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Adverse selection and moral hazard in group-based lending

Mehrteab, H.T.

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Chapter 1 Introduction

1.1 Aim of the study

Development economists and policy makers generally identify access to credit as one of the main determinants of economic activity and alleviation of poverty in developing countries. By having access to credit the poor may acquire productive capital to improve their capacity to generate income, savings and investment (Tang, 1995). However, in practice the poor in developing countries have very limited access to formal sector credit.

There are many reasons why the poor in developing countries' are not gaining access to credit from formal financial institutions. To start with, formal financial institutions in developing countries are characterized by persistent market imperfections, resulting from problems associated with adverse selection, moral hazard, and enforcement. In addition, credit markets in these countries are hampered by a lack of suitable collateral and difficulties in enforcing loan repayments (Besley, 1994).

Recently, new institutions – referred to as microfinance – are flourishing in developing countries to provide credit to the poor microentrepreneurs of these countries. Broadly defined, microfinance refers to the provision of financial products to low-income borrowers who do not have access to loans from established formal institutions. The term microfinance embraces different forms of microlending, the most famous institutions being the Grameen Bank of Bangladesh, the Bancosol of Bolivia, and the Bank Kredit Desa of Indonesia. These institutions have already shown success in being able to reach the poor and realizing high repayment performance.

Microfinance institutions can be broadly categorized into two groups: those engaged in providing loans directly to individual borrowers, and those providing loans only to individuals who organize themselves into groups, which are known as solidarity groups, i.e. group-based lending.

Grameen Bank and Bancosol are examples of the so-called group-based lending institutions, whereas Bank Kredit Desa of Indonesia provides loans directly to individuals. In group-based lending, borrowers have to organize themselves into groups and become jointly liable (the joint liability principle) for the repayment of their loans in order to acquire loans from microfinance institutions (MFIs).

Most existing literature tries to explain the success of group-based lending. Economists have developed theoretical models that explain this success by showing that group-based lending mitigates the asymmetry of information problems of financial markets, such as adverse selection problems, moral hazard, and enforcement problems (Stiglitz, 1990; Besley and Coate, 1995; Ghatak, 1999). Firstly, groups are formed on the basis of a self-selection process of members. To this end group members screen the behavioral integrity and creditworthiness of each other before they form a group. Thus, screening by group members may help to mitigate the adverse selection problem of financial institutions. Secondly, once groups have been formed, members agree to monitor each other's economic activities. Through this monitoring process, they may be able to mitigate the moral hazard problem. Finally, once individual members' output has been realized, group members may enforce repayment against defaulting members for which they may use social sanctions and pressure mechanisms. Social ties and connections among members play a role in facilitating the screening, monitoring and enforcement process. Thus, according to the theoretical literature the three problems related to asymmetry of information of formal financial institutions – i.e. adverse selection, moral hazard and enforcement problems – can be alleviated by group-based lending mechanisms. Yet, there are very few empirical studies to verify the claims of these theoretical models

This thesis contributes to the joint liability lending literature by carrying out empirical studies that investigate whether these theoretical claims also hold after empirical scrutiny. To be more precise, these studies analyze a number of issues that have remained largely untouched by previous empirical studies.

First, the thesis investigates the impact of differences in behavior of different types of group members on the performance of groups. In most group-based lending programs, groups have to elect a group leader after the group is formed. In the thesis, we particularly look at differences in *monitoring activities* and *social ties* of group leaders versus other group members and analyze their impact on reducing moral hazard behavior within groups. Moreover, we investigate whether differences in monitoring activities and social ties of group leaders versus other group members matter when it comes to the repayment performance of groups. As far as we know, our research is the first attempt to empirically investigate differences in behavior of different group members and their effect on group performance.

The second issue we discuss is associated to the problem of *adverse selection* and the related *screening activities* of group members. In particular, we look at the group formation process and investigate whether group members match homogeneously or heterogeneously in risk. To the best of our knowledge, this issue has been addressed in only one other study, which dealt with group-based lending in Latin America (Sadoulet and Carpenter, 2001).

The empirical studies use data of group behavior from two group-based lending programs in Eritrea. During the year 2000 we issued a questionnaire that contained several questions on, among other things, the screening, monitoring, enforcement and social ties of 351 individuals who were members of 102 different groups. The complete list of questions can be found in the appendix to this thesis.

1.2 Outline

The remaining part of this thesis is structured as follows. Chapter 2 provides an overview of microfinance approaches and their limitations. In this chapter we observe the similarities and differences between different microfinance approaches, as well as the characteristics of group-based lending programs and their restrictions. Before this is discussed, however, the chapter describes the segmentation of financial markets in developing

countries and the inability of these markets in reaching the microentrepreneurs of these economies. It further provides a discussion on the asymmetry of information paradigm as a rationale for the failure of financial markets.

The aim of chapter 3 is to provide an assessment of financial institutions in Eritrea. The chapter starts by illuminating the historical development of the banking system in Eritrea, followed by an overview of the role of the Eritrean financial institutions in the financial intermediation process in comparison with financial institutions of some other countries. The chapter also covers the operations and type of clients they serve, and discuses the limitations of each of the relevant formal financial institutions in Eritrea. Finally, the chapter discusses informal financial activities in Eritrea. The conclusion of this chapter is that the Eritrean formal and informal financial institutions are unable to provide the microenterprises in the country with sufficient capital to improve their capacity to generate income and profit.

