fact that Life Goes On is a small charity that is not particularly well-known. In addition, two other factors may have contributed to the low response rate. First, as mentioned before, we ran our campaign during the Global Financial Crisis. Second, our campaign dates were close to the 2009 Victorian bushfires, which were one of the most devastating in history. Since many people donated to help the survivors of the bushfires, our response rate may reflect donor exhaustion (Cairns and Slonim, 2011; Reinstein, 2011).

meaningful impact on the participation rate. The participation rates were 0.83% without a rebate or a refund and 0.88% with both a rebate and a refund.

Table 2 also shows that the total amount of donations was the highest in treatment RRN, and the lowest in treatment NNN. Table 2 implies that the impact of rebates and refunds on total donations was greater in percentage terms in the treatments without seed money. In the absence of seed money, the increase was 77.37% with a refund and an additional 218.97% with a rebate and a refund. In the presence of seed money, total contributions increased by 35.15% when a refund was offered and by another 4.70% when both a rebate and a refund were offered. Similarly, the marginal effect of seed money on total donations was greater in the absence of rebates and refunds. The increase in the total amount of donations is 167.13% between NNN and NNS, while it is 103.54% between RNN and RNS. When both rebates and refunds were offered, the total amount of donations actually decreased with the inclusion of seed money (from \$1850.00 in RRN to \$1236.00 in RRS).¹⁵

Table 2 reveals that although seed money has a positive impact on participation, it has a negative impact on average donations. Hence, its impact on total donations depends on which effect dominates. The negative effect of seed money on average donations is most striking when we compare RRN and RRS. The average falls from \$88.10 to \$35.31 (p -value = 0.109). In contrast, offering rebates and refunds has a

¹⁵ Table 2 shows that the threshold was not reached in any of the groups. One possible explanation for this is that the number of people we chose to contact for each group (2,000) was insufficient since the response rate we expected to have was almost twice the actual response rate. A couple of the donors approached Life Goes On to make donations equal to the threshold amount after they learned that the threshold was not reached. Both of these donors were in treatment RRS. There were a few other donors who sent more money when we notified them of the outcome of the campaign, but their contributions were not as critical. See Vesterlund (2003) and Bag and Roy (2008) for theoretical models of repeated donations.

positive impact on average donations. The impact is more prominent in treatments without seed money.

Figures 1 and 2 show the histogram and empirical cumulative distribution of donations by treatment. The figures show that the majority of donations are \$50 or below. Interestingly, treatments with rebates and refunds consistently have more donations that are \$100 or more. This is especially noteworthy in the case of RRN, where the five large donations are in the amounts of \$150, \$200, \$300, \$400, and \$500. Across the remaining five treatments, the highest donation size is \$100. We comment more on this issue later.

3.2 Regression Analysis

Table 3 shows the results of regressions of participation rates and donation amounts against rebates, refunds, seed money, and their interaction terms. We estimated binary probit models for the participation rates and ordinary least squares models for the donation amounts. This approach acknowledges that the decision to give and the amount given may be determined by two separate stochastic processes. The dummy variables *Refund* and *Seed* indicate whether a refund and seed money is available, respectively. The dummy variable *Refund-Rebate* indicates whether a rebate in addition to a refund is also available. The remaining two variables are interaction variables with seed money.

In the analysis, we pool the data from the two mail-outs (June 2009 and September 2009) since the timing of the mail-outs is not a significant determinant of behavior in the regressions for both participation and donation size. As can be seen in Table 1, treatments NNS, RNS and RRS had two groups. The data from the first group in each treatment was collected in June 2009 and the data from the second group was

collected in September 2009. Using this sub-sample of treatments, we are able to test whether the date at which the mail-out was conducted matters, and find that the coefficient for ‘First Mail-out,’ which is a dummy for June 2009, is statistically insignificant in the regressions for both participation and donation size.

Table 4 presents comparisons of various treatments of interest based on the estimated coefficients of the regression models in columns (2) and (4) of Table 3. For example, a comparison between treatments NNS and RRS in Table 4 gives us the treatment effect of having both rebates and refunds, in the presence of seed money, on the participation rate and average donation size.¹⁶

We start by considering the impact of rebates, refunds and seed money on participation rates.

Result 1: The presence of seed money significantly increases the participation rate, both in the presence and absence of rebates and refunds. Offering both rebates and refunds significantly increases the participation rate in the absence of seed money.

