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14 August 2007

Online at https://mpra.ub.uni-muenchen.de/4469/
MPRA Paper No. 4469, posted 14 Aug 2007 UTC

# Public-private Partnerships in Micro-finance: Should NGO Involvement be Restricted?

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August 14, 2007

**Abstract**

This paper examines public-private partnerships in micro-finance, whereby NGOs can help in channelizing credit to the poor, both in borrower selection, as well as in project implementation. We argue that a distortion may arise out of the fact that the private partner, i.e. the NGO, is a *motivated* agent. We find that whenever the project is neither too productive, nor too unproductive, reducing such distortion requires *unbundling* borrower selection and project implementation, with the NGO being involved in borrower selection only.

*Keywords:* Public-private partnerships; micro-finance; motivated agent; NGO.

*JEL Classification:* E62, G21, G28, H5, O17.

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# 1 Introduction

Micro-finance is an important tool in fighting poverty.[1] Scaling up micro-finance operations, one of the central challenges facing the micro-finance movement, is, however, often constrained by a lack of funds, particularly when banks and recipients are not well connected. One possible solution is to use public-private partnerships[2] in micro-finance, whereby private agents, namely non-governmental organizations (henceforth NGOs), link government banks to micro-finance recipients.[3] Interestingly, under the self-help group (SHG) linkage program in India, the NGOs play precisely this role.[4]

The United Nations Interagency Committee on Integrated Rural Development for Asia and the Pacific (1992) (henceforth UNICIRDAP) provides a formal characterization of NGOs as organizations with six key features: they are voluntary, *non-profit*, service and development oriented, autonomous, *highly motivated and committed*, and operate under some form of formal registration [see also Besley and Ghatak (1999) for an extensive list of features

[1] A relatively recent and comprehensive survey of the literature is provided, among others, by Aghion and Morduch (2005).

[2] We refer the readers to Maskin and Tirole (2007) for a succinct introduction to the literature on public-private partnerships.

[3] Bennet and Iossa (2005) study institutional optimality in terms of private-public ownership structure for building and managing facilities that provide collective services, with a focus on recent government policies in Western Europe and North America. See also Hart (2002) on boundaries between private and public firms in advanced capitalist economies.

[4] In fact, the SHG linkage program is rapidly turning into the dominant micro-finance paradigm in India (Basu and Srivastava, 2005). The number of self help groups linked to banks has increased from 500 in the early 1990s, to over 8,00,000 by 2004. The program of course has many other interesting aspects, e.g. group-lending and an emphasis on savings (see, e.g. Aniket (2007) and Roy Chowdhury (2007)). For the sake of focus we abstract from these aspects in this paper.

and functions of NGOs operating across the globe].

In our framework, the NGO can potentially provide two services. First, it can identify good, i.e. relatively more efficient, borrowers. Second, it can help borrowers implement their projects more efficiently. These arise because of the closeness of NGOs to their clientele, something which the government, or profit-seeking organizations lack.[5] In fact, Cernea (1988) reports a World Bank survey that indicates a high correlation between NGO involvement and success of Bank-financed projects. Thus, in contrast to some of the public-private literature, it is *ex post* efficient to involve the NGO in *both* these aspects.

The essential trade-off in the model arises because the NGO is a motivated agent[6] who maximizes the aggregate utility of the villagers. This is a central theme in the literature on NGOs. UNICARDAP (1992), for example, says that "the rural poor are given higher priority by NGOs" (page 20) as compared to governments.

Given their motivations, from the view-point of the NGOs the more efficient borrowers are 'less needy' (in a sense made formal later on), so that maximizing aggregate borrower utility may involve channelizing the loan to the less efficient borrowers. Doing so becomes more attractive if the NGO is also involved in the project implementation stage, since in that case the NGO can help out the less efficient borrowers with their projects, thus reducing the inefficiency arising out of the loan going to the less efficient borrowers. With full NGO involvement, resolving this problem requires the rate of inter-

[5]In the Indian SHG-linkage program, for example, the idea is to utilize NGOs who are already active in the area.

[6]Besley and Ghatak (2005) define motivated agents as those "who pursue goals because they perceive intrinsic benefits from doing so" and give examples of such agents as doctors, researchers, judges and soldiers.

est to be so low, as to make lending infeasible for the banks. We show that this happens whenever the project is neither too efficient, nor too inefficient. Under these parameter conditions, implementing the first best therefore calls for restricting NGO involvement to borrower selection alone.

The rest of the paper is structured as follows. In Section 2 we provide a formal description of the environment. In Section 3 we establish and discuss our main result. The paper concludes in Section 4.

