



Contributions for a Community Good: Results from a Field Experiment in India

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Abstract

This paper presents the results of a field experiment on voluntary contribution for a proposed *community good*. The experiment was conducted at village Sundarika, District South 24 parganas, in West Bengal, India. The proposed community good was a community medicinal plant garden. Solicitation letters, on behalf of a local Community Based Organization (CBO), were delivered to one hundred households by the experimenters with the request to contribute generously for the proposed garden. Sixty-five households contributed and a strong positive association is found between contributions and CBO membership on the one hand and landholding on the other.

Key words: Community good; Field experiment; VCM; social capital

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INTRODUCTION

Theory suggests that public goods, that are non-rival and non-excludable in consumption, generate a free-rider problem and the unwillingness of the consumer to reveal

his willingness to pay for such a good. The standard solution suggested in this case is the provision of such a good by the government and paid for by taxation.

A sub-class of such goods termed here as a community good motivates this paper. Such a good is exactly like a public good except for two important differences:

- i) The good is non-excludable to members of a community but excludable to outsiders.
- ii) It is impossible for the market to provide the good (same as a public good) and prohibitively costly for the government to do so.

The only way such a good can be provided is if members of a community come together and contribute time, money or other resources to create the good (or service). Examples of such goods could be social activities such as a neighborhood crime watch, organizing a free medical check up camp, monitoring the functioning of the local administrative bodies and so on. It becomes difficult to exclude community members owing to spatial proximity of the members to the community good as well as due to high social costs of exclusion. However, we would like to differentiate these types of goods from Common Property Resources (CPRs) as CPRs already exists, being provided by nature, but community goods are to be provided by collective participation of the community members. These goods (and services) being scattered and varied are beyond the scope of the State authorities. Here community is defined as a social or anthropological group. It may constitute residents of a village, employees of a factory, and students of a college and is self and peer recognized.

The creation of community goods through community participation involves implementation of a joint course of action that leads to a mutually beneficial outcome. But given non-excludability of community goods, self-interested individuals would prefer to free ride on others' efforts and community participation may not be forthcoming. But even if we assume that individuals have other-regarding

preferences such as reciprocity, altruism, fairness and so on or that there is complementarities in consumption, community participation may fail to take place due to lack of coordination among the different members of the community. Bowles (2005) points out that an important reason for coordination failure is that one's decision about how to play depends upon one's beliefs about how others will play, and the way people cope with this indeterminacy may result in a vicious circle around a sub-optimal outcome. Dasgupta (2005), makes a similar point by saying *failure to cooperate could be due simply to collection of unfortunate self-confirming beliefs, nothing else*.

Thus, successful implementation of any joint actions or community participation depends on mutual trust and cooperation among the members of the community. In the literature on social networking, this mutual trust and affection among the members of a community has been termed as *social capital*. It is held that social capital is an increasing function of the frequency of interactions among the members since this increases attachment among the members.

In this paper, we describe a field experiment conducted by the authors at a village called Sundarika, in the district of South 24 parganas, West Bengal, India. The experiment is related to setting up a community medicinal plant garden by a Community Based Organization by soliciting donations from the community members. Land had already been procured by the CBO. There is a rapidly growing literature on charitable fund-raising that discusses different experiments and analyzes various aspects of fund-raising. Here we briefly discuss some of the important results.

Andreoni (1998) suggests that if leaders can provide enough seed money to cover the threshold level of the public fund then the zero-equilibrium situation can be avoided. He considers a public good with a threshold level of investment and unless the charity is sure to reach the threshold, individuals do not have any incentive to give and the outcome may well be zero contribution equilibrium. List and Lucking-Reiley (2002) have conducted field experiments on charitable fund-raising by varying seed-money and observed that there is a positive association between seed-money and contribution. Frey and Meier (2004) found supporting evidence of conditional giving in fund-raising field experiments. Students at the University of Zurich were randomly informed either that many other students (sixty-four percent of the students) have contributed to the fund or few other students (forty-six percent of the students) have contributed. It was found that the pro-social behavior was higher among students who were informed about many others pro-social behavior. Charitable fund-raising is also affected by the relative price of giving. Meier (2005) shows that willing to behave pro-socially increases when there is matching of people's donation. This is because matching funds reduces the relative price of giving.

Andreoni (2006) explores the possibility of signaling the quality of a charity through leadership giving. If the leader can deceive the followers that the charity is of higher quality than it actually is, then the followers will be inspired to make high contributions, which will benefit the leader. Thus the leader must make an extra large contribution to send a credible signal. This gives rise to a war-of-attrition game for who will bear the cost of signaling. In equilibrium, under the assumption that the cost of obtaining information about quality is the same for all, the wealthiest shall emerge as the leader as the opportunity cost for signaling is the lowest for her. However, if the cost of obtaining information is heterogeneous and the cost is private knowledge to each individual, then there will be delay in emergence of the leader, as each would play a strategy of waiting. Here the government or a private foundation can act as a leader to signal the high quality of the charity.