Supporting our observations from Table 2, column (1) of Table 3 shows that seed money overall increases the participation rate, and this effect is significant at the 1% level (p-value = 0.000). The first three lines of Table 4 show that seed money increases the participation rate regardless of whether rebates and refunds are also offered. Specifically, seed money significantly increases the participation rate by 0.55% in the absence of rebates and refunds (NNN vs. NNS, p-value = 0.001). In the presence of

¹⁶ Given the small number of donations, we also conducted bootstrapped regression analysis on the average donation size and bootstrap tests for differences in means to check the robustness of our main results. Bootstrapped regression analysis can provide more accurate inferences when sample sizes are small or when the data are not well-behaved (Fox, 2008). See also Davidson and MacKinnon (2004). The bootstrap test for differences in the means of two samples makes no assumption about the underlying distribution of the data except that observations are drawn from i.i.d. populations (Efron and Tibshirani, 1993). Using these alternative methods, our main conclusions remain the same. Details are available from the authors upon request.

refunds, seed money increases participation by 0.55% (RNN vs. RNS, p-value = 0.002) and in the presence of both rebates and refunds, seed money increases participation by 0.35% (RRN vs. RRS, p-value = 0.060). These results are consistent with List and Lucking-Reiley (2002), Rondeau and List (2008), Verhaert and Van den Poel (2012), and Gneezy et al. (2014), who also find that seed money significantly increases participation.

As far as refunds are concerned, Table 4 shows that they have a statistically insignificant impact on participation, both in the presence and absence of seed money. Similarly, List and Lucking-Reiley (2002) also show that although refunds increase average donations significantly, they have no significant impact on participation. However, when both rebates and refunds are offered, Table 4 reveals that participation increases by 0.25% in the absence of seed money (NNN vs. RRN, p-value = 0.076). The effect of rebates and refunds on participation is statistically insignificant in the presence of seed money (NNS vs. RRS, p-value = 0.808).

These results suggest that the impact of seed money on participation is robust to the presence of rebates and refunds. If a fundraiser does not have access to seed money, then rebates and refunds can be used to increase participation. However, a fundraiser with seed money should not expect rebates and refunds to increase participation.

Our next two results are about the impact of rebates, refunds, and seed money on the average donation size.

Result 2: Offering both rebates and refunds significantly increases the average donation size in the absence of seed money only. This seems to be driven by the impact of rebates since offering refunds only does not have a statistically significant impact.

A comparison of treatments NNN and RRN in Table 4 reveals that offering both rebates and refunds significantly increases the average donation by \$58.37 in the absence of seed money (p-value = 0.009). This increase is driven by the effect of rebates since offering refunds only does not have a statistically significant impact on the average donation size (NNN vs. RNN, p-value = 0.622), but offering rebates in addition to refunds significantly increases the average donation size by \$46.67 (RNN vs. RRN, p-value = 0.023). These effects disappear in the presence of seed money, as shown by the comparisons of NNS vs. RNS, RNS vs. RRS, and NNS vs. RRS.¹⁷

Results 1 and 2 jointly imply that, in our sample, rebates and refunds have no statistically significant impact on participation and average donations in the presence of seed money, but they do in the absence of seed money.¹⁸ Interestingly, the positive impact of rebates and refunds on average donations in the absence of seed money is largely driven by their ability to attract large donations. As shown in Figures 1 and 2, RRN was the only treatment where we saw donations larger than \$100, and these accounted for 23.81% of the donations in this treatment. Since these large donations appear in only treatment RRN and they constitute close to a quarter of the donations in that treatment, they are very unlikely to be outliers.

Note that while there were no donations larger than \$70 in NNS, there were five donations that were equal to \$100 in RRS. Hence, offering rebates and refunds in general seems to encourage large donations, possibly by providing a guarantee to

¹⁷ It is important to note that, due to the relatively small number of donations we received, the lack of statistically significant treatment effects on average donations may be due to a lack of power in our tests. Specifically, for these treatments, the sample sizes give us power to detect effect sizes between 2.8 and 2.9 standard deviations from the mean. We do not find an effect this large.

¹⁸ This finding is consistent with the findings in both the theoretical and experimental literature that refunds affect giving positively at high threshold levels only (Cadsby and Maynes, 1999; Menezes et al., 2001). Similarly, List and Lucking-Reiley (2002) find that the impact of offering refunds is stronger at lower seed amounts. Their results are significant for average donations only.

potential donors that all of their donations will be put solely to the project's use. However, the impact seems to be especially strong in the absence of seed money, where we observed donations exceeding \$100 in treatment RRN. This may be because the presence of seed money decreases the effective threshold and the need for large donations to reach the target. Hence, offering rebates and refunds may have a greater impact on giving at higher threshold levels by encouraging especially large donations.

