

# Getting Credit to High Return Microentrepreneurs: The Results of an Information Intervention

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Small-scale entrepreneurs typically cite access to finance as the most important constraint to growth. Recent randomized experiments have shown the return to capital to be very high for the average microenterprise in Sri Lanka. An intervention was designed to improve access to credit among these high-return microenterprises without subsidizing interest rates or requiring group lending. The intervention consisted of information sessions providing details of the microfinance loan product offered by a regional development bank and a reduction from two to one in the number of personal guarantors required for these loans. Ten percent of the microenterprises invited to the information meetings received a new loan, doubling the proportion of firms receiving loans over this period. However, the loans do not appear to be going to particularly high-return firms but rather to firms with more household assets. Many more firms would like loans but are constrained by an inability to find personal guarantors and by other bureaucratic procedures. The results suggest that information alone is unlikely to be enough for most firms and point to the need for credit bureaus that cover microfinance loans and for continuing innovation in loan products that can reach the urban microenterprise sector. JEL classification: G21, D24, D83, O12

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Access to finance is the most common constraint to growth cited by entrepreneurs in a broad range of countries. Surveys of small and medium-size firms in 54 countries indicate that financing constraints are particularly severe for small

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firms. Moreover, firms identifying finance as a constraint are found to grow more slowly (Beck, Demirgüç-Kunt, and Maksimovic 2005), suggesting that bridging the finance gap is important for stimulating entrepreneurship. In most countries, microenterprises are even less likely than small and medium-size firms to have access to finance from formal channels, resulting in very large returns to capital for these firms. Recent randomized experiments in Mexico and Sri Lanka providing grants of \$100–\$200 to microenterprises found mean real monthly returns to capital of 20 percent or more in Mexico and more than 5 percent in Sri Lanka (McKenzie and Woodruff 2008; de Mel, McKenzie, and Woodruff 2008). These high returns—well in excess of microlending interest rates in these countries—motivate the research and policy question of this article: How can the formal financial system get credit to these high-return microentrepreneurs?

The traditional government response to the credit needs of microenterprises has been subsidized interest rate programs. Such programs have been criticized as too costly, politically directed, and damaging to incentives for the financial sector to find innovative ways to expand access (World Bank 2008). For firms with high returns, loan access is more important than interest rates, and access to microfinance has recently succeeded in expanding access to credit to some segments of the poor. But the group lending approach that has worked well with rural women has required adaptation to meet the demands of urban business owners; in urban areas, individual loans offered by microfinance providers are often larger and often require collateral (Armendáriz and Morduch 2007). Sri Lanka has the fourth highest microfinance penetration in the world, with 4.3 percent of the population as loan clients (Honohan 2004). Yet only 5.2 percent of the Sri Lankan microenterprises in this study sample received a microfinance loan in the year before the intervention.

Why aren't more microenterprises receiving credit? The low frequency of observed credit may reflect credit supply issues. Borrowers may not be able to meet the criteria set by formal financial institutions. The lending criteria include collateral requirements, legal title, records and forms, and other lender requirements that potential borrowers might not be able to supply. In a sample of much larger firms than those studied here, Banerjee and Duflo (2008) show that supply constraints are an important determinant of credit to small firms. Alternatively, the low levels of observed credit may reflect a lack of demand from microenterprises. Entrepreneurs may not want credit at available interest rates. On the surface, this seems at odds with the high average returns to capital in microenterprises. But there is considerable heterogeneity in these returns, and even when the expected returns exceed market interest rates, some owners may object to loans on religious grounds or because of risk aversion. Alternatively, entrepreneurs may want credit but not know where or how to get it. This possibility, which concerns the role of information and financial literacy, has received far less attention in the literature. Information and financial

literacy problems are likely to be particularly prevalent in a developing country setting, where schooling levels are low, use of outside financial advisors or accountants is rare, and people have little experience with the financial system (Miller 2008).<sup>1</sup>

This article reports on a financial literacy intervention carried out by the authors in Sri Lanka that permits assessing the role of these three explanations in accounting for the low level of credit among microenterprises. The intervention aimed to increase access to credit at market interest rates by providing information about the availability of loans and procedures for obtaining loans from a local development bank. Providing information has recently been found to have large effects in other domains of behavior, such as schooling decisions in the Dominican Republic (Jensen 2010), risky sexual behavior among girls in Kenya (Dupas 2011), and employee decisions about retirement plans at a large U.S. university (Duflo and Saez 2003). Holding information sessions is less costly and controversial than providing interest subsidies, so, if effective, providing information could become a useful tool for increasing financial sector participation by the poor.

Microentrepreneurs in two districts (similar to states) received a letter informing them of an existing loan product offered by the Ruhuna Development Bank (RDB) and inviting them to an information meeting with bank staff to hear about the loans available and how to fill out an application. Discussions with branch managers also led RDB to relax requirements on the number of guarantors required for loans from two to one and make other minor modifications of requirements. Thus, the intervention both provided new information and slightly relaxed the loan requirements.

There was considerable interest among microenterprises in obtaining a loan; 62 percent of the enterprises contacted attended the information meetings. Difference-in-differences and fixed effects methods show that the intervention doubled the number of firms receiving a loan in a three month period, a sizable effect. However, this still represents new loans for only 10 percent of the firms invited to the meetings and is likely an upper bound on the impact of information. For firms attending the meeting that did not obtain loans, the main reasons were inability to find a guarantor for the loan and the fact that applicants had to travel to other banks and microfinance institutions to obtain endorsements showing they had no loan commitments to these organizations, because there were no credit bureaus to provide this information. Data from the randomized capital injections described in de Mel, McKenzie, and Woodruff (2008) show that the firms receiving loans did not have the highest predicted returns to capital but

1. In a study in Zambia, only half the adult population knew how to use the most basic financial products such as a savings account (DFID 2008). In India and South Africa, even clients of financial institutions were found to have little knowledge of compound interest, products available, or why a bank charges fees (Cohen and others 2006).

rather had higher household assets and capital stock than other firms. Even at the margin, the financial system is thus directing loans to firms with higher assets rather than to firms that stand to gain the highest returns from the loans.

The article is structured as follows. Section I describes the financial system in Sri Lanka and the intervention. Section II discusses the data, and section III describes the results of the intervention. Section IV discusses the policy implications of the results.

## I. SETTING AND THE INTERVENTION

Sri Lanka has a population of approximately 20 million, with GDP per capita of \$1,070 in 2006. The financial sector consists of a wide range of institutions including commercial banks (both state owned and private), six state-owned regional development banks, the privately owned Sanasa Development Bank, finance and leasing companies, cooperatives, nongovernmental organizations, and Samurdhi banks, which are part of the state-run Samurdhi welfare program (Duflos and others 2006; GTZ 2007). Outreach is fairly extensive, with a recent study finding that 78 percent of urban households had accessed financial institutions for savings and 40 percent for loans (GTZ 2007). Microfinance institutions, which include regional development banks, Sanasa, Samurdhi banks, nongovernmental organizations, and community-based organizations, are an important part of the financial system, with more than 15 million deposit accounts and 2 million outstanding microloans in 2004 (Duflos and others 2006).