In the next section we present the objectives of the paper followed by a section on the design of the field experiment. In the fourth section the result of the experiment is presented along with the results of a regression model. Finally the paper ends with a concluding section.

1. OBJECTIVE OF THE EXPERIMENT

The present field experiment is linked to a session of an experiment in a classroom setting, which was a simple public goods game with Voluntary Contribution Mechanism (VCM). This session had thirty members of a Community Based Organization (CBO), *Sundarika Mitali Sangha*, in the village Sundarika. In that experiment the subjects were paid Fifty Rupees (a little over one US \$) each, as initial endowment, and asked to contribute towards a group fund. The accumulated group fund was then doubled by the experimenters and divided equally among the subjects. There were four treatments in the experiment and before the beginning of each treatment (consisting of a single period) the subjects were paid the initial endowment.

In one such treatment in the above classroom-type experiment with thirty subjects (results reported in *Economic and Political Weekly* (results reported in *Economic & Political Weekly*, 2009) the subjects were asked to contribute from their endowments towards a real-life ongoing social forestry project in the village. The experimenters promised to contribute an additional amount equal to the total contribution in this treatment towards the social forestry project fund to the CBO. It was found that in this treatment all subjects contributed their entire endowment to the project fund. This we found was remarkable. Here it may be important to note that the common characteristic of the subjects in this classroom-type experiment were that they belonged to the same CBO and had a history of community participation.

Considering this particular treatment as the reference treatment, the objectives of the experiment were i) to examine whether association with the CBO was in any way responsible for the strong commitment towards community shown by the members; and ii) to elicit any other factor that may have a positive impact on contribution for a community good. These could not be ascertained from the above classroom experiment because in that experiment the contributions were anonymous as a treatment condition and also because all the participants belonged to the same CBO.

2. DESIGN OF THE FIELD EXPERIMENT

Before we actually describe the design of the field experiment conducted by us it may be interesting to note the methodological differences between field experiments and lab experiments. Field experiments (now also called ‘natural experiments’) are conducted using a situation that was happening naturally i.e. on its own, without intervention from the investigators. All that the experimenters do is to build in one additional stimulus in the naturally occurring phenomenon. The point is to study the effect of this additional stimulus on the outcome of the experiment. Consequently, in all field experiments any effect of unequal socio-economic and political distributions remain as they would have remained even in the absence of the stimulus provided by the investigators. Consequently, there are both advantages and disadvantages of conducting field experiments. Field experiments allow experiments to be conducted with real goods and real subjects with wide range of demographic characteristics (i.e. non- student subjects). It also allows the natural experience or acquired norms of the subjects to come into play in decision-making where induced values are not put into use. (Harrison & Rutstroem, 2001) In fact these may increase the external validity of the field experiments. But this is achieved at the cost of some loss of experimental controls arising out of variability in the socio-economic and demographic backgrounds of the subjects as well as their experiences.

During our visits to the village for the classroom experiments we learnt that the CBO was planning to create a community medicinal plant garden¹ whose costs would be borne by soliciting contributions from the villagers. Land had already been procured for the purpose. The land was in four or five small pieces, adjacent to the office of CBO. The CBO was given user right of the plots and it was an informal arrangement. This was a benevolent gesture and there is no evidence to suggest that the owners of the plots of land enjoyed any special

power in management of the medicinal garden. However, the collection of donations for the planting of the garden was yet to begin. We seized this opportunity. The leaders of the CBO were approached with a proposal of collecting the contributions from the villagers for the proposed medicinal plant garden on their behalf.

We started by writing a solicitation letter (given in appendix) to the villagers on behalf of the CBO requesting them to contribute as much as they could afford towards the proposed medicinal plant garden. In the letter the issue of increasing cost of medicines and prevalence of preventive diseases in the area were addressed. The solicitation letter was written in Bengali and distributed randomly to one hundred households of the two hundred and twelve households in the village. This was done by visiting the households individually and one member of the CBO accompanied the investigators. In the letter it was clearly stated that the money collected would be used to buy medicinal plants, compost and spent for maintenance of the garden.