Although the households in our database were randomly allocated to treatments, we still wanted to make sure that it was not the demographics of the donors in treatment RRN that yielded the especially large donations we saw in this treatment. Although we do not have income and age data at the donor level, we have their postal codes. This meant we could use the median age and income of individuals living in the area using data from the 2011 Census (Australian Bureau of Statistics, 2011) as a proxy for the age and income of the donors. When we included these proxies in our regression analysis, we found that the median age and income of households in the donor's postal area have no significant effects on average donations. More importantly, the point estimates in Table 3 do not change by much and the treatment effects in Table 4 remain the same.

Result 3: Seed money significantly decreases the average donation size in the presence of both rebates and refunds. Otherwise, it has no statistically significant impact on the average donation size.

Column (4) in Table 3 show that seed money, in the absence of rebate and refund offers, does not have a statistically significant effect on the donation size (NNN vs. NNS, p -value = 0.874). Table 4 shows that this result also holds when refund offers are

present (RNN vs. RNS, p -value = 0.642).¹⁹ However, seed money has a significant *negative* impact on the average donation size in the presence of both rebates and refunds, decreasing the average donation size by \$52.78 (RRN vs. RRS, p -value = 0.001).

Results 1 and 3 imply that seed money has opposite effects on participation and average donation amounts. While participation increases with seed money, average donations either remain unaffected or decrease.²⁰ The increase in participation may be due to a signaling effect as mentioned before. If this increase in participation is anticipated by potential donors, it may result in lowered donations, especially since the effective threshold is lower with seed money. Hence, in addition to the signaling channel, seed money can also affect donor behavior through a “threshold effect,” because the presence of seed money in the context of threshold public goods causes the effective threshold to be lower than the announced threshold. The signaling effect is likely to affect both participation and the average donation size positively (Andreoni, 2006; Vesterlund, 2003). On the other hand, the threshold effect is likely to affect the average donation size only, and this effect is likely to be negative (Rondeau and List, 2008).²¹ Hence, the net effect of seed money on the average donation size depends on whether the signaling or the threshold effect dominates. This may explain the conflicting results in the literature. For example, while Rondeau and List (2008) and Verhaert and Van den Poel (2012) find that seed money has no significant impact on

¹⁹ Again, the lack of statistically significant results here may be due to a lack of power in our tests. For these treatments, the number of donations gives us power to detect effect sizes between 2.9 and 3.0 standard deviations from the mean. We do not find an effect this large.

²⁰ Our results on the intensive margin are in line with Rondeau and List (2008) and Verhaert and Van den Poel (2012), who also find that seed money has no impact on the average donation size.

²¹ Interestingly, Rondeau and List (2008) find that although the average donation size is positively correlated with the announced threshold amount, seed money has no impact on the average donation size. That is, they find that although the effective threshold decrease with seed money, the average donation size does not. According to our terminology above, this may be because the signaling effect cancels out the threshold effect. See also List and Rondeau (2003).

the average donation size, List and Lucking-Reiley (2002) find a positive significant impact.

Our results are in line with Rondeau and List (2008) and Verhaert and Van den Poel (2012), except when rebates are offered. In the presence of both rebates and refunds, we find that the average donation size actually decreases with seed money, a result possibly driven by the threshold effect. Seed money's signaling effect on average donation may be weaker in the presence of rebates and refunds if the latter is already providing a signal on the quality of the project (i.e., if seed money, and rebates and refunds play substitute roles as signals of quality). This may mean that the threshold effect of seed money dominates and causes the average donation size to decrease between RRN and RRS.

4. Concluding Remarks

We conclude by discussing the implications of our results for future research on charitable giving and for fundraising practitioners.

To summarize, our study of contributions to a threshold public good show that offering rebates and refunds has a significant positive impact on giving behavior (both participation and average donations) in the absence of seed money. The use of seed money in provision point mechanisms has a positive effect on participation only. It has no significant impact on average donations on its own and has a significant negative impact on average donations in the presence of rebates and refunds.

Our results differ from the theoretical predictions of Bagnoli and Lipman (1989). One possible explanation for this difference is that the strong informational

assumptions of their model do not hold in our field setting.²² Evidence suggests that uncertainty regarding the quality and credibility of charities may be a significant issue in the field. For example, Trussel and Parsons (2007) identify four factors which affect the donations received by charities: reputation, information provided to potential donors, efficiency, and financial stability.²³ Our charity partner, Life Goes On, and the Salvation Army also indicated that uncertainty regarding charity quality is an important determinant of willingness to donate.

In general, it is important to note that using provision point mechanisms has higher informational requirements than using voluntary contributions mechanisms. Fundraisers may have little information about how donors value the specific public goods under consideration, which may make it challenging to determine the magnitudes that donors are likely to give and, hence, the number of potential donors to contact. In addition, potential donors themselves usually have incomplete information about the valuations of others, which makes it hard for them to determine how critical a role they play in the provision of the public good. Hence, from the perspective of fundraisers, gathering as much information as possible on donor valuations through pre-campaign research and revealing this information to donors prior to actual fundraising may be important.²⁴

²² In fact, Bagnoli and Lipman (1989) themselves state that the assumption of complete information may limit the applicability of their results and that incomplete information may lead to under-provision.