However, the GTZ report also found large unmet demand for credit, with collateral requirements, excessive documentation, rigid terms and conditions, and long processing periods all viewed as key barriers, particularly among poorer households. Sri Lanka's credit bureau reports only on loans over 100,000 rupees (Rs.) (approximately \$1,000), and is accessible only to its shareholders, which are commercial banks, licensed specialized banks, and the regional development banks. There is no organized credit information sharing among microfinance providers. This lack of information, coupled with the large number of competing microfinance providers, leads to concerns about clients taking out multiple loans (GTZ 2007).

Direct evidence of credit constraints among microenterprises can be seen in the results of a randomized experiment conducted by the authors in which grants of \$100–\$200 were given to a randomly chosen subset of microenterprises surveyed in the Galle, Kalutara, and Matara districts of Sri Lanka (de Mel, McKenzie, and Woodruff 2008). The study found real monthly returns to capital averaging 5 percent, with the highest returns for firm owners with greater ability and lower wealth. The intervention examined in this article was designed in light of these high returns.

### *The Ruhuna Development Bank*

The Ruhuna Development Bank (RDB) was the first state-owned regional development bank to be incorporated under the Regional Development Bank Act of 1997. It began operations in July 1998 through the amalgamation of three regional rural development banks in the districts of Galle, Hambantota, and Matara along the southern coast of Sri Lanka. RDB is keen to position itself as the “premier development bank of the masses of Ruhuna” (RDB 2007). At the end of 2007, it had 440 employees, 408,000 savers, and 171,000 active borrowers with an average loan balance of \$254.<sup>2</sup> RDB, with its regional focus on the southern districts of the country and its emphasis on promoting self-employment activities for development, was a natural partner for implementation of the microfinance intervention.

### *The Loan Product*

Discussions with RDB management enabled the design of a loan scheme that was comparable to other loan products offered by RDB to similar micro-level enterprises. The loan product offered to the research project’s enterprises had the following features and conditions (summarized in table A1 in the appendix):

- *Loan amount:* Enterprises could apply for any loan in the Rs. 5,000–25,000 range (approximately \$50–\$250). Recall the average loan balance among all RDB customers is \$254, so these loans were at the lower end of what the bank offered. The bank had flexibility in making the final decision on the loan amount, subject to usual investigations and procedures.
- *Interest rate:* All enterprises were charged RDB’s regular annual lending rate of 16 percent. This rate is competitive in the local market—comparable to the interest rates offered by other development banks and cheaper than interest rates of around 22 percent offered by local microfinance organizations.
- *Loan repayment:* All loans had a two-year repayment period. Normal RDB practice allows for a grace period of three months when necessary. The bank offers either a reducing balance (the interest payment, and therefore the installment, drops as principal is paid off)<sup>3</sup> or an equal installment loan. Because of the nature and size of the enterprises and the education levels of the entrepreneurs, an equal monthly installment

2. <http://www.mixmarket.org/mfi/ruhuna/data> [accessed December 17, 2008].

3. Under a reducing balance system, the firms would pay more in the first months, with the repayment amount falling with the balance. For a Rs. 20,000 loan, firms would pay Rs. 1,100 in the first month, declining slowly to Rs. 844 in the last month. The equal installment method averages these payments out and is calculated by the RDB so that the same amount of interest is paid over two years (Rs. 3,333 on a Rs. 20,000 loan) as would be paid under reducing balance.

method was preferred. The monthly installment was Rs. 486 for a Rs. 10,000 loan and Rs. 972 for an Rs. 20,000 loan.

- *Collateral*: RDB usually requires collateral; however, for small loans the branch has the discretion to relax this requirement and did so for this research project loan scheme. To stress the importance of loan repayment, loan officers had the discretion to take an inventory of household assets.
- *Guarantors*: RDB usually requires two cosigners as loan guarantors. The guarantor should have a steady income from wage/business employment or access to liquid assets. For the research project loan scheme, the bank relaxed requirements to allow guarantors to be family members or mutual loan applicants (“interperson” guarantee). Individual branches also had the discretion to reduce the number of guarantors from two to one.
- *Endorsements by other financial institutions*: RDB usually requires all loan applicants to provide information on bank accounts and loan commitments. In the absence of a microfinance credit bureau, applicants must obtain a written endorsement from each bank and microfinance intermediary in the area. For the purposes of the research project loan scheme, this process was limited to the five leading microfinance intermediaries in the area (Sanasa, Samurdhi, SEEDS, Rural Bank, and Ceylinco Grameen) and verification against the centralized RDB database.
- *Residence verification by Grama Niladhari officer*: RDB usually requires that all applicants obtain verification of their residential address by the Grama Niladhari (the smallest administrative unit) officer. For the research project loan scheme, this requirement was imposed as usual.
- *Oath of attestation*: RDB usually requires applicants to furnish an oath of attestation, signed in the presence of a justice of the peace, certifying the fixed and movable assets owned by the applicant. For the purposes of the research project, the branches were given discretion to waive this requirement.
- *Salary certification by employer*: RDB usually requires employee loan applicants to provide salary certification from their employers. Since the research project is targeted to self-employed enterprise owners, this condition was not imposed.
- *Business registration*: Required for larger loans, this is usually not imposed as a precondition for approval of small loans.
- *Age*: If the enterprise owner is more than 55 years old, RDB usually requires a joint application with a younger immediate family member. This condition was imposed as usual.
- *RDB account holder condition*: All loan applicants are required to be RDB savings account holders. Existing account holders were asked to

bring their savings account books. Those without accounts were required to open new savings accounts with an initial deposit of Rs. 250 (approximately \$2.50). The usual three-month waiting period between opening a savings account and loan application was not imposed.

- *Loan application-related administrative costs:* RDB usually charges an administrative fee on all loan applicants that is deducted from the loan amount credited to the account. These costs (Rs. 250 per loan applicant) were imposed as usual but were paid by the research project rather than loan applicants.

In sum, the loan offered was similar to existing RDB loan products, but with fewer constraints in terms of guarantors and other minor adjustments where discretion was often already given. The main reason RDB agreed to relax the constraint was that the number and size of loans were small compared with the overall portfolio. From the project viewpoint, this mild relaxation of conditions was viewed as potentially helping to ensure there would be some loan applicants to learn from since it was unclear ex ante how many firms would meet the requirements.