# 2 The Economic Environment

A village consists of two individuals (henceforth villagers) who are about to start a project each. Each project requires a start-up capital of 1 unit. The villagers have no money or assets, and hence require to borrow this amount from a bank which has limited resources and can finance only one such project. We assume that the opportunity cost of capital is 0 and denote $r \geq 1$ as the interest factor. Further, there is limited liability.

Let $\theta \in \{h, l\}$ denote the skill level of a villager, with one of the villagers being high-skilled ($h$ type), and the other one being low-skilled ($l$ type). This difference in skill is manifested in two ways. First, a high skilled villager has a better outside option in so far as his reservation utility is $u > 0$, while that of the low skilled villager is 0. Second, the project can be risky, yielding $X$ ($> 1$) if it succeeds, and 0 if it fails. We assume that an $h$ type villager is always successful, while an $l$ type villager has a success rate that is less than 100 percent. The probability of success for a low skilled villager is $\lambda'$ if the NGO is involved in project implementation, and $\lambda$ otherwise, where $1 > \lambda' > \lambda > 0$. Thus the success probability of the $l$ type is higher if there is NGO involvement. Moreover, output is observable.

As discussed earlier, the lending environment includes a *non-profit* and motivated NGO, who may be involved in two stages, 0 and 1. Stage 0 requires the NGO to choose the villager to whom the loan is given out. This allows the greater knowledge of the NGOs regarding borrower types to come into play. In stage 1, the NGO may be directly involved in implementing the project along with the selected villager. If the loan is sanctioned to a villager and she repays $r$ back to the bank, the NGO receives a fraction $r\beta_0$ if not involved in stage 1, and $r\beta_1$ if involved in stage 1.[7]

At the helm of this environment sits the government who sets up the institution denoted by the triple $(I, r, \beta_I)$, where $I = 0$ (respectively 1) implies that the NGO is not involved (respectively involved) in stage 1.

We assume that all agents are risk-neutral expected utility maximizers. Given this, the payoffs of the various agents are as follows. In the absence of stage 1 involvement by the NGO, the villager who receives the loan has a payoff equal to $(X - r)$ if she is high skilled, and $\lambda(X-r)$ otherwise. Whereas if there is stage 1 involvement by the NGO, then these payoffs are $(X - r)$ and $\lambda'(X - r)$ respectively. A villager who does not obtain the loan earns her reservation utility. We assume that $X - 1 > u$, otherwise the problem is not interesting.

The NGO only cares about the aggregate utility of the borrowers. Thus the utility of a NGO who selects a villager of skill $h$ is $X - r$ irrespective of whether there is stage 1 involvement or not. While if the selected villager is low skilled, then the NGO's utility is $\lambda'(X - r)+u$ with stage 1 involvement, and $\lambda(X - r) + u$ otherwise.

[7]This income is used by the NGO to run its day-to-day activities. Allowing for this payment to the NGOs, however, does not affect the analysis in any way. All our results go through even if $\beta_0 = \beta_1 = 0$.

We then consider the payoff of the bank. Under an institution $I$, it receives $(1-\beta_I)\,r-1$ if the selected villager is high skilled and $\lambda\,(1-\beta_I)\,r-1$ if the selected borrower is low skilled.

# 3 Institutional Structure and Implementing the First Best

We first study the behavior of the NGO. The following notations are helpful: $\pi_v^\theta$ is the payoff of the villager of skill $\theta$; $\pi_N$ is the payoff of the NGO; finally, $\pi_B$ is the payoff of the bank.

**Institution with stage 1 involvement:** Consider the institution $(1, r, \beta_1)$. The NGO will select a high-skilled borrower if and only if $X - r > \lambda'(X - r) + u$, that is

$$r < \tilde{r} \equiv X - \frac{u}{1-\lambda'}.$$

We thus have

**Observation 1.** Suppose there is stage 1 involvement and the NGO selects a borrower in order to maximize its own utility. Then:

1. For $r > \tilde{r}$, $\pi_v^l(1, r, \beta_1) = \lambda'(X - r)$, $\pi_v^h(1, r, \beta_1) = u$, $\pi_N(1, r, \beta_1) = \lambda'(X - r) + u$ and $\pi_B(1, r, \beta_1) = \lambda'(1 - \beta_1)r - 1$..
2. For $r \leq \tilde{r}$, $\pi_v^l(1, r, \beta_1) = 0$, $\pi_v^h(1, r, \beta_1) = (X - r)$, $\pi_N(1, r, \beta_1) = X - r$ and $\pi_B(1, r, \beta_1) = (1 - \beta_1)r - 1$.