²³ See also Bekkers and Wiepking (2011). Eckel and Grossman (1996) provide evidence, using university students, that an increase in the “deservingness” of the recipient (i.e., replacing students with the American Red Cross as the recipient) increases the quantity of donations. Ortmann and Svítková (2007) suggest that charity certification programs may be used to signal quality.

²⁴ One way to do this may be through announcement of previous donations. Bag and Roy (2008) show such announcements to be effective in reducing uncertainties regarding valuations. This may explain the repeated donations we received in our campaign. Further field research on the effectiveness of rebates and refunds in settings which allow for announcement of previous donations and repeated or sequential donations would be worthwhile.

Our results point to two promising paths for further research. First, it would be good to analyze theoretically the impact of rebates and refunds under the assumption of incomplete information on donor valuations and charity quality. In such a setting, rebates and refunds may serve an alternative purpose from the one already considered in the literature. We conjecture that charities can use rebates and refunds to communicate to their potential donors that they are reliable and efficient. This is especially important for relatively small and unknown charities, such as Life Goes On.

Second, it would be useful to develop a theoretical framework that explores the impact of rebates and refunds in the presence and absence of seed money. For example, if our conjecture about the signaling role of rebates and refunds is true, it would explain the differences we observe between the treatments with and without seed money. If seed money acts as an alternative signal of high quality, then rebates and refunds may lose their potency as a signal in the presence of seed money. In that case, one would expect, as we find, the impact of rebates and refunds on giving behavior to be higher in the absence of seed money.²⁵

²⁵ The existence of seed money does not have to mean that rebates and refunds become completely irrelevant. Their impact may depend on the amount of seed money provided since they may act as additional signals of quality.

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Table 1 – Experimental treatments

Treatment	Group	# mailed	Refund offer	Rebate offer	Seed money	Time period
RRS	RRS1	2000	Refund	Rebate	Seed	June 2009
	RRS2	2000	Refund	Rebate	Seed	Sept 2009
RNS	RNS1	2000	Refund	No rebate	Seed	June 2009
	RNS2	2000	Refund	No rebate	Seed	Sept 2009
NNS	NNS1	2000	No refund	No rebate	Seed	June 2009
	NNS2	2000	No refund	No rebate	Seed	Sept 2009
RRN	RRN1	2000	Refund	Rebate	No seed	Sept 2009
	RRN2	2000	Refund	Rebate	No seed	Sept 2009
RNN	RNN1	2000	Refund	No rebate	No seed	Sept 2009
	RNN2	2000	Refund	No rebate	No seed	Sept 2009
NNN	NNN1	2000	No refund	No rebate	No seed	Sept 2009
	NNN2	2000	No refund	No rebate	No seed	Sept 2009

Table 2 – Results of the field experiment

Group	# mailed	# of donations	Participation rate (%)	Total donations (\$)	Average donation size (\$)	Std error of mean amount (\$)
RRS1	2000	20	1.00%	\$680.00	\$34.00	\$6.08
RRS2	2000	15	0.75%	\$556.00	\$37.07	\$8.95
RRS	4000	35	0.88%	\$1236.00	\$35.31	\$5.10
RNS1	2000	16	0.80%	\$530.00	\$33.13	\$7.66
RNS2	2000	20	1.00%	\$650.55	\$32.53	\$7.01
RNS	4000	36	0.90%	\$1180.55	\$32.79	\$5.10
NNS1	2000	14	0.70%	\$350.50	\$25.04	\$4.63
NNS2	2000	19	0.95%	\$523.00	\$27.53	\$4.08
NNS	4000	33	0.83%	\$873.50	\$26.47	\$3.02
RRN1	2000	10	0.50%	\$950.00	\$95.00	\$49.91
RRN2	2000	11	0.55%	\$900.00	\$81.82	\$40.67
RRN	4000	21	0.53%	\$1850.00	\$88.10	\$31.13
RNN1	2000	6	0.30%	\$170.00	\$28.33	\$7.03
RNN2	2000	8	0.40%	\$410.00	\$51.25	\$11.37
RNN	4000	14	0.35%	\$580.00	\$41.43	\$7.60
NNN1	2000	4	0.20%	\$57.00	\$14.25	\$4.25
NNN2	2000	6	0.30%	\$250.00	\$41.67	\$12.76
NNN	4000	11	0.28%	\$327.00	\$29.73	\$7.98

For one of the donations we received for NNN, we could not identify which group it belongs to, so it is included in the overall data for treatment NNN, but not in the data for NNN1 or NNN2.