### *Information Intervention*

RDB regional managers divided the 383 enterprises in the Galle and Matara districts of the Sri Lanka Microenterprise Survey (described later) among eight bank branches—four in each district—based on location. In late August 2006, the enterprises were sent a letter informing them about the RDB loan scheme. The letter stated that loan amounts would range from RS. 5,000 to Rs. 25,000, with the actual amount at RDB's discretion; the interest rate would be 16 percent; the loan would be repayable in equal monthly installments over 24 months (with examples given for Rs 10,000 and Rs. 20,000 loans); and applicants would not have to pay the administrative fees of the loan application (as the project would pay them) The letter emphasized that this would not be a grant but a loan subject to the prevailing rules and regulations of the bank and that this was a transaction between the loan applicant and the bank, with the research project playing only a facilitating role.<sup>4</sup> Anyone interested in obtaining more information about the loan offer and the application process was invited to attend a meeting at an identified venue (such as a community hall) in the area. Loan applicants were also requested to bring their existing savings accounts books or the initial minimum Rs. 250 deposit and identity card to open an RDB account.

Although the costs of going to a bank branch to learn the conditions and details of a loan product might be modest, firms are unlikely to make inquiries

4. Given previous randomized interventions with equipment and cash grants with these enterprises in 2005 (see de Mel, McKenzie, and Woodruff 2008), special care was taken to identify the current intervention as being a loan and to differentiate it from the previous project's grants. This fact was reemphasized at the loan awareness meetings held in September 2006.

if they have not heard of the bank or that it offers products to firms like theirs and is willing to spend time talking with them. Thus, the information intervention was considered important in providing credible information about specific loan products and the willingness of RDB to lend to enterprise like those in the sample.

These awareness meetings were held in mid-September 2006 at eight locations and attended by both RDB and research project staff. At the meetings, bank staff explained the loan features and the conditions. RDB staff opened 118 new accounts; 72 attendees were existing account holders. Loan application forms were distributed and explained. RDB and project staff answered questions about the loan and the application form. Loan application forms could not be submitted at the meetings because of the need for various third-party endorsements.

The median elapsed time between receiving the application form and submitting it was seven days. Median times reported by firms to fulfill the different requirements were approximately one hour to fill out the application form, two hours to obtain the residence verification, seven hours to obtain a guarantor and fill out the associated forms, three hours to obtain the endorsements of other financial institutions, and one hour to submit the application. The median applicant spent 26 hours completing these steps.

The completed applications, including the required endorsements, were turned in to the assigned RDB branch. During September–October 2006, 41 enterprises completed the application process. After verification of the information on the application by the RDB loan officer, which included a field visit, 38 of the loans were approved and 3 were rejected.<sup>5</sup> Funds were dispersed during November–December 2006.<sup>6</sup>

### *Why Design the Intervention This Way?*

By building on the knowledge gained from the authors' prior experiment with these firms, this intervention offered two advantages. First, there was good knowledge of the returns to capital and characteristics of the firms, including several observations on the firms before the intervention. Second, using an existing sample of firms enabled learning about the constraints to finance with relatively low marginal costs, making the intervention budgetarily feasible. However, this decision also raised three key issues.

The first issue is whether participation in the prior experiment—in which randomly selected firms had received grants—would change their behavior in the loan experiment. This raises the issue of external validity. Firms that had received grants might have felt obligated to attend the meetings, or

5. RDB loan officers usually conduct a field visit before approving a loan. In this case, it was mainly to verify the existence and status of the enterprise. If deemed necessary, loan officers also had the discretion to visit the residence and take an inventory of household assets.

6. Except for two loan applicants that handed in their application material late and had loans approved in early January 2007.



those that had not received grants might show up in expectation of receiving benefits this time. This would imply higher meeting attendance than would be the case in another sample of microenterprises. Or, if the grants had alleviated credit constraints, that might have reduced the demand for loans, resulting in lower attendance among firms that received the earlier grants. The article examines this concern by testing whether prior receipt of a grant is a significant determinant of loan-seeking behavior and finds a small and insignificant effect. This suggests that these concerns may not be a first-order issue.

The second issue is that this is not a randomized experiment—the intervention was carried out in the two districts where RDB operates and not in Kalutara where it does not. Given the sample size and the small number of RDB branches in Galle and Matara, it did not make sense to randomly introduce the intervention to, say, only four of the eight branches in these districts. Randomization at the individual firm level was rejected because of the possibility of information spillovers and reduced sample size. As a result, the study relies on nonexperimental estimation. However, the setting offers several characteristics that make the nonexperimental estimation reasonably convincing. The comparison district is adjacent to those treated, with similar characteristics. The six rounds of panel data available on both intervention and control firms before the intervention make the difference-in-difference approach more credible. A matching exercise was also conducted to ensure that comparisons are made only among firms with similar characteristics.

The final issue is that the intervention is a combination of information provision and modest changes in the loan approval process. These changes were made to improve the chances of at least some firms getting loans; but the drawback is that any impacts cannot be ascribed to information provision alone. Rather, the results can be interpreted as an upper bound on the effect of information provision. Firms were asked detailed questions to help unpack the dimensions along which the intervention mattered. Nevertheless, this limitation must be acknowledged. The current study is a first step in learning about the constraints to getting access to credit, which future experiments can build on.

## II. DATA

The main data source is the Sri Lanka Microenterprise Survey (SLMS), a panel survey of 617 microenterprises in three southern and southwestern districts of Sri Lanka: Galle, Kalutara, and Matara. The baseline survey was carried out in April 2005, with eight additional waves conducted at quarterly intervals through April 2007. Two additional waves were conducted in October 2007 and April 2008. Finally, preliminary data from a December 2010 revisit provide additional evidence. The survey was designed in part to study the

recovery from the December 26, 2004, Indian Ocean tsunami, and the sample was selected to draw equally from areas along the coast, where firms suffered direct damage from the tsunami; areas slightly inland, where firms did not suffer direct damage; and inland areas, where neither assets nor demand were affected. A door-to-door screening survey in 25 Grama Niladhari divisions in these three districts was used to select full-time self-employed entrepreneurs running manufacturing, services, and retail trade firms with invested capital of Rs. 100,000 (about \$1,000) or less, excluding investments in land and buildings. See de Mel, McKenzie, and Woodruff (2008, 2010) for more details on this survey.

This study focuses on the 574 firms remaining in the sample after six rounds of the panel survey (July 2006 was the last survey round before the intervention occurred). The 383 qualifying firms in Galle and Matara districts received invitations to the RDB meetings, and the 191 firms in the Kalutara district did not because they were outside RDB's coverage area. In Galle and Matara, firm owners were approximately evenly split between male and female owners (table 1). The average owner was 43 years old, married, with nine years of schooling. Mean monthly profits in June 2006 were Rs. 5,814 (about \$58), and mean capital stock aside from land and buildings was Rs. 41,428 (\$414). A quarter of firms had been in business for three years or less at the time of the baseline survey. The firms were largely informal: only 20 percent were registered with the Pradeshiya Saba or District Secretariat, only 27 percent kept business records, and 70 percent operated out of the owner's home.