Next we examine the

**Institution without stage 1 involvement:** The NGO will select a borrower of skill $\theta = h$ if and only if $X - r > \lambda(X - r) + u$, that is

$$r < \hat{r} = X - \frac{u}{1-\lambda}.$$

Hence, the payoffs to the involved parties are given by

**Observation 2.** Suppose there is no stage 1 involvement and the NGO selects a borrower in order to maximize its own utility. Then:

1. For $r > \hat{r}$, $\pi_v^l(0, r, \beta_0) = \lambda(X - r)$, $\pi_v^h(0, r, \beta_0) = u$, $\pi_N(0, r, \beta_0) = \lambda(X - r) + u$ and $\pi_B(0, r, \beta_0) = \lambda(1 - \beta_0)r - 1$.

2. For $r \leq \hat{r}$, $\pi_v^l(0, r, \beta_0) = 0$, $\pi_v^h(0, r, \beta_0) = X - r$, $\pi_N(0, r, \beta_0) = X - r$ and $\pi_B(0, r, \beta_0) = (1 - \beta_0)r - 1$.

The government maximizes welfare subject to a non-negative profit constraint for the bank, where social welfare equals the sum of the aggregate utility of the villagers, the payoff of the bank and the *monetary income* of the NGO. Thus while the government cares about the monetary income of the NGO, it does not care about the utility externality enjoyed by the NGO.[8]

Suppose that a high skilled villager is selected. Then, the selected villager earns $X - r$, the other villager earns 0, the bank earns $(1 - \beta_I) r - 1$, and the NGO earns $r\beta_I$. The social welfare is then

$$(X - r) + 0 + (1 - \beta_I) r - 1 + r\beta_I = X - 1. \tag{1}$$

Similarly, if a low skilled villager is selected then she earns $p(X - r)$, where $p$ is the probability of success and equals $\lambda$ or $\lambda'$ (depending upon whether there is stage 1 involvement or not), the other villager earns $u$, the bank earns $p(1 - \beta_I) r - 1$, and the NGO earns $p\beta_I r$. Hence the social welfare in this case is

$$p(X - r) + u + p(1 - \beta_I) r - 1 + p\beta_I r = pX + u - 1. \tag{2}$$

[8]Our analysis, not reported here, suggest that very similar results go through even if the government did take this into account. While the results will be qualified, the distortion arising from the objectives of the government and the NGO being non-aligned will still exists.

In order to focus on the case of interest, we assume that the productivity of the project is neither too large, nor too small.

**Assumption 1.** $\max\left\{\frac{u}{1-\lambda'}, 1+\frac{u}{1-\lambda}\right\} < X < 1+\frac{u}{1-\lambda'}$.

Notice immediately that since $\lambda' > \lambda$, Assumption 1 is not vacuous. We begin by solving for the *first best outcome* under this assumption. Since $X > \frac{u}{1-\lambda'}$, it follows that $X - 1 > \lambda' X + u - 1 > \lambda X + u - 1$. Hence by (1) and (2) we know that the social welfare is maximized when the high skilled villager gets the loan, irrespective of whether there is stage 1 involvement or not.

We then consider *implementing* this outcome. First consider an institution with stage 1 involvement. The NGO selects $\theta = h$ if and only if $r \leq \tilde{r} \equiv X - \frac{u}{1-\lambda'}$. Also, the government must ensure that it is feasible for the bank to sanction the loan. This would require $(1-\beta_1)\, r \geq 1$, that is $r \geq \frac{1}{1-\beta_1} \geq 1$. Hence, to implement the first best it is necessary and sufficient that

$$\frac{1}{1-\beta_1} \leq r \leq X - \frac{u}{1-\lambda'}. \tag{3}$$

Notice, however, that Assumption 1 implies that $X - \frac{u}{1-\lambda'} < 1$, so that $r < 1$ which violates the bank's feasibility condition.

Now consider an institution without stage 1 involvement. An analogous argument establishes that implementing the first best now requires

$$\frac{1}{1-\beta_0} \leq r \leq X - \frac{u}{1-\lambda}. \tag{4}$$

Given Assumption 1, $X - \frac{u}{1-\lambda} > 1$. Consequently, there exist $r$ and $\beta_0$ such that (4) is true.

Finally, given that the bank and the government does not know the identity of the borrowers, not involving the NGO in stage 0 cannot be optimal,

since in that case the loan will go to the low skilled villager with a positive probability.

Summarizing the above discussion we obtain our main result.