Table 3: Hurdle model estimations for participation rate and donation size

Variables	(1)		(2)		(3)		(4)	
	Participation Rate		Participation Rate		Donation Size		Donation Size	
	(a)	(b)	(a)	(b)	(a)	(b)	(a)	(b)
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Refund	0.046	0.527	0.079	0.548	7.158	0.561	11.701	0.622
Refund-Rebate	0.044	0.530	0.138	0.237	17.460	0.134	46.667	0.023**
Seed	0.288	0.000***	0.379	0.001***	-25.645	0.017**	-3.258	0.874
Refund*Seed			-0.047	0.766			-5.378	0.846
Refund-Rebate*Seed			-0.148	0.309			-44.145	0.075*
Constant	-2.714	0.000***	-2.776	0.000***	46.518	0.000***	29.727	0.096*
Observations	24,000		24,000		150		150	
R-squared					0.075		0.105	

Notes: 'Participation Rate' reports the marginal effects from a probit regression calculated at the mean; 'Donation Size' is a truncated linear regression.
 *, **, and *** denote statistical significance at the 10%, 5%, and 1% level, respectively.

Table 4: Comparison of treatments

Treatments	Participation Rate ^(a)		Donation Size ^(b)	
	(a) Marginal Effect	(b) p-value	(a) Marginal Effect	(b) p-value
NNN vs. NNS	0.0055	0.001***	-3.2576	0.874
RNN vs. RNS	0.0055	0.002***	-8.6355	0.642
RRN vs. RRS	0.0035	0.060*	-52.7810	0.001***
NNN vs. RNN	0.0008	0.548	11.7013	0.622
RNN vs. RRN	0.0018	0.236	46.6667	0.023**
NNN vs. RRN	0.0025	0.076*	58.3680	0.009***
NNS vs. RNS	0.0008	0.717	6.3234	0.656
RNS vs. RRS	-0.0003	0.905	2.5212	0.857
NNS vs. RRS	0.0005	0.808	8.8446	0.536

Notes: The null hypothesis for any two given treatments is that there is no significant difference in the participation rate / average donation size between them. The regression models in columns (1) and (2) take the general form:

$$Y = \beta_0 + \beta_1 \text{Refund} + \beta_2 \text{Refund-Rebate} + \beta_3 \text{Seed} + \beta_4 \text{Refund*Seed} + \beta_5 \text{Refund-Rebate*Seed}$$

where $Y = \text{Pr}(\text{Donate})$ in the non-linear probit regression of the participation rate, and $Y = \text{Donation}$ in the truncated linear ordinary least squares model on the donation size, estimated in columns (2) and (4) of Table 3, respectively.

*, **, and *** denote rejection of the null at the 10%, 5%, and 1% level, respectively.

^(a) Wald tests are used for non-linear null hypotheses for the probit model.

^(b) t-tests are used for linear null hypotheses for the OLS model.