GPS coordinates of the location of the bank branches and firms were used to calculate the straight-line distance between the firm and the bank branch where meetings were held and loan applications were delivered. Distance from the branch was 3.6 kilometers for the mean firm and 2.2 kilometers for the median firm, with the top quartile by distance 5.2–32 kilometers away. Straight-line distances understate the travel distance to the banks but should be a reasonable approximation for most firms, assuming a reasonably dense urban road network (Gibson and McKenzie 2007).

The SLMS contains rich data on owner characteristics. For demand for credit, potential attributes of interest include measures of general and entrepreneurial ability (education, digitspan recall, and self-assessed entrepreneurial self-efficacy); risk aversion (measured as the coefficient of relative risk aversion obtained from playing lottery games with the firm owners for real money and as self-assessed risk-seeking in general and financial domains on a 10-point scale, as used in the German Socioeconomic Panel (a well-known large-scale survey); a household asset index (the first principal component of a set of indicators of ownership of selected durable goods); number of wage workers in the household (who can provide a source of financing for the firm); and the religion of the owner (7 percent of owners in the Galle and Matara sample are Muslim).

TABLE 1. Difference in Means

| Characteristics   | Galle and Matara firms |                                 |                               |                               |                                  |
|---|------------------------|---------------------------------|-------------------------------|-------------------------------|----------------------------------|
|   | Kalutara firms         | Invited to meeting <sup>a</sup> | Attended meeting <sup>b</sup> | Applied for loan <sup>c</sup> | Application refused <sup>d</sup> |
| <i>Owner characteristics</i>                              |                        |                                 |                               |                               |                                  |
| Female owner  | 0.43                   | 0.52*                           | 0.54                          | 0.55                          | 0.33                             |
| Age of owner  | 40.9                   | 42.8*                           | 42.7                          | 42.3                          | 46.0                             |
| Married   | 0.80                   | 0.82                            | 0.86**                        | 0.80                          | 0.33**                           |
| Years of education  | 9.63                   | 9.23                            | 8.97**                        | 9.05                          | 10.00                            |
| Muslim  | 0.16                   | 0.07***                         | 0.06                          | 0.00*                         | 0.00                             |
| Digitspan recall  | 5.94                   | 5.89                            | 5.83                          | 5.83                          | 6.67                             |
| Risk aversion (lottery-based)                             | 0.41                   | 0.08**                          | 0.03                          | -0.02                         | -0.16                            |
| Overall Risk-seeking behavior                             | 6.93                   | 6.24***                         | 6.12                          | 6.28                          | 5.67                             |
| Financial risk-seeking behavior                           | 6.10                   | 5.40***                         | 5.38                          | 5.33                          | 5.33                             |
| Entrepreneurial self-efficacy                             | 33.8                   | 29.9***                         | 29.9                          | 30.1                          | 29.7                             |
| Household asset index                                     | 0.10                   | 0.06                            | -0.08*                        | 0.41**                        | 0.70                             |
| Number of wage workers in household                       | 0.69                   | 0.66                            | 0.65                          | 0.65                          | 1.67**                           |
| Financially literate                                      | 0.49                   | 0.70***                         | 0.71                          | 0.74                          | 0.67                             |
| <i>Firm characteristics</i>                               |                        |                                 |                               |                               |                                  |
| Capital stock (excluding land and buildings) in June 2006 | 45259                  | 41428                           | 38748                         | 50952*                        | 45750                            |
| Real profits in June 2006                                 | 6789                   | 5814*                           | 6000                          | 6370                          | 3465                             |
| Real revenues in June 2006                                | 23345                  | 17137***                        | 17638                         | 18977                         | 21545                            |
| Owner hours in June 2006                                  | 50.0                   | 47.8                            | 48.6                          | 52.4                          | 54.7                             |
| Registered firm   | 0.18                   | 0.20                            | 0.17                          | 0.30**                        | 0.33                             |
| Manufacturing/services                                    | 0.36                   | 0.57***                         | 0.59                          | 0.55                          | 0.33                             |
| Three years or less in age                                | 0.40                   | 0.24***                         | 0.22                          | 0.28                          | 0.67                             |
| Business operated out of the home                         | 0.46                   | 0.70***                         | 0.70                          | 0.65                          | 0.00**                           |
| Business records kept                                     | 0.24                   | 0.27                            | 0.23**                        | 0.28                          | 0.33                             |
| Received grant  | 0.59                   | 0.59                            | 0.58                          | 0.60                          | 0.00**                           |
| Had previously had a loan in March 2005                   | 0.24                   | 0.25                            | 0.25                          | 0.23                          | 0.00                             |
| Received a formal loan in the year to June 2006.          | 0.24                   | 0.21                            | 0.20                          | 0.15                          | 0.00                             |
| Directly affected by the tsunami                          | 0.34                   | 0.34                            | 0.33                          | 0.30                          | 0.33                             |
| Distance to the bank branch (kilometers)                  | n.a.                   | 3.59                            | 3.54                          | 3.99                          | 3.34                             |
| Sample size   | 191                    | 383                             | 237                           | 40                            | 3                                |

\*Difference in means significantly different from 0 at the 10 percent level; \*\* difference significant at the 5 percent level; \*\*\* difference significant at the 1 percent level.

a. Difference in means between Kalutara and Galle/Matara firms

b. Difference in means compared with nonattendees among Galle/Matara firms.

c. Difference in means compared with nonapplicants among attendees.

d. Difference in means compared with approved loans among loan applicants.

Source: Authors' analysis based on data described in the text.

Supplementing the data from the SLMS are RDB administrative data on loan applications and loan decisions and a questionnaire administered during the RDB meetings to 128 firm owners.<sup>7</sup>

The baseline survey asked whether the business had ever received a loan from a private bank, government bank, microfinance organization, Samurdhi, Sanasa, or Integrated Rural Development Program (IRDP) or Rural Economic Advancement Program (REAP).<sup>8</sup> A loan from any of these sources is considered a formal loan. The survey also asked whether the business had ever received an informal loan—money from a moneylender or family and friends. Each round of the survey asks whether the firm has received a loan in the past three months from any of these sources. In Galle and Matara, 25 percent of firms had had some form of formal loan in the baseline survey, and 21 percent had received a formal loan in the year before the intervention. None of these lenders emerged as a preferred lender. Formal loans were spread across a variety of sources: 3.9 percent had received a loan from a private bank, 5.0 percent from a government or development bank, 5.2 percent from a microfinance organization, 6.0 percent from Samurdhi, 3.7 percent from Sanasa, and 1.6 percent from IRDP/REAP. Informal loans favored family or friends (5.0 percent of firms) over moneylenders (2.6 percent).