Chapter 4 presents the two MFIs that operate in Eritrea. The chapter provides an overview of these institutions by illustrating their characteristics. It presents background information on how these institutions have started to operate in Eritrea. This is followed by a discussion of the organizational structure and objectives, strategies and group formation procedures of these institutions. The final section illustrates the credit-saving policies, methodologies and organizational structure, as well as the performance of the two institutions.

Chapter 5 describes the data collected from the two Eritrean MFIs. First, it discusses the survey procedure and data collection process. Next, it provides a statistical summary and illustration of the amounts of money borrowers in the sample received and the group savings they made. Moreover, it presents responses of borrowers on questions related to group formation, social ties and peer screening, group monitoring and enforcement mechanisms. Finally, it deals with data on a number of other variables.

Chapters 6, 7 and 8 are the empirical chapters of the thesis. Chapter 6 attempts to investigate the determinants of repayment performance of groups. Several theories indicate that repayment performance is related to the screening, monitoring and enforcement of group members. A number of earlier empirical studies show that repayment performance of groups is indeed determined by the screening, monitoring, and enforcement activities of its members. Some studies also show that social ties may matter. We extend the existing empirical literature by emphasizing that when analyzing repayment performance of groups, one should look at these activities as carried out by different types of group members. In particular, we investigate whether differences in monitoring activities of group leaders versus other group members make a difference for the repayment performance of groups.

Most empirical studies use data of one individual member as a representative of his group and test group repayment performance. In our analysis we use data of at least two group members: the group leader and at least one other member of the group. This permits us to separate the data into two parts: variables describing the activities and characteristics of the group leader, and variables that are related to members other than the group leader. Consequently, we are able to test whether there are differences with respect to the role of the monitoring activities and social ties of group leaders vis-à-vis these activities and ties of other group members in reducing repayment problems of groups.

We focus on the differences in behavior between the group leader versus the other group members because when we visited the group-based lending programs in Eritrea, we noticed that group leaders in the Eritrean MFIs did a lot of activities on behalf of the other group members. Therefore, we want to see whether their activities have a different impact on group performance as compared to the effects of the same activities yet done by other group members.

Chapter 7 elaborates on the results discussed in chapter 6. One of the determinants of repayment performance may be the extent to which group members show moral hazard behavior. Theoretically, moral hazard

behavior of group members has a negative impact on repayment performance of groups. The empirical analysis in chapter 7 provides an empirical analysis of the impact of peer monitoring and social ties of group members in minimizing moral hazard behavior among group members. Joint liability lending theories claim that peer monitoring by and social ties of all group members play a role in reducing moral hazard behavior by members. Individuals voluntarily get together to form borrowing groups and they promise to be jointly liable for each other. In order not to end up paying for a defaulting member, every member monitors every other member's investment behavior. Therefore, group-based lending delegates costly monitoring activities to group members, which may help lenders to reduce their lending costs and transfer these costs reductions to debtors by reducing interest rates.

While there are abundant theoretical studies on group-based lending and moral hazard behavior, there have been almost no empirical tests of this hypothesis. In this study we attempt to find out if peer monitoring and social ties play a role in mitigating moral hazard behavior among group members. In particular, just like we did in chapter 6, we focus on the differences between group leaders versus the other group members when investigating the impact of monitoring and social ties on reducing moral hazard within groups.

Chapter 8 analyses the group formation process. In particular, in this chapter we provide new insights into the empirical relevance of the homogeneous matching hypothesis in theoretical models of group-based lending. These models can be categorized into two groups. Most theoretical models of joint liability lending explicitly or implicitly assume that groups match homogenously in risk, which means that safe borrowers match with safe borrowers and risky borrowers match with risky ones (Ghatak, 1999). According to Ghatak (2000), homogenous matching among group members allows lenders to screen borrowers by the group members they choose. If a lender offers two contracts, one with high joint liability and a low interest rate and the other with low joint liability and a high interest rate, Ghatak's model shows that the safe borrower will choose the first type of contract and the risky borrower will choose the

latter. Homogenous matching thus allows the lender to identify the risk level of potential borrowers, which helps the lender to mitigate the adverse selection problem.

An alternative theoretical study by Sadoulet (1999) shows that groups match heterogeneously rather than homogenously in risk. Sadoulet claims that heterogeneous matching emerges as a rational response to missing insurance markets. The argument is that heterogeneous matching among members permits group risk pooling and creates insurance mechanisms in areas without insurance markets. An empirical study by Sadoulet and Carpenter (2001) on Guatemalan group-based lending confirms the heterogeneous matching hypothesis.

In chapter 8 we empirically test whether groups match homogeneously or heterogeneously in risk, taking the case of Eritrean microfinance institutions. It is important to investigate this issue. If our findings show that groups match heterogeneously in risk, rather than homogenously, then this may have adverse implications for the hypothesis that joint liability lending mitigates adverse selection problems, which, as is explained above, is generally assumed in most theoretical models.

Finally, chapter 9 provides a summary of the results of the empirical studies and presents some recommendations for further research.