



# Repayment and exclusion in a microfinance experiment<sup>☆</sup>



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## ABSTRACT

Microfinance groups often engage in a variety of collective activities not directly related to credit. We design a three-stage repayment game to examine how the existence of these ancillary activities affect repayment behavior and group attrition. In the first stage, the group borrows under joint liability, each member undertakes a risky project and decides whether or not to contribute to loan repayment. In the second stage, contributing members can vote to expel others from the group. Those remaining engage in a public goods game in the last stage. The public good game represents the non-credit collective activity that members can be involved in. We identify repayment equilibria with and without exclusion and show that exclusionary equilibria are most likely when loans are large and there is significant within-group heterogeneity in the gains from the public good. Results from a laboratory experiment that embodies the main features of the repayment game are consistent with the theoretical predictions. Individual decisions to contribute to loan repayment depend on gains from the public good and groups with the largest debt burdens have the highest rates of default and attrition.

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## 1. Introduction

Many microfinance groups engage in collective activities not explicitly related to credit. For example, the rules of Grameen membership specifically mention the obligation to help others in difficulty as well as to take part in all social activities collectively.<sup>1</sup> Members of Self-Help Groups, the dominant form of microfinance in India, often participate in village governance, school nutrition programs and a range of other productive and social activities. In Kenya, about one fourth of the

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<sup>1</sup> These are 2 of the 16 decisions that each member must commit to on joining the Grameen Bank.

Roscas in Kibera invest in long term projects, health insurance or self-employment schemes (Anderson and Baland, 2002).<sup>2</sup> Similarly, many microfinance members of the Uganda Women's Finance Trust are also members of a popular indigenous association in Uganda, *Munno Mukabi* (which translates to *Friend In Need Associations*). The *Munno Mukabi* helps organise functions such as burials, weddings, children's graduations and baptismal parties (Sebstad and Cohen, 2001). In a typical *Munno Mukabi* members pledge to make their labor available whenever a member faces a crisis or holds a celebration (CGAP, 2000). Often a budget is agreed upon and split among members. The money is used to purchase assets, such as large saucepans and lanterns, required for most household social functions that draw large numbers of people from the *Munno Mukabi*. These collective activities can therefore be very beneficial both in terms of protecting members against shocks and in sharing information and knowledge about other non credit programs. For many, continuing to participate in these ancillary activities could be a good motivation to repay their credit in the microfinance program. Analogous to the programs described above, the *Kudumbashree* program in Kerala encourages its members to engage in collective farming and also provides a platform for micro entrepreneurs funded through the program to market their products.

The multi-faceted functions of these groups provide them with the capacity to sanction members who default on their loans by excluding them from valuable collective activities. Such informal enforcement mechanisms have been shown to be effective in a variety of historical and contemporary contexts where formal institutions are weak (Greif, 1993; Putnam et al., 1994; Aoki, 2001; Platteau, 2006). In the group lending literature, Besley and Coate (1995) first modelled the relationship between social sanctions and repayment rates. Subsequent research has provided insights on the enforcement capacity of exogenous sanctions under alternative informational assumptions and contractual arrangements.<sup>3</sup>

Our main aim in this paper is to explore the role of collective activities in encouraging repayment in microfinance groups. As the literature on microfinance suggests, there are many reasons why members would repay loans; for example to comply with credit contracts that are enforceable, to avoid social sanctions and to ensure access to future loans. While these reasons for repayment are important, there is also evidence that contracts are often not enforced in the field due to opportunistic behaviour or corruption by microfinance agents (Bond and Rai, 2002) or that high degree of social capital between group members is probably insufficient in and of itself to generate high repayment (Cassar et al., 2007). Previously existing social ties that could lead to social pressure to repay have also been shown to be not necessary for group lending to yield high repayment rates (Wyck, 1999). Further, Bond and Rai (2009) argue that dynamic incentives (i.e., the promise of future loans) that have been used extensively to induce repayment in microfinance might not always work. For example, if borrowers expect others in their group to default so that no further loans will be available in the future, then they themselves will default leading to a contagion. Additional incentives would therefore be needed to counter the propensity to default in such an environment. This suggests that exploring the impact of collective activities on repayment would be a fruitful additional pathway to examine. Exclusion from such collective non-credit activities in response to non-repayment of joint liability loans could also be viewed as a specific form of social sanction.

We design a three-stage repayment game that relates these activities to group default and attrition. In the first stage, the group borrows under joint liability, each member undertakes a risky project, and those who succeed decide whether or not to contribute towards loan repayment. If there are enough contributors to reimburse the loan, the entire group proceeds to the next stage of the game. Contributing members are given the opportunity to vote against other members and all those receiving a unanimous vote against them must exit. Those remaining engage in a variant of a public good game. The value to each member from this final stage varies by member type and by the size and composition of the group. There are two types of members, *a* and *b*, with the former adding greater value to the public good and receiving a higher return from it.

We characterize the conditions under which the threat of exclusion induces repayment in the first stage. We show that groups with small loans reimburse them with symmetric behavior across types and exclusion is unlikely. For large loans, there exist asymmetric equilibria in which those with low public good valuations default and are excluded. These results provide a mechanism through which default and attrition in microfinance groups are connected to the way in which they engage in collective action. It also provides an alternative mechanism for ensuring high repayment rates in joint liability loans.

Using data from a laboratory experiment we examine the broad predictions of the repayment game. In the experiment, participants were randomly assigned in groups of 10 across 20 sessions. A session had 8 rounds and was in one of three treatments based on a pre-determined loan size (debt). Each group had 5 individuals of each of the two types, *a* and *b*. The type of each individual remained private information throughout the session. Within a session, the per-member debt burden changed across rounds based on the number of successful projects. These differences in the required repayment, by round and treatment, allow us to examine whether loan repayment varied systematically with the expected benefits from the public good game. While our groups of 10 are larger than those used in most microfinance experiments, this choice was motivated by our interest in understanding how the non-credit activities of Self-Help Groups (SHGs) help enforce credit contracts. These groups typically have at least 10 members. The heterogeneous returns from the public good in our experiment also have natural empirical counterparts in these groups. Baland et al. (2008) study over 1000 SHGs in India and

<sup>2</sup> Microfinance groups studied by Rai and Ravi (2011) in India and by Janssens and Kremer (2016) in Tanzania also provide health insurance in addition to credit.

<sup>3</sup> See for example, DeQuidt et al. (2016) and Baland et al. (2013) and the references therein.

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