The study survey included two questions on financial literacy used by Lusardi and Mitchell (2006) in the United States to assess whether individuals understand basic concepts of compound interest and inflation:

- Suppose you had Rs. 100 in a savings account and the interest rate was 2 percent a year. After five years, how much do you think you would have in the account if you left the money to grow: more than Rs. 102, exactly Rs. 102, or less than Rs. 102?
- Imagine that the interest rate on your savings account was 1 percent a year and inflation was 2 percent a year. After 1 year, would you be able to buy more than, exactly the same as, or less than today with the money in this account?

In Galle and Matara, 91 percent of firm owners got the first question correct, and 74 percent the second. The 70 percent who got both questions correct are

7. In particular, administrative records were examined on who applied for a loan and who was granted a loan. Survey self-reports closely matched these administrative records, and the results of the estimations are qualitatively similar when survey self-reports of applying for or receiving a loan are used in place of the administrative records.

8. Samurdhi is the main government poverty alleviation program, begun in 1995. Although it is mainly a direct welfare grant, it has a credit component that includes group savings and intragroup emergency credit, credit schemes implemented by the two state banks (Bank of Ceylon and People's Bank), and microfinance loans from Samurdhi banking societies. The Sanasa Development Bank, set up as a licensed specialized bank in 1997, functions as the apex of the thrift and credit cooperative movement and provides microfinance loans to its membership. The Integrated Rural Development Program (IRDP) and the Rural Economic Advancement Program (REAP) are lending programs at the regional level.

referred to as financially literate. This compares favorably with the sample of older Americans in Lusardi and Mitchell (2006), where only 56 percent got both questions right.

While general basic financial literacy is reasonably high, product-specific literacy is more limited. In the short survey given at the RDB meetings, attendees were asked about their knowledge of RDB before receiving the letter: 36 percent of firms said they did not think that RDB offered loans to small businesses, 62 percent said they had no idea what interest rate RDB charged on a loan of Rs. 10,000, and 10 percent knew that the annual rate was 16 percent. Agreement seems to be emerging among financial literacy trainers that product-specific financial literacy training is more effective than general financial literacy training. For example, telling someone how to apply for a loan is less effective than walking them step by step through applying for a loan from a specific bank using the bank's forms.<sup>9</sup> Thus, despite the reasonably high levels of basic financial literacy, the lack of RDB-specific financial literacy suggests considerable scope for the intervention to provide new information.

### III. RESULTS

This section reports on the results for meeting attendance and loan application and outcome.

#### *Meeting Attendance*

Meeting attendance was high, with 237 of the 383 invited firm owners (62 percent) attending.<sup>10</sup> Based on pre-meeting data, a *t*-test shows significant difference in means between meeting attendees and nonattendees (see table 1 column 3). Meeting attendees are more likely to be married, to have slightly less education and household durable assets, and to be slightly less likely to keep business records than nonattendees.

The first three columns of table 2 present the results of a probit estimation of the correlates of meeting attendance. Since the loan meeting invitation mentioned only the availability of the loan, the interest rate, and repayment period but not the relaxation of guarantor requirements, it seems reasonable to view this reduced form as revealing the correlates of demand for loans.

9. While related, this information provision differs from the marketing efforts of banks. The point of marketing is to sell services to new customers, and marketing outreach by some financial intermediaries includes financial literacy training. This intervention did not try to sell the firms on all the things they could use a loan for or encourage them to get a loan. Rather, it provided information on how to apply for a loan at this particular financial institution if one wanted such a loan.

10. In survey round 7 immediately following the meetings, 231 firm owners said they attended the meeting. The study research assistant recorded 208 owners attending. Firms are classified as having attended if either the research assistant recorded them as attending or the firm owners say they attended. The results are robust to using either measure separately.

TABLE 2. Determinants of Attending Meeting and Applying for Loan: Marginal Effects from Probit Estimation

| Characteristics                                  | Attending meeting    |                       |                      | Applying for loan    |                      |                      |
|--|----------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|
|  | (1)                  | (2)                   | (3)                  | (4)                  | (5)                  | (6)                  |
| <i>Owner characteristics</i>                     |                      |                       |                      |                      |                      |                      |
| Female owner                                     | 0.00202<br>(0.071)   | 0.0407<br>(0.054)     |                      | -0.0243<br>(0.066)   | -0.0199<br>(0.053)   |                      |
| Age of owner                                     | -0.00334<br>(0.0029) | -0.00381<br>(0.0025)  |                      | 0.000269<br>(0.0029) | -0.00117<br>(0.0026) |                      |
| Married owner                                    | 0.203**<br>(0.085)   | 0.138*<br>(0.071)     |                      | -0.129<br>(0.11)     | -0.0309<br>(0.074)   |                      |
| Years of education                               | -0.0118<br>(0.012)   | -0.0189**<br>(0.0096) |                      | -0.0105<br>(0.0099)  | -0.00512<br>(0.0087) |                      |
| Muslim owner                                     | -0.197<br>(0.12)     | -0.176*<br>(0.11)     |                      |                      |                      |                      |
| Digitspan recall                                 | 0.00745<br>(0.025)   | -0.0103<br>(0.021)    |                      | 0.0322<br>(0.022)    | 0.0108<br>(0.019)    |                      |
| Risk aversion (lottery based)                    | 0.00329<br>(0.021)   |                       |                      | 0.0164<br>(0.020)    |                      |                      |
| Overall risk-seeking behavior                    | -0.0230<br>(0.016)   |                       |                      | -0.00443<br>(0.014)  |                      |                      |
| Financial risk-seeking behavior                  | 0.00709<br>(0.016)   | -0.00348<br>(0.012)   |                      | 0.00806<br>(0.013)   | -0.00102<br>(0.010)  |                      |
| Entrepreneurial self-efficacy                    | 0.000737<br>(0.0059) |                       |                      | 0.000904<br>(0.0065) |                      |                      |
| Household asset index                            | -0.0146<br>(0.020)   | -0.0266<br>(0.016)    |                      | 0.0351*<br>(0.020)   | 0.0396**<br>(0.016)  |                      |
| Number of wage workers in household              | -0.0123<br>(0.037)   |                       |                      | -0.0148<br>(0.038)   |                      |                      |
| Financially literate                             | 0.0691<br>(0.070)    | 0.0646<br>(0.058)     |                      | 0.0839<br>(0.057)    | 0.00876<br>(0.058)   |                      |
| <i>Firm characteristics</i>                      |                      |                       |                      |                      |                      |                      |
| Log capital stock (excluding land and buildings) | -0.0219<br>(0.031)   |                       | -0.0505**<br>(0.025) | -0.0137<br>(0.030)   |                      | -0.000988<br>(0.022) |

(Continued)

