



Moral hazard and peer monitoring in a laboratory microfinance experiment[☆]

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ARTICLE INFO

Article history:

Received 31 March 2011
Received in revised form
28 November 2011
Accepted 1 February 2012
Available online 11 February 2012

JEL classification:

G21
C92
O2

Keywords:

Group lending
Monitoring
Moral hazard
Laboratory experiment
Credit
Development

ABSTRACT

This paper reports the results from a laboratory microfinance experiment of group lending in the presence of moral hazard and (costly) peer monitoring. We compare peer monitoring treatments in which credit is provided to members of the group to individual lending treatments with lender monitoring. We find that if the cost of peer monitoring is lower than the cost of lender monitoring, peer monitoring results in higher loan frequencies, higher monitoring and higher repayment rates compared to lender monitoring. In the absence of monitoring cost differences, however, lending, monitoring and repayment behavior is mostly similar across group and individual lending schemes. Within group lending, contrary to theoretical predictions, simultaneous and sequential lending rules provide equivalent empirical performance.

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1. Introduction

The last few decades have witnessed the development of innovative and highly successful microfinance mechanisms for the provision of credit to the poor. The most common of these is group lending. Rather than use individual lending rules where the bank (or the lender) makes a loan to an individual who is solely responsible for its repayment, in group lending the bank makes a loan to an individual who is a member of a group and the group is jointly liable for each member's loans. If the group as a whole is unable to repay the loan because some members default on their repayment, all members of the group become ineligible for future credit. The Grameen Bank in Bangladesh, the well known microfinance institution (MFI) that was the pioneer of such group lending programs, reports that as of 2008, only 2.08% of its loans are overdue (see

[☆] We have benefited from comments by Dyuti Banerjee, Shyamal Chowdhury, Roland Hodler, Jeorg Oechssler, Kunal Sengupta, Tom Wilkening, Chikako Yamauchi, participants at seminars and workshops at Monash University, University of Melbourne, the Australian National University, the University of Adelaide, University of Sydney, Jadavpur University, Kolkata, the Indian Statistical Institute, Delhi, participants at ESA International meetings, NEUDC Conference, the Econometric Society Australasian Meetings, the Econometric Society World Congress and two anonymous referees for their comments and suggestions. We would like to thank Gautam Gupta for his assistance in organizing the sessions at Jadavpur University, Kolkata. Tania Dey, Simon Hone, Vinod Mishra and Roman Sheremeta provided excellent research assistance. The usual caveat applies.

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<http://www.grameen-info.org/>). The success of the Grameen Bank has led policy makers and non-government organisations around the world to introduce similar schemes.¹ While in recent years, several MFIs have moved on from group based lending programs, group lending continues to be the most commonly used mechanism in the context of credit provision by MFIs. Indeed the current trend towards individual lending programs makes a systematic study of the performance of lenders and borrowers in individual and group lending programs topical and important from an academic and a policy point of view.

The aim of this paper is to examine lending, monitoring and repayment behavior in group and individual lending schemes, using experimental methods. We report the results from a laboratory experiment of group lending in the presence of moral hazard and (costly) peer monitoring.² We find that simultaneous and sequential credit provision to group members leads to similar results. Compared to individual lending, however, group lending leads to greater loan frequencies, and higher monitoring and improved repayment rates if peer monitoring is less costly than lender monitoring.

This importance of monitoring costs on credit market performance in our experiment is consistent with perceived advantages of group lending in practice. The success of group lending programs arises, in part, because they can better address the enforcement and informational problems that generally plague formal sector credit in developing countries.³ Group lending programs typically help solve the enforcement problem through peer monitoring. Stiglitz (1990) and Varian (1990) argue that since group members are likely to have better information compared to an outsider like, the bank, peer monitoring is relatively cheaper compared to bank monitoring, leading to greater monitoring and hence greater repayment. Banerjee et al. (1994) argue that peer monitoring is better at explaining the success of group lending programs than alternative explanations.⁴

Most empirical studies on the determinants of repayment use data from institutions with similar lending rules, hence there is relatively little variation to estimate the efficacy of a particular mechanism. Thus, lacking well designed experiments, they are forced to rely on variation in the economic environment to identify the parameter of interest, and often times they employ instruments that are hard to justify. Also, the variation that does exist in the field is endogenous, which makes it difficult to unambiguously determine causality (Morduch, 1999; Armendariz de Aghion and Morduch, 2005). Microfinance loans present a complex economic environment, and the literature does not yet provide a unified approach to analyse contracts and borrower and lender behavior. Experiments, grounded in careful theory, have an important role to play in this respect.