Figure 1 – Contributions by treatment with seed money

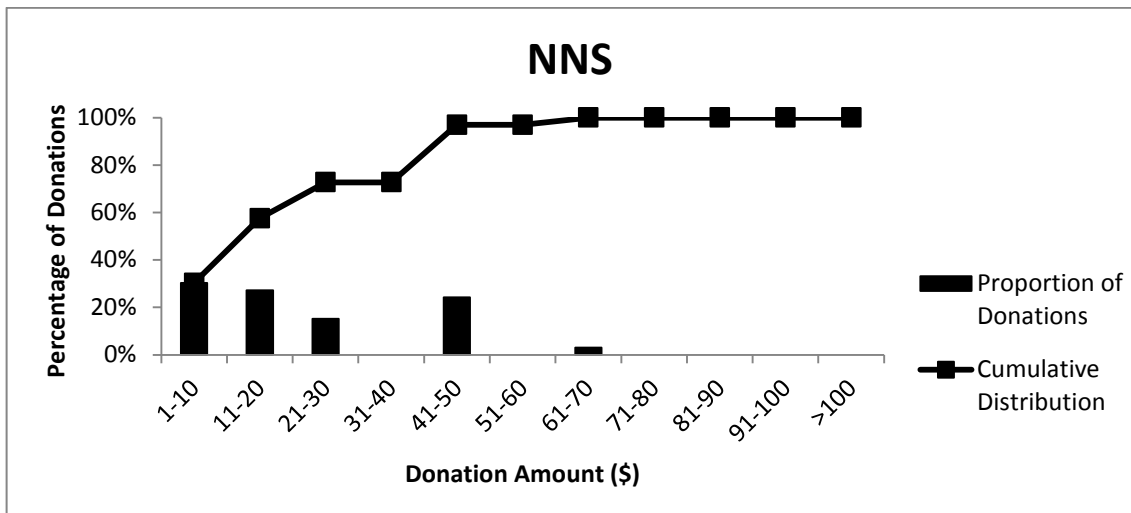
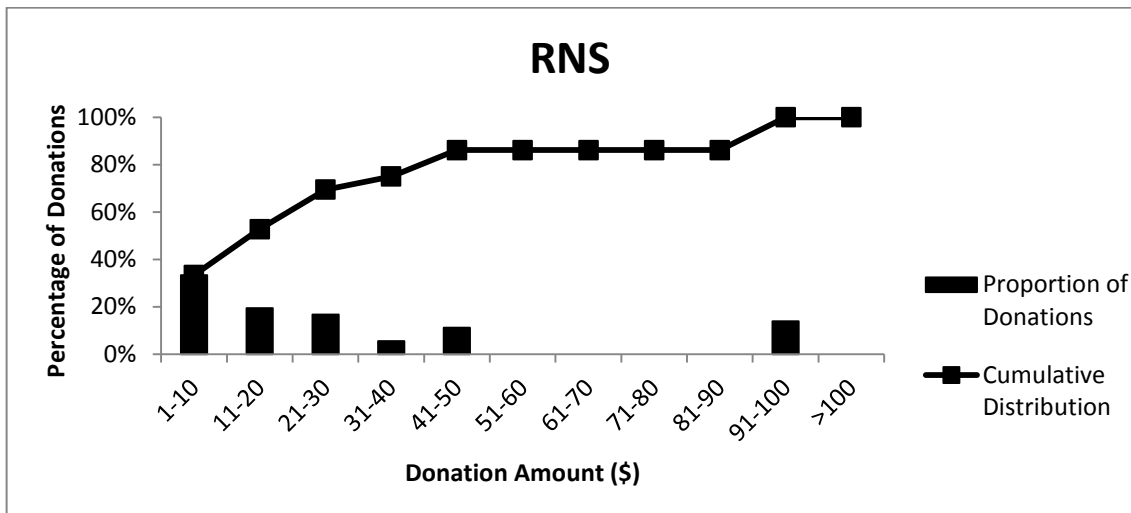