TABLE 2. Continued

| Characteristics                                 | Attending meeting   |     |                      | Applying for loan    |     |                      |
|---|---------------------|-----|----------------------|----------------------|-----|----------------------|
|   | (1)                 | (2) | (3)                  | (4)                  | (5) | (6)                  |
| Log real profits                                | -0.00772<br>(0.034) |     | 0.0333<br>(0.029)    | 0.000532<br>(0.032)  |     | -0.000359<br>(0.024) |
| Log real sales                                  | 0.0364<br>(0.023)   |     |                      | -0.000940<br>(0.023) |     |                      |
| Owner hours worked per week                     | 0.00132<br>(0.0015) |     |                      | 0.00119<br>(0.0016)  |     |                      |
| Registered firm                                 | -0.0244<br>(0.086)  |     | -0.0153<br>(0.074)   | 0.105<br>(0.10)      |     | 0.215**<br>(0.099)   |
| Manufacturing/services                          | 0.0240<br>(0.082)   |     | 0.0626<br>(0.067)    | 0.107<br>(0.071)     |     | 0.0683<br>(0.055)    |
| Age three or younger                            | -0.0205<br>(0.081)  |     | -0.0241<br>(0.069)   | 0.166<br>(0.11)      |     | 0.121<br>(0.077)     |
| Business operated out of home                   | 0.00696<br>(0.079)  |     | -0.0463<br>(0.068)   | 0.0112<br>(0.074)    |     | 0.00449<br>(0.058)   |
| Business records kept                           | -0.114<br>(0.075)   |     | -0.116*<br>(0.064)   | -0.0182<br>(0.074)   |     | 0.00377<br>(0.062)   |
| Received grant                                  | -0.0361<br>(0.065)  |     | -0.000615<br>(0.056) | -0.00583<br>(0.066)  |     | 0.0110<br>(0.051)    |
| Had previously had a loan by March 2005         | 0.0456<br>(0.071)   |     |                      | -0.0116<br>(0.064)   |     |                      |
| Received a formal loan in the year to June 2006 | -0.103<br>(0.078)   |     | -0.0272<br>(0.067)   | -0.145***<br>(0.047) |     | -0.0949**<br>(0.048) |
| Directly affected by the tsunami                | -0.0751<br>(0.068)  |     | -0.0416<br>(0.060)   | -0.0349<br>(0.059)   |     | -0.0164<br>(0.053)   |
| Log distance to the bank branch                 | -0.00480<br>(0.032) |     | 0.00630<br>(0.026)   | -0.00998<br>(0.031)  |     | 0.0130<br>(0.025)    |
| Number of observations                          | 282                 | 369 | 340                  | 163                  | 215 | 209                  |

\*  $p < 0.1$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Note: Numbers in parentheses are robust standard errors.

Source: Authors' analysis based on data described in the text.

Firm owners attending the meetings and those not attending are similar in many respects, and the differences shown in table 1 continue to hold after controlling for other variables. The probability of attending is lower for owners with more education, who are unmarried, who are Muslim, and with more household assets or whose firms have higher pre-intervention capital stock. Uncorrelated with meeting attendance are the owner's risk aversion and entrepreneurial ability, pre-intervention profitability of the firm, industry, and level of exposure to the 2004 tsunami. Also uncorrelated with meeting attendance are receipt of a grant during the prior randomized experiment on returns to capital (de Mel, McKenzie, and Woodruff 2008) and distance to the RDB bank branch holding the meeting.

Firm owners who did not attend the RDB meetings were asked why (table 3). Personal reasons topped the list, such as illness and family emergency (42 percent of nonattendeess). That so many owners would be affected by illness or family emergency seems implausible; more likely, this became a catch-all category for such reasons as did not get around to it and did not want to make the effort. The next two most common responses were no need for a loan and do not like taking loans (14 percent each). One in ten nonattendeess reported not knowing about the meeting. Only 22 percent of nonattendeess reported one of several responses indicating that the loan requirements or conditions were responsible for their lack of interest in a loan.

#### *Loan Application and Loan Outcomes*

Only 41 firm owners submitted a loan application, and 38 of these were granted a loan. Only one firm owner submitting a loan application had not attended the meeting. The majority of applications were submitted in the last few days of September 2006 and in October 2006, with most loans being approved and disbursed in November and December 2006. The last approval and disbursement occurred on January 8, 2007. Most (30 out of 38) loans were for Rs. 25,000 (\$250); two firms received Rs. 10,000, five received Rs. 20,000, and one received Rs. 75,000. The importance of product-specific information is evidenced by the fact that before the intervention 19 percent of those receiving loans did not know the location of the RDB branches, 38 percent did not think that RDB offered loans to small businesses like theirs, and only 15 percent had any idea what interest rate RDB charges.

The fourth column of table 1 provides summary statistics for owners who attended the meetings and who applied for a loan, indicating where *t*-tests show a difference in means between them and owners who attended the meetings but did not apply for a loan. Columns 4–6 of table 2 show the marginal effects from probit estimations of the determinants of loan application among those attending the meeting. These reflect the joint



TABLE 3. Reasons Given for Not Attending the Loan Information Meeting

| Reason  | Percent stating this reason |
|---|-----------------------------|
| Personal reasons (e.g., illness, family emergency)                                | 41.9                        |
| I dislike/do not believe in taking loans  | 14.2                        |
| I do not currently have any use for a loan  | 14.2                        |
| I did not know about the meeting  | 10.8                        |
| Interest rate on loan is too high   | 6.1                         |
| I am still paying back a loan from another institution                            | 5.4                         |
| I don't have confidence I could make regular loan repayments                      | 5.4                         |
| Loan amount is insufficient   | 4.7                         |
| I will not be able to fulfill other RDB criteria other than guarantees/collateral | 4.7                         |
| Dislike closing the business to attend  | 2.7                         |
| Time and effort to fill out application forms, etc.                               | 2.7                         |
| Inability to find guarantors and collateral for the loan                          | 2.7                         |
| Bank branch is too far/too inconvenient   | 1.4                         |
| I do not have much faith in development banks such as RDB                         | 1.4                         |
| Sample size   | 149                         |

*Source:* Authors' analysis based on responses from October 2006 Sri Lanka Microenterprise Survey (round 7).

outcome of demand for loans and supply restrictions imposed by lenders, and so are simply a description of who got credit.<sup>11</sup> Although those attending the meetings were somewhat poorer and more likely to own a firm that was not formally registered than those not attending, the subsample of firm owners who applied for a loan have more household assets and their firms have higher capital stock and are more likely to be registered than meeting attendees who did not apply. Conditional on other covariates, owners who had received a formal loan in the past year were 10–15 percentage points less likely to apply for a loan. During the meetings, owners with existing loans were dissuaded from making new loan applications. The only other significant variable is the dummy variable for Muslim, as no one who reported their religion as Muslim applied for a loan. Since loan applications were rejected for only three firm owners, the characteristics of owners approved for a loan and those who applied are very similar; the last column of table 1 shows how the three rejected applicants differ from those whose applications were approved.