**Proposition 1.** *Suppose Assumption 1 holds.*

*(i) The first best involves sanctioning a loan to the high-skilled borrower.*

*(ii) The first best can be implemented only through an institution without stage 1 involvement. Any* $r$ *and* $\beta_0$ *satisfying* $\frac{1}{1-\beta_0} \leq r \leq X - \frac{u}{1-\lambda}$ *implements the first best.*

Proposition 1 above illustrates the central trade-off discussed in this paper. Since the NGO maximizes the aggregate utility of the villagers, it may have an incentive to channelize loan to the low-skilled villager. This is because the high-skilled villagers are "less needy", in the sense that they have a higher reservation utility, i.e. $u > 0$. The incentive for such socially sub-optimal selection is higher in case the NGO is also involved in project implementation since in that case the NGO can utilize its own expertise to increase the productivity of the low skilled villager. Due to this, if the NGO is allowed to get involved in stage 1, implementing the first best requires a very low interest factor. In that case the objectives of the government and the NGO get aligned, so that the loan goes to the high skilled villager. At such a low rate of interest, however, equation (3) implies that it is impossible to meet the feasibility condition for the bank. This follows since from A1, $X$ is relatively small. Hence under the appropriate parameter values the optimal project design is to not involve the NGO in the second stage, even though doing so is *ex post* efficient.

Note that this result has some implications for Hypothesis 2 in Besley and Ghatak (1999). It states that "NGO provision will be more prevalent

in projects where the NGO cares more about the beneficiaries." Proposition 1 in this paper, however, suggests that the argument for restricting NGO participation may get stronger, as the NGOs become more motivated. Of course, in contrast to Besley and Ghatak (1999), we are concerned with the provision of credit, rather than a public good, and in implementing the first best.

We then briefly discuss the role of Assumption 1. Suppose $X$ is large in the sense that $X > 1 + \frac{u}{1-\lambda'}$ so that from (1) and (2) it follows that the first best still requires sanctioning the loan to the high skilled villager. Hence, one can always find $r$ and $\beta_I$ in order to satisfy both (3) and (4) so that the first best can always be implemented irrespective of institutional design. This is because with a very high $X$, the government can always find an interest factor which is low enough to correct the incentives of the NGO, but high enough to ensure that the bank sanctions the loan. On the other hand, if $X$ is sufficiently low in the sense that $X < \frac{u}{1-\lambda'}$, then from (1) and (2) it follows that the first best involves giving the loan to the low-skilled villager, so that the trade-off between social welfare and aggregate villager utility, which is the focus of this paper, goes away.[9] Finally, if $\frac{u}{1-\lambda'} < X < 1 + \frac{u}{1+\lambda}$, then no mechanism can implement the first best (since satisfying either eqns. (3) or (4) will imply that the bank's feasibility condition will be violated).

Our analysis therefore suggests that full involvement of NGOs is optimal if the projects are either very productive or very unproductive, while there are intermediate cases where it is socially optimal to keep the NGOs away from project implementation. Under the assumption that project productivity is linked to the average income level of the villagers, our analysis suggests that

[9]This is in line with Hypothesis 3 in Besley and Ghatak (1999) and some empirical evidence reported in Farrington and Lewis (1993).

*there should be full involvement of NGOs in villages that are either relatively rich, or relatively poor. Otherwise, NGO involvement should be restricted to borrower selection alone.*

Rather interestingly, the result goes through even if two *different and independent* NGOs are involved in the two stages. Since the NGOs are only interested in aggregate borrower welfare, borrower selection by the first NGO is going to be biased as long as it knows that the inefficient borrowers are going to helped out in the project implementation stage. Thus this problem cannot be resolved by involving two different NGOs.

# 4 Conclusion

This paper examines public-private partnerships in micro-finance, whereby NGOs are used for channelizing credit to the poor. We find that there may be a distortion arising out of the fact that the NGO is a motivated agent, and its interest may diverge from that of the social welfare maximizer. Further, it turns out that controlling such distortion involves *unbundling* borrower selection and project implementation, with the NGO being involved in borrower selection alone.

Our results have implications for two different, but related literatures. As argued by Maskin and Tirole (2007), in the context of public-private partnerships, an important question is whether different stages, e.g. construction and operation, should be bundled or not. Arguments against bundling are, broadly speaking, two. First, an agent who is efficient in one of the stages, need not be efficient in the other. In that case involving the same agent in both stages is sub-optimal. Second, since the private agents are *profit-maximizers*, their choice may involve selection of poor quality (which may

be cost-efficient). In contrast, we consider a private agent who is *motivated*, and it is this which creates the distortion in our framework. Interestingly, Maskin and Tirole (2007) analyze a scenario where the *government officials* may be socially motivated (among other things), and then investigate the role of spending caps in controlling the resultant distortion.

Second, our analysis is of relevance to the micro-finance literature. In this context, the argument against involving NGOs sometimes revolve around the fact that they may be self-serving. Our analysis demonstrates that such self-serving behavior (if it exists), is not the only possible source of distortion. Our framework identifies a possible problem that may arise out of the fact that NGOs may be motivated.[10] From a policy perspective our analysis suggests keeping NGOs out of project implementation activities in villages that are neither too poor, nor too rich, and involving them fully otherwise.

[10]In the context of the Indian SHG-linkage program, Basu and Srivastava (2005) also argue that the fact that NGOs may value social objectives over commercial ones, may be problematic.

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