The field experiment was a simple public goods experiment with voluntary contribution but no initial endowment was provided. That is, the subjects had to contribute from their own income. The solicitation letter contained a cost estimate of creating the medicinal garden as well as for its fencing. The subjects were told that the experimenters would contribute an amount equal to the total collection towards the same project. This was done to provide an additional incentive to contribute to the villagers, most of whom are quite poor. The purpose of providing the money by the experimenters in this experiment was different from that in the classroom experiments. The purpose in the classroom experiment was to capture the return from investment in the community good. But here the purpose was to provide additional incentive to contribute towards the medicinal plant garden which will come into existence through provision of additional funds by the investigators, provided they too contribute. It was clear to us from the beginning that it would not be possible for the selected households only to contribute for the entire garden. However, if the subjects also believed that their contribution would be inadequate for the garden, they might refrain from making any contribution. Here, it should also be noted that the proposed community good is scale-neutral implying that, lower contributions would provide for a smaller garden (even though, some minimum investment was required to start it at a meaningful level). Therefore lump-sum assistance was not declared because that could have had a negative impact on voluntary contribution.

¹Endnote: The people in India commonly use an alternative medicinal method called *ayurveda* where medicines are derived or extracted directly from herbs and plants. The making of the medicines and their applications and uses are common knowledge in India. But such plants grow in the wild and are not concentrated in one place, hence not easily available.

The households were requested to deposit their contributions at the CBO office within one month. Each contributor was given a receipt for the donation and a duplicate of this was kept at the office. A socio-economic survey sheet was enclosed with the solicitation letter. The households were requested to return the filled-up survey sheet even if they did not contribute for the garden.

Table 1
Distribution of Contribution by Households

Contribution (Rupees)	0	2	3	5	10	20	30	50	100	mean	Std.-dev.
Number of Households with CBO members	3	0	0	5	1	0	1	17	1	35.53	24.47
Number of Households without CBO members	32	5	1	7	19	3	1	4	0	7.33	11.97
Number of Households	35	5	1	12	20	3	2	21	1	15.43	

More than fifty percent of the households did contribute for the community garden. The total contribution by the villagers was 1543 Rupees and the distribution is shown in Table 1. The households can be broadly classified as those having some members associated with the CBO and those who had none. There were 28 households belonging to the first group and 72 households in the second group. The distributions of contribution by these two groups have been shown in the second and the third rows. From the table it is clear that the former group has a higher average contribution as well as a higher standard deviation. But the latter distribution is concentrated around a low mean value. It should also be noted that the first 28 households contributed two-third of the total while 72 households contributed the remaining one-third.

A second round of survey was conducted among the 20 households who have only submitted the survey sheet but did not contribute. The remaining 15 households were not approached because they had already informed, during the first survey, that they would neither contribute nor fill-up the survey form. The second survey was to find out the reasons of non-contribution. Two reasons were put forward by the households;

Reason 1: Poor financial condition,

Reason 2: Do not believe that the garden will actually be set up.

Table 2 shows the results of the second survey

3. RESULTS

Of the one hundred households to whom the solicitation letters and survey sheets were delivered, only sixty-five households contributed. Out of the sixty-five households fifty-five households returned the survey sheet. Of the thirty-five non-contributing households, twenty households returned the sheet. Thus we had information on seventy-five households.

Table 2
Reasons for Non-contribution

	Reason 1	Reason 2
Households with CBO membership	2	1
Households without CBO membership	4	13

From Table 1 and Table 2 we find that out of the 35 non-contributing households 32 do not have any association with the CBO. Of the 20 households surveyed, 17 were without membership of the CBO and 13 of them did not have much faith that the project will be actually be implemented.

To investigate the determinants of the probability of high donation, that is contribution greater than five Rupees, a Probit model was estimated. The marginal effects are presented in Table 3 below. From the table it is clear that the last three variables are statistically significant at five percent level but monthly medical expenditure has a negligible impact. McFadden index is 0.19486 and Ben./Lerman index is 0.62188.

Table 3
Marginal Effects of Determinants of Contribution

Variable	Coefficient	[P z > z]
Constant	-0.2764	0.0653
Income	-0.5487	0.1954
Medical Expenditure	0.0017	0.0377
CBO Membership	0.3887	0.0001
Landholding	0.2635	0.0354

Next, to examine the impact of different socio-economic factors on the actual level of community contribution, Equation 4.1 was estimated.

$$C = 6.73 - 0.001 x_1 + 0.0133 x_2 + 10.57 z_1 - 2.3168 z_2 + 35.76 s \quad (4.1)$$

(1.41) (-1.25) (0.8105) (2.802) (0.6001) (8.505)

Here C is household contribution that depends on household income x_1 , household monthly medical

expenditure x_2 , dummy variables z_1 representing land ownership (landowner=1, landless=0), z_2 representing

house type (concrete roof=1, thatched roof=0) and s representing membership (member=1, non-member=0) in the CBO. The figures in parenthesis are t-statistic and adjusted R-square is 0.545529. From the estimated relation it is seen that the coefficients for landholding and CBO membership are not only statistically significant but take large values. The coefficient for household income had an unexpected sign.