One plausible reason why more firms do not apply for credit is risk rationing (Boucher, Carter, and Guirkingner 2008). Even if average returns to capital are high, risk-averse individuals may not choose to borrow because of the risk of

11. One approach would be to try to jointly model supply and demand for loans as a system of equations. Given the small number of firms that ultimately received loans and the lack of convincing identifying restrictions to separate supply and demand at this second stage, this approach is not pursued here.

TABLE 4. Reasons Given by Meeting Attendees for Not Applying for a Loan

| Reason  | Percent stating this reason |
|---|-----------------------------|
| Inability to find guarantors and collateral for loan                    | 24.7                        |
| I will not be able to fulfill other RDB criteria other than guarantees  | 21.3                        |
| Interest rate on loan is too high                                       | 21.0                        |
| I dislike/do not believe in taking loans                                | 18.7                        |
| I do not currently have any use for a loan                              | 13.1                        |
| Time and effort in filling out loan applications, collecting signatures | 12.0                        |
| I am still paying back a loan from another bank/institution             | 10.9                        |
| I don't have confidence I could make regular loan repayments            | 9.7                         |
| Loan amount is insufficient   | 7.9                         |
| I do not have much faith in development banks such as RDB               | 4.5                         |
| Bank branch is too far/too inconvenient                                 | 3.4                         |
| I have already taken a loan from RDB and am still repaying              | 1.5                         |
| Sample size   | 267                         |

*Source:* Authors' analysis based on responses from October 2006 Sri Lanka Microenterprise Survey (round 7).

losing collateral or putting their guarantor under pressure if they cannot repay the loan. While the wealth measures discussed above provide some support for this supposition, other measures suggest that this is not the prime reason. Table 2 shows that the measures of risk aversion are not significantly associated with either meeting attendance or loan application. Tables 3 and 4 show that only 5.4 percent of owners reported a lack of confidence that they could make regular loan repayments as a reason for not attending the meeting, and only 9.7 percent of those attending who did not apply for a loan cited uncertainty about making payments as a reason. Finally, in December 2010 firm owners were asked about the consequences of missing a loan payment. Only 3.7 percent believed that the bank would seize collateral, and 17 percent thought the bank would ask the guarantor for payment, while 74 percent thought that they would have to pay additional interest but would get extra time to repay, and 30 percent said that they would be given extra time to repay without paying additional interest. Thus, most owners believed that there was some scope for flexibility in repayment if they could not pay a particular loan installment.

DID THE FIRMS THAT DID NOT APPLY SIMPLY NOT NEED CREDIT? Given that 21 percent of firms had some formal loan at baseline and that recent studies have found modest take-up rates for credit, it is reasonable to ask whether lack of demand explains the low loan application rate.<sup>12</sup> This study provides some

12. See, for example, Banerjee and others (2010) [please add to reference list], where 27 percent of urban households take a loan after microfinance is introduced in newly urbanized areas of Hyderabad. One difference worth noting in the Banerjee and others study is that the lender was offering a group-lending microfinance product directed to women only. Overall demand for credit without these gender and group-lending restrictions might have been higher.

evidence from direct questioning and economic estimation that suggests that firms might not have applied for loans even though they were, by standard definitions, credit-constrained.

The October 2006 survey, which occurred in the month following the meetings, asked firm owners whether they had applied for a loan, had decided not to apply, or had not applied but planned to do so in the near future. Fifty-seven owners said that they planned to apply in the near future, but only eight did (they are included among the 41 owners who applied for a loan). The most important reasons given for not applying were not meeting the loan criteria: 25 percent reported an inability to find guarantors or collateral, and 21 percent reported not being able to fulfill other criteria (see table 4). Next in importance was lack of demand at the going interest rates: 21 percent said the interest rate was too high, 19 percent said they did not like loans, and 13 percent said that they did not need a loan at the time. Only 3.4 percent said that the bank branch was too far away or too inconvenient to get to.

Those who said that they intended to apply in the near future were asked the reasons for the delay. Half the owners reported difficulty finding guarantors, 19 percent could not decide immediately whether to apply, and 16 percent identified the process of getting endorsements from other banks. When asked directly during a revisit to the firms in December 2010, 62 percent of firms in the sample that did not have formal loans said they would apply for a Rs. 20,000 Rs loan at the same interest rate and terms as the loan in the intervention if they knew a bank would approve their application.

Thus, at least half the firms that did not apply indicated a demand for credit when asked directly. From the authors' previous randomized experiment, there is also econometric evidence of returns far in excess of interest rates (de Mel, McKenzie, and Woodruff 2008). These high returns to capital generated by grants are more likely to result from credit constraints than from risk aversion. Returns to the grants were higher for male enterprise owners, for owners with more education and higher digitspan recalls, and for owners with lower household assets and fewer wage workers in the household. The higher returns suggest that these owners are more credit constrained.

Marginally significant evidence is found that firm owners with fewer household assets and lower capital stocks are more likely to attend the meetings, and clearer evidence that the less educated are more likely to attend. Moreover, among those attending, there is clear evidence that firms with higher capital stock and more household assets are more likely to apply. That is, while owners whose firms have the highest predicted returns are more likely to have attended the meetings, they are not more likely to have obtained a loan through the intervention. The main determinant of receiving a loan was higher household assets.

One might question whether the inability to find a guarantor reflects a lack of suitable candidates or whether it reflects the fact that those in a position to

guarantee a loan know the business and think it unlikely to succeed. Ninety percent of those obtaining a loan have a government employee as their guarantor. Firm owners were asked whether they had parents or parents-in-law, siblings, uncles, aunts, or cousins who were government wage workers. Among those giving lack of a guarantor as a reason for not applying, only 2 percent of had a parent or parent-in-law who was a government wage worker, 24 percent had a sibling, and 43 percent had a more distant relative. Thus, the majority of those who said they could not find a guarantor did not have a close family member in a position to act as a guarantor.

If potential guarantors were basing their decision on the expected returns to the loan, more educated, higher ability, less wealthy firm owners would be expected to have guarantors and to receive a loan. Table 5 compares the characteristics of those approved for a loan and those who said that the inability to find a guarantor was the reason for not applying for a loan or for delaying (and then not applying). Those who said that they could not find guarantors have lower levels of household durable assets and their firms have lower capital stock (although not significantly so) and are less likely to be formally registered. Thus, wealth seems the main factor determining whether a guarantor is available to those wishing to apply for a loan or who would apply if they had a guarantor. Gender, the ability of the owner, and factors that *de Mel, McKenzie, and Woodruff (2008, 2009)* associate with higher returns do not appear linked to the availability of a guarantor. Guarantors thus appear to be considering the same factors as the bank, ensuring that the potential loan applicant has sufficient collateral rather than deciding based on expected returns to capital.