Few laboratory experiments examine the impact of specific design features on the performance of microfinance models. Abbink et al. (2006) and Seddiki and Ayedi (2005) examine the role of group selection in the context of group lending. Both experiments are designed as investment games where each group member invests in a risky project whose outcome is known only to the individual, and both find that self-selected groups have a greater willingness to contribute. Neither of these papers analyse the role of peer monitoring.

This paper contributes to the recent debate on joint versus individual liability in microfinance. In recent years, programs like Grameen II and Banco Sol have adopted individual liability, where each loan recipient is individually responsible for repayment of her loans. Gine and Karlan (2009) use data from a controlled field experiment in Philippines and argue that converting existing borrowers to individual liability does not affect repayment rates; and even when groups are initially formed under individual liability, repayment rates are no lower. The role of a group in such a scenario is simply to act as a mediator. On the other hand, programs like Self Help groups in India continue to rely on joint liability where members are jointly responsible for loan repayment. As many micro lenders switch or consider switching from group to individual-liability loans, it is important to understand the mechanisms determining outcomes in the different scenarios. Achieving this goal is particularly challenging as it can be affected by information, monitoring, and project choice.⁵ We find that in the environment that we consider, the results depend on the cost of monitoring. If the cost of monitoring under an individual liability program

¹ As of 2007, microfinance institutions were serving around 150 million people around the world (Gine et al., 2010). The 2006 Nobel Prize for Peace to microfinance pioneer Muhammed Yunus also put the success of microfinance in the world spotlight. 2005 was designated by the United Nations as the year of microfinance. While microfinance programs are most widespread in less developed countries they are by no means confined to them. These programs have been introduced in transition economies such as Bosnia and Russia and in developed countries such as Australia, Canada and the US (see Conlin, 1999; Armendariz de Aghion and Morduch, 2000, 2005; Fry et al., 2008). Micro-lending is increasingly moving from non-profit towards a profit-making enterprise, with large banks such as Citigroup now backing such loans (Bellman, 2006).

² We focus on informational asymmetries due to moral hazard rather than those due to adverse selection. In particular we restrict attention to exogenously formed groups and leave the issue of endogenous group formation (positive assortative matching) for future research. Ghatak (2000), Van Tassel (1999), and Armendariz de Aghion and Gollier (2000) discuss theoretical models on how group lending solves the problem of adverse selection.

³ Armendariz de Aghion and Morduch (2000, 2005), Chowdhury (2005), Che (2002), Rai and Sjostrom (2004) and Bhole and Ogden (2010) discuss different aspects of microfinance programs.

⁴ Peer monitoring and peer enforcement have been observed to deter free riding in several experiments relating to other social dilemma situations, such as common pool resource environments and the voluntary provision of public goods. See Fehr and Gaechter (2000), Barr (2001), Masclet et al. (2003), Walker and Halloran (2004), and Carpenter et al. (2006) for experimental evidence.

⁵ Field experiments, while feasible, are difficult to implement and sometimes come at the cost of some loss of experimental control. For example, spill overs from one village to another or from the treatment group to the control group could create noise in the data. Since groups are self-formed in the field the benefits of peer monitoring could also be over-estimated due to assortative matching. It might therefore be difficult to separate out the effects of peer monitoring and group selection using field data. This is not a problem in our laboratory experiment, which features strictly random assignment. That said, in recent years there have been a number of innovative field experiments dealing with different aspects of microfinance. Gine et al. (2010), Fischer (2008), Kono (2006), and Cassar et al. (2007) report “artefactual” field experiments which place non-student subjects in stylized microfinance environments similar to controlled laboratory studies. Field and Pande (2008), Banerjee et al. (2009), Gine and Karlan (2009), Karlan and Zinman (2010), and Feigenberg et al.

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