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Separating the wheat from the chaff: Signaling in microfinance loans

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A B S T R A C T

We examine how microfinance borrowers might signal their repayment responsibility (i.e., borrower quality) by opting into (costly) life insurance purchase along with their micro-loans. We show empirically that borrowers who bought additional life insurance coverage were significantly more likely to fully repay their loan, and were allowed to receive higher loan amounts, even after controlling for borrower health and other determinants of loan repayment and insurance purchase. The relationship is stronger in magnitude for new borrowers' first loan than for their second loan, and in several situations in which borrowers would have a higher incentive to signal their creditworthiness. We interpret this evidence as borrowers signaling their creditworthiness (or quality) by purchasing costly insurance in an environment subject to a high level of information asymmetries and devoid of credible tools to demonstrate creditworthiness.

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1. Introduction

Since its inception in the late seventies under the auspices of Muhammad Yunus and the Grameen Bank, the microfinance industry has tried to be on the forefront of innovation in order to ensure that it best serves borrowers in the poorest corners of the world. While early innovations included group based loans with joint liability, frequent (weekly or semi-monthly) loan repayment programs and dynamic incentives, the offer of business trainings and health services to borrowers, more recent innovations include loans packaged with other financial products, such as life, health, and crop insurance (Banerjee, Duflo, & Hornbeck, 2014; Bauchet, Damon, & Larsen, 2017; Giné & Yang, 2009; Chakravarty & Pylypiv, 2017).

In some cases, bundles are mandatory, such that potential borrowers must purchase the added product(s) in order to receive a loan. Banerjee et al. (2014), for instance, study demand for health microinsurance bundled with loans on a mandatory basis. In other cases, bundled products are offered on a voluntary basis and borrowers can choose whether they wish to purchase individual products at personal cost. Compartamos Banco in Mexico, for example, offers a term life insurance policy to its group borrowers on a voluntary basis. In Colombia, the microfinance institution Crezcamos offers voluntary crop insurance to farmers who take out agricultural microfinance loans (Bauchet et al., 2017).

In settings in which microfinance borrowers have the option to purchase additional units of a given financial product, we ask: Can some borrowers use the act of purchasing such product(s) as a signal of their quality, thereby increasing their (perceived) chances of receiving a loan and/or of receiving a larger loan?

We argue that such signaling has merit because it helps borrowers increase the likelihood of loan approval and to secure better terms for both their current and future loans.[1] For example, a borrower could be interested in obtaining a larger loan amount, which requires approval from the lender and/or, in many group lending methodologies, from her group partners. Purchasing costly life insurance could send that signal, which would make the loan request more likely to be approved. Ours is the first paper to empirically test the issue of signaling in the microlending context, and underscores a way in which some borrowers, even without the track record of past successful loan cycles, can credibly separate themselves out from the rest of the pack.

Our work builds on classical signaling theory (see, for example, Akerlof (1970), Bhattacharya (1979), Spence (1973)). From this body of work, we know that for a signal to be credible, it has to be personally costly to the signaler, its cost must be inversely correlated with the attribute it signals, and it needs to be prohibitively costly to mimic by others. Specifically, Spence (1973) models how high-productivity job applicants can use signals to differentiate themselves from low-productivity applicants. The signaling theory

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[1] Our argument is not that borrowers only use the purchase of insurance as a signal (they may simultaneously value its protection component), but our results show evidence consistent with the use of insurance to signal one's creditworthiness.

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has been applied in various settings. Bhattacharya (1979), for example, shows how firms use dividend payments to signal their future expected cash flow even though dividends are taxed at a higher rate than capital gains. Puelz and Snow (1994) show that low-risk buyers of auto insurance in the United States signal their risk type by purchasing policies with higher deductibles. Additionally, Hansen and McMahon (2016) and Melosi (2017) apply the idea of signaling to monetary policy, showing how central banks in the United Kingdom and the United States use signals to control inflation.

In the realm of microfinance, Batabyal and Beladi (2010) provide a game theoretic model of borrower signaling through self-financing. They establish how lenders may use signals from borrowers, included but not limited to self-financing of some of the investment for which borrowers might request a loan, in order to separate high- and low-quality projects and borrowers and thereby mitigate adverse selection in microfinance lending. Benjamin (2013) further argues that rural microfinance borrowers may also use their participation in certified environmental services (such as carbon credit projects) to signal their creditworthiness, stemming from the increased and more diversified income that such certified environmental services can potentially provide. However, neither Batabyal and Beladi (2010) nor Benjamin (2013) provide empirical evidence of the use of signals by microfinance borrowers. Moss, Neubaum, and Meyskens (2015) partially address this issue by analyzing the profile of loan applicants on Kiva, a major online microfinance lending platform on which private individuals can lend directly to microfinance institutions all over the world. They find that the narratives displayed on each prospective borrower's page on the website are related to the likelihood to receive funding, the speed at which a loan is funded, as well as the loans' repayment rate.[2] While set in the microfinance context, this finding remains far removed from traditional microfinance transactions, which take place directly between a borrower and a lender. In this paper, we contribute to closing the empirical gap by focusing on a more typical microfinance setting on a large scale.