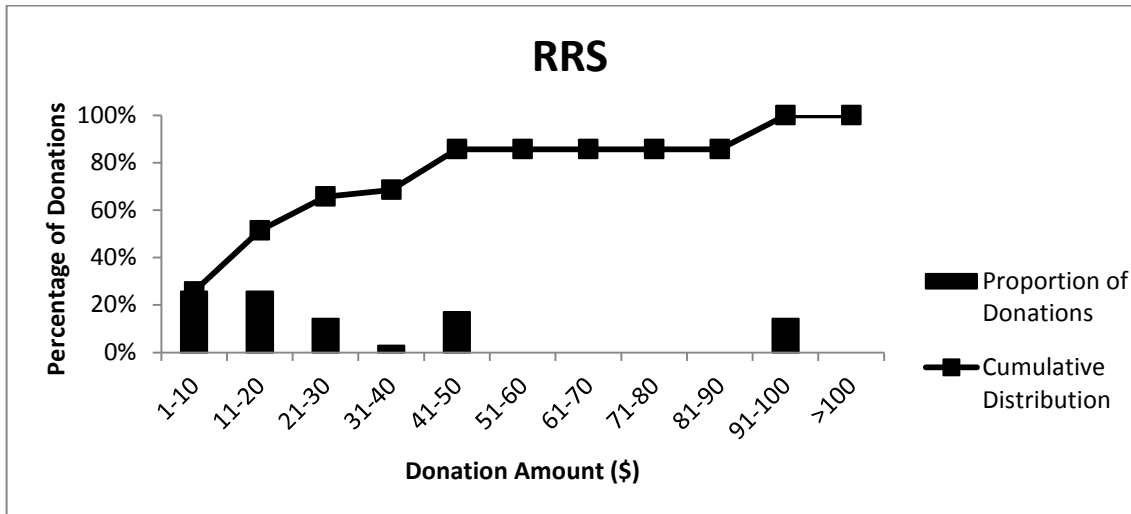
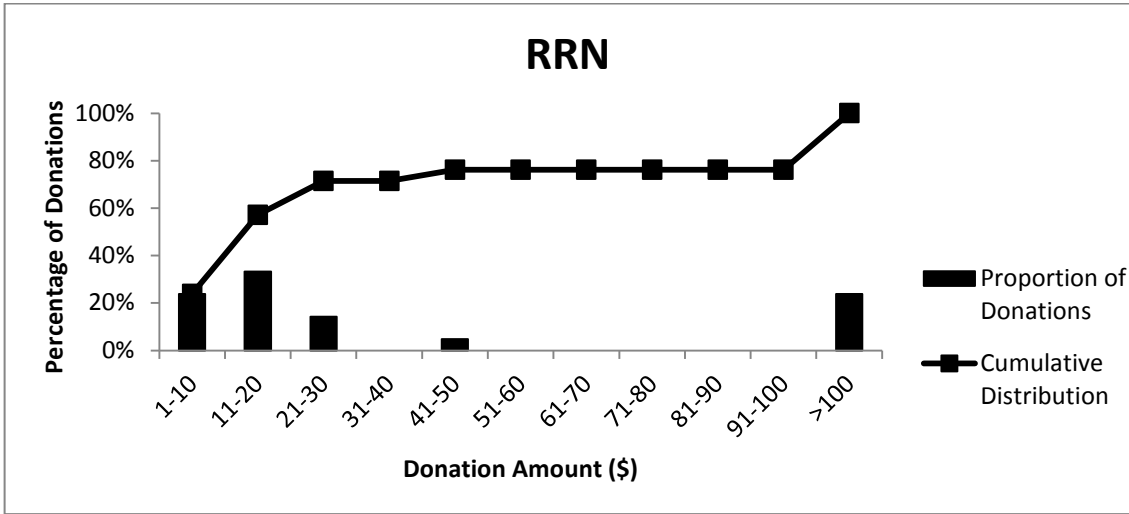
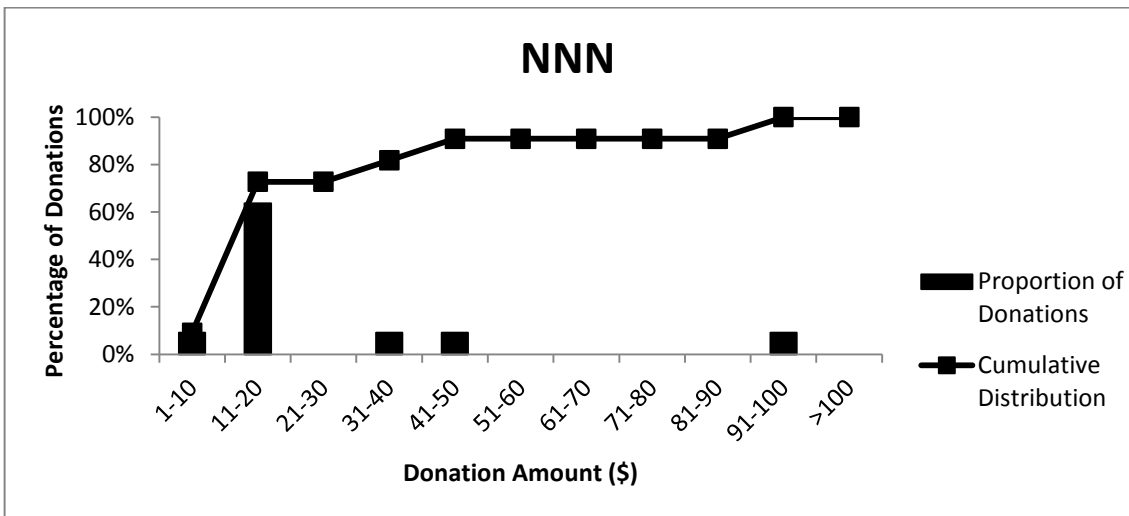
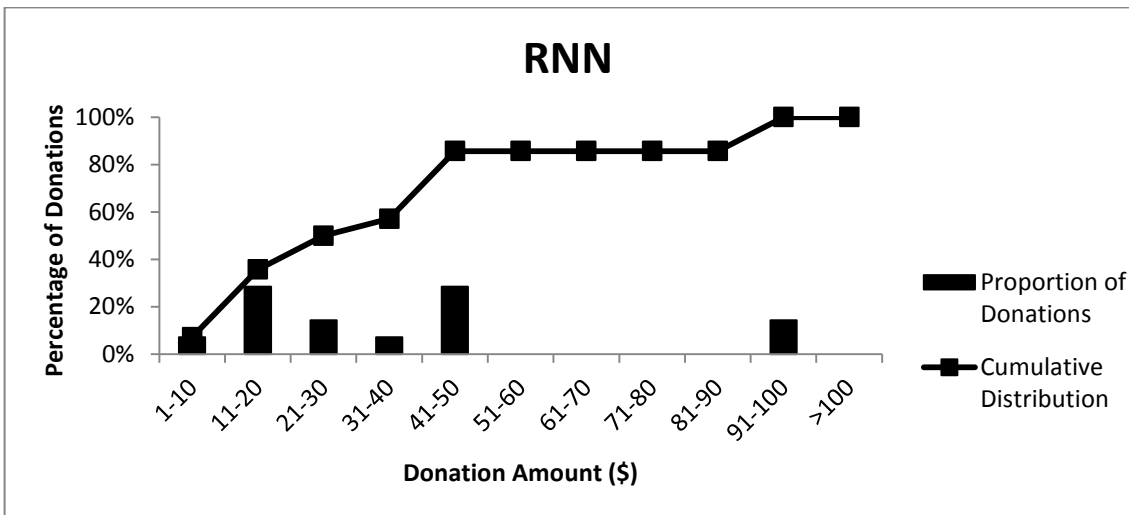