CONCLUSION

The results of the field experiment show that the average contribution by the members of the CBO was higher than that by the non-members. Moreover, CBO membership and landholding were found to be statistically significant determinants of contributions. However, to interpret the results of the field trial it has to be treated in conjunction with the results of the earlier classroom treatment.

Here we should note that the difference between this experiment and the earlier treatment is that in this experiment the members participated along with non-members. We should also note that the medicinal plant garden was conceived and was going to be implemented by the CBO. Therefore, it would not be out of place to assume that the CBO members had a natural inclination towards making sure that the medicinal plant garden was set up (even at the minimum level). Moreover, their association with the CBO allowed them to have more information about the quality of the garden, which the non-members may not have had (at least that is what was revealed in the second round of survey by most respondents). Thus the incentive to contribute by the members may have been to avoid the zero equilibrium, as in Andreoni (1998), and they had more information about the quality of the garden than the non-members.

However, even with an incentive to avoid a zero equilibrium situation, the members could have free ridden on other members' effort. This did not take place probably because their past experience of successful community participation has helped them to develop a pro-social disposition towards community participation and a mutual trust among themselves. According to Baland and Platteau (1996, p.345) [*P*]ast experiences of successful collective action is an important social capital in a convention of cooperation that provides a focal point from which it may spread by analogy. The CBO had a history of successful community service through members' participation, like carrying out social forestry, arranging blood donation camps, arranging free medical check-up, etc. Thus we may conclude that their past experiences of successful cooperation may have triggered a future expectation of the same.

But could it be that higher contribution was triggered by some sense of shame or embarrassment on being

revealed a free rider or some threat of social sanctions? This appears unlikely. This is because if we refer to the outcome of the referred treatment in the classroom experiment where anonymity was strictly maintained, the performance was no worse.

Landholding, too, is important because the landholders tend to be usually located in that place for long periods and may have had a special attachment towards the community. Glaser, Laibson, Sacerdote (2002), show that there is a negative relationship between expected mobility and social capital. This is because when an individual is likely to leave his neighborhood or community, he or she is less likely to be interested in developing social capital. In the same paper it is also shown that there exists a strong correlation between social capital and homeownership. According to the authors, owing to high transaction costs in the real estate market, homeowners tend to be less mobile and thus develop a high level of social capital. Now, it would not be difficult to extend similar arguments in case of agricultural land-ownership. Thus those who have land are also likely to be less mobile and develop high social capital. In fact, those who have agricultural land have the additional incentives to invest in social capital to derive community protection.

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APPENDIX 1

Letter of Solicitation (Translated from Bengali)

27.12.05

Dear Friends,

We wish you in advance a Happy New Year, 2006. Let us all celebrate this New Year in a slightly different way.

You must be aware that the price of medicine and expenditure on health are increasing every day and it is really difficult for middle class people to meet such expenditure. A survey carried out by Jnan Chandra Ghosh Polytechnic and the medical camps organized jointly by Jnan Chandra Ghosh Polytechnic & Sundarika Mitali Sangha, revealed that most of the diseases prevalent are preventive in nature. With a little care it is possible to avoid such diseases. Sundarika Mitali Sangha has taken up a project to set up a medicinal garden and they have already asked for help from different agencies and individuals. The Department of Economics, Jadavpur University, can provide some help from one of its Research Projects.

We are also glad to inform you that land for the proposed garden has already been obtained. But land and financial help from Jadavpur University are not enough for the proposed garden. So we request you on behalf of Sundarika Mitali Sangha to donate as much as possible for the project. The estimated cost for the proposed garden is Rs. 12,000 and according to the condition of the project, the University will donate just as much as is contributed by you.

The members of Sundarika Mitali Sangha will collect your donation against money receipts. We hope you will stand beside the noble effort taken by the members of Sundarika Mitali Sangha.

Yours faithfully,

Gautam Gupta

APPENDIX 2

(Translated from Bengali)

Field Experiment on Community Participation

Survey Sheet

In this survey we shall collect some information about you. The information collected shall be used for our research and will not be made public. We earnestly request you to provide us with correct information as far as possible.

1. Name;
2. Address:
3. Do you own land? Y/N
- 4a. Your Profession _____
- 4b. Your average monthly family income _____.
5. Your average monthly family medical expenditure _____
6. Have any member of your family been seriously ill or died in the last few months? Y/N
7. Are you interested in growing medicinal plants? Y/N
8. How would you describe your house:
 - Kutcha (thatched roof)
 - Pucca (concrete roof)