In particular, we study borrowers of Compartamos Banco in Mexico who participate in the bank's group lending program.[3] Borrower in this program are able to purchase voluntary term life insurance policies concurrently with their loan; the policies benefit a person of the borrower's choice, not the bank who automatically forgives loan balances of deceased borrowers. Overall, 25 percent of the borrowers in our sample purchase a term life policy. Our dataset comprises 1.14 million loans made to about 790,000 borrowers throughout Mexico in 2011. This provides us with a unique opportunity to measure the relationship between insurance purchase and loan outcomes on a large scale.

We find multiple strands of evidence that all point to the use of insurance purchases as a signal of borrower quality. The findings contribute to the debate on the bundling of various financial products. While bundling can reduce costs, increase take-up, and improve financial inclusion, it can also lead to overuse of financial products and lack of understanding from clients about the various products offered to them, which hurts long-term financial inclusion. Our results imply that offering additional financial products alongside credit can help improve the functioning of microfinance markets, which benefits both institutions and borrowers.

Our framework could easily be applied to borrowers signaling their quality using other costly devices and not just life insurance. For instance, in Bangladesh, basic health insurance coverage for the borrower's family is often offered simultaneously to the loan itself. It is therefore conceivable that the lender could include additional health insurance coverage for upfront purchase, which could then be potentially used as a signaling mechanism by some borrowers. Another service often offered alongside microfinance loans is business training geared toward microentrepreneurs. It is therefore possible to add additional (and costly) diagnostic features to microcredit loan contracts and allow the customers to voluntarily self-select whereby the good (low risk) borrowers are incentivized to signal their worth through purchase of these costly units and thereby separate themselves from the relatively high risk borrowers.

2. Background and institutional details

We analyze data on borrowers from the group lending program of Compartamos Banco. This program is open only to women, who form groups of 10–50 members and borrow together in standardized cycles of 16 weeks with weekly loan repayment. Group members are free to invite whomever they choose to join their group; other than enforcing basic eligibility requirements (such as being 18 years or above), Compartamos does not interfere in the group formation process. As a result, it is common for groups to be composed of several clusters of relatives, friends and acquaintances, with only loose connections between the clusters. In urban areas, a neighborhood can count several groups. One cannot be part of more than one group at a time. Group membership fluctuates; borrowers are free to leave a group after completion of a loan cycle to stop borrowing, join another existing group, or form a new group (provided they find enough other loan applicants to meet the 10-person minimum group size). In our data, for example, 68 percent of first-time borrowers took a second loan (including loans due in 2012). Of these, 13 percent left their first-cycle group and joined a different group (a new group for 75 percent of them, a different existing group for the other 25 percent).

All members of a group are jointly responsible for repaying the entire group's total loan amount (a "joint liability" mechanism very common in group microfinance loans), although each member is given a separate loan, for an amount of her choice, and to be used at her discretion. Compartamos cares about being repaid the total amount lent to the group (plus interest), which is the sum of amounts lent to its members. As a consequence, Compartamos does not evaluate loan applicants, nor makes loan approval decisions (officially and practically), but rather relies on the group to screen loan applicants, to decide who is allowed to borrow, to determine how much each group member is allowed to borrow, and to monitor the performance of borrowers once they have received the loan proceeds. During the group meeting when loans and loan amounts are approved and insurance purchase decisions are made, loan officers do not have a vote. Their role is to ensure that all documentation is in order, that members' loan and insurance decisions are properly recorded, and that Compartamos' policies are properly followed in each group (for example, they would prevent members from pressuring others into purchasing life insurance).

Within a group, all loans are taken and due at the same time, and all borrowers decide about purchasing insurance at the same time. Loan applications and insurance purchases are made at the first group meeting of each loan cycle. Orchestrated by the loan officer, each group member takes a turn informing her groupmates of the loan amount she requests, the intended use(s) of the loan proceeds, and whether she chooses to purchase insurance. All members of a group must vocally approve extending a loan to each

[2] On Kiva.org, microfinance institutions attract funding by advertising specific borrowers and their stories. Lenders select a borrower (or group of borrowers) based on these web pages, although the funds are typically transferred to the institution, not necessarily the exact borrower displayed on the page.

[3] Compartamos Banco is a Mexican bank established in 1990. It is the largest microfinance lender in Latin America, serving over 2.8 million low-income clients in Mexico alone in 2015 (MixMarket, 2015).

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