Figure 2 – Contributions by treatment without seed money



In RRN, donations greater than \$100 were in the amounts of \$150, \$200, \$300, \$400 and \$500.



APPENDIX

Information brochure

Strategies and choices for the seriously ill and those who care for them



Life Goes On was founded in December 2000 by author and cancer survivor Joel Nathan. Since then, Life Goes On has helped more than 27,000 people struggling with a life-threatening illness.

“When you have a serious illness, you are so vulnerable. It’s just you and the illness.”

- Judith (a caller)

Life Goes On helps those struggling with serious illness

- We understand the hopes, needs, and fears of the seriously ill and those close to them.
- We give people hope and help them regain a sense of control.

Our Service: Telephone counselling, 24 hours a day, 7 days a week

- Our **Hopeline®** offers immediate assistance to those facing serious illness and death.
- Sufferers of life-threatening illnesses are given the opportunity to talk anonymously to someone who understands them.

“When I answer the phone, I feel deeply honoured by the trust the caller has in me to assist them in their darkest time.”

- David (a volunteer)

A 100% Volunteer service staffed by those who have lived through illness

- Our phones are answered by kind, selfless volunteers who give their time to help those in need.
- Our volunteers have lived through the trauma of serious illness and understand the needs of callers.

Comprehensive training to ensure that every caller is given the best care

- All our volunteers go through extensive training before they are given a phone.
- Training involves undertaking many modules on specific issues such as cancer, grief, and depression.
- Each module is presented by an expert in that specific field.
- This training makes Life Goes On **Hopeline®** the absolute best service for those in need.

Life Goes On

24 hrs counseling: 1300 364 673 Office: 03 8629 1125
Web: www.lifegoeson.org.au Email: info@lifegoeson.com.au

Solicitation letter for treatment RRS



L11/473 Bourke Road, Melbourne VIC 3000
Office Phone: 03 8629 1125 Fax: 03 9848 6460
Counselling Service: 1300 364 673
www.lifegoeson.org.au

Dear ...,

My name is Joel Nathan. I am a cancer survivor and the founder of a not-for-profit organisation called Life Goes On. I know how important it is to have someone to talk to when you are struggling with a life-threatening illness. Life Goes On can be that someone.

We provide counselling support to those diagnosed with serious disease. We offer our service completely free. All our counsellors are volunteers who have been diagnosed with a life-threatening illness or have cared for a loved one who has.

Our volunteers undergo comprehensive training with multiple modules. Each module trains volunteers on a different issue, ranging from depression to grief. Unfortunately, we can only offer each module as we raise the money for it. If we cannot run a module, our volunteers cannot take calls on that topic.

Currently, we end up turning away many callers every month because several volunteers are awaiting training. We are writing to ask for your help in training these volunteers by making a donation. Each training module costs \$2000 to run. An anonymous donor has already agreed to cover 50% (\$1000) of the cost of our next module if we raise the remaining \$1000.

You are one of 2000 households that we are contacting to raise the \$1000. If we fail to raise the \$1000 from these 2000 households, we will not be able to run the module and will refund your money to you. If we raise at least \$1000, we will run the module. Any additional money we raise above \$1000 will be refunded to you. Your refund will be proportional to your contribution.

Please complete the donation form below and send it to us by 20 October 2009 using the reply-paid return envelope provided. All donations are tax deductible. We thank you for your kindness and generosity. Your donation will make a difference to the lives of our callers.

Yours sincerely,

Joel Nathan OAM
Founder: Life Goes On

"Talking to Life Goes On made all the difference ... and helped me cope in a way I never thought possible."

- Peter (a caller)

Please give now to fund one training module. We need to raise \$1000. If the full \$1000 is not raised, we will refund your money. The money we collect above \$1000 will also be refunded.

My Generous Gift: \$ _____

I am giving by: Visa MasterCard AMEX

Cheque (please make payable to 'Life Goes On')

Card Number: _____

Phone: _____

Cardholder Name: _____

Email: _____

Signature: _____ Expiry Date: _____

Opt out of our mail list: []