WHAT DID FIRMS RECEIVING CREDIT CONSIDER THE MOST IMPORTANT PART OF THE INTERVENTION? The intervention consisted of providing information and relaxing two loan conditions: reducing the number of guarantors from two to one and paying the Rs. 250 loan application fee. Firms that received loans were asked how important each of these components of the intervention was in enabling them to get the loan. Firms considered information provision to be the most important component of the intervention (table 6). Three-quarters of the borrowers said that learning that RDB would lend to small firms like theirs was very important, and 51 percent said that it was the most important component of the intervention. Next in importance was learning that business registration was not required (60 percent of firms viewed this as very important and 24 percent as the most important component). Relaxing the guarantor requirement was important for some firms (40 percent considered it very important, but only 8 percent said it was the most important component). Asked whether they could have provided two guarantors, 48 percent of firms answered yes. Paying the administrative fee was viewed as very important by 11 percent of the firms, and 86 percent said that they would have paid it had the project not done so.

TABLE 5. Differences in Characteristics between Those Receiving Loans and Those Who Could not Find Guarantors

| Characteristics   | Approved    | No guarantor | <i>p</i> -value |
|---|-------------|--------------|-----------------|
| <i>Owner characteristics</i>                              |             |              |                 |
| Female owner  | 0.55        | 0.49         | 0.514           |
| Age of owner  | 42.4        | 41.5         | 0.645           |
| Married   | 0.84        | 0.87         | 0.718           |
| Years of education  | 8.95        | 8.52         | 0.492           |
| Muslim  | <b>0.00</b> | <b>0.11</b>  | <b>0.032</b>    |
| Digitspan recall  | 5.74        | 5.73         | 0.978           |
| Risk aversion (lottery-based)                             | -0.01       | -0.09        | 0.784           |
| Overall risk-seeking behavior                             | 6.32        | 6.13         | 0.647           |
| Financial risk-seeking behavior                           | 5.34        | 5.39         | 0.912           |
| Entrepreneurial self-efficacy                             | 29.9        | 29.4         | 0.545           |
| Household asset index                                     | <b>0.41</b> | <b>-0.47</b> | <b>0.004</b>    |
| Number of wage workers in household                       | 0.55        | 0.67         | 0.539           |
| Financially literate                                      | 0.76        | 0.61         | 0.119           |
| <i>Firm characteristics</i>                               |             |              |                 |
| Capital stock (excluding land and buildings) in June 2006 | 50308       | 36219        | 0.195           |
| Real profits in June 2006                                 | 6556        | 5312         | 0.328           |
| Real revenues in June 2006                                | 18290       | 17407        | 0.844           |
| Owner hours in June 2006                                  | 52.4        | 48.3         | 0.341           |
| Registered firm   | <b>0.32</b> | <b>0.11</b>  | <b>0.005</b>    |
| Manufacturing/services                                    | 0.58        | 0.61         | 0.737           |
| Three years or less in age                                | 0.24        | 0.14         | 0.209           |
| Business operated out of the home                         | 0.71        | 0.78         | 0.421           |
| Business records kept                                     | 0.26        | 0.30         | 0.677           |
| Received grant  | 0.63        | 0.54         | 0.367           |
| Had previously had a loan in March 2005                   | 0.24        | 0.26         | 0.825           |
| Received a formal loan in the year to June 2006.          | 0.18        | 0.19         | 0.951           |
| Directly affected by the tsunami                          | 0.32        | 0.32         | 0.944           |
| Distance to the bank branch (kilometers)                  | 4.03        | 3.32         | 0.231           |
| Sample size   | 38          | 90           |                 |

*Note:* Numbers in bold are values that are significant at conventional levels.

*Source:* Authors' analysis based on responses from Sri Lanka Microenterprise Survey (various rounds).

DID THE INTERVENTION INCREASE ACCESS TO CREDIT? Ten percent of targeted firm owners (38 of 383) received a loan from the RDB. It is possible that all 38 firms would have received loans in the absence of the intervention, either from the RDB or from another financial institution. The panel data are examined to determine whether the intervention increased access to credit to microenterprises in Galle and Matara.

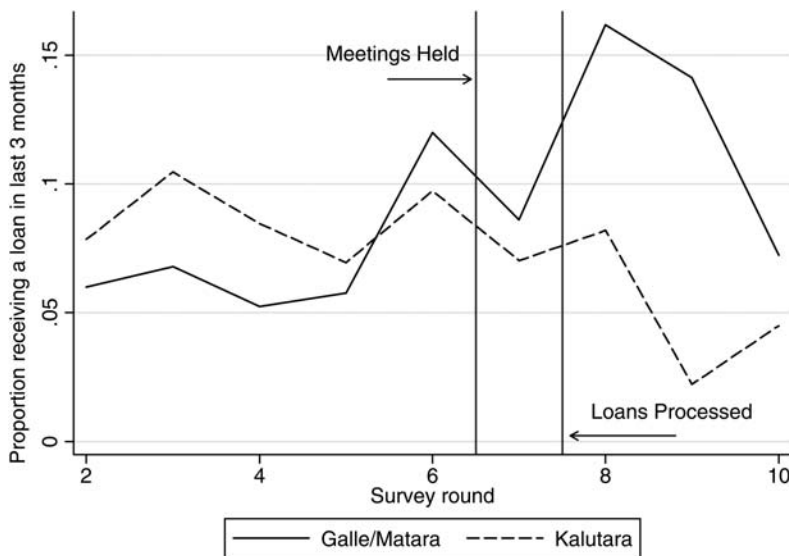
Figure 1 summarizes the identification strategy. It plots the share of enterprises receiving a new loan in the past three months by survey wave in Galle and Matara, where the intervention took place, and in neighboring Kalutara, where it did not. On average 7.2 percent of firms in Galle and Matara and 8.7 percent of firms in Kalutara obtained a new loan in any given three month

TABLE 6. What Do Firms Receiving Loans See As the Most Important Part of the Intervention?

| Intervention component   | Percent ranking as very important | Percent ranking as most important |
|--|-----------------------------------|-----------------------------------|
| Providing information that RDB would lend to small firms like theirs | 75.7                              | 51.4                              |
| Providing information that RDB would lend without collateral         | 62.2                              | 13.5                              |
| Providing information that business registration was not necessary   | 59.5                              | 24.3                              |
| Showing them how to fill out the application forms                   | 56.8                              | 0.0                               |
| Reducing the number of guarantors from two to one                    | 40.5                              | 8.1                               |
| Providing information on terms and requirements of loan              | 24.3                              | 2.7                               |
| Paying the Rs. 250 administrative cost charged by the bank           | 10.8                              | 0.0                               |

Source: Authors' analysis based on responses from Sri Lanka Microenterprise Survey (2007 survey rounds).

Figure 1. Proportion of Firms Getting a Formal Loan in the Last Three Months, by Geographic Region



Source: Authors' analysis based on data described in the text.

period over the 15 months preceding the start of the intervention (survey rounds 2 through 6). The share of firms receiving new loans is likely overstated because of double-counting: 36 percent of those receiving a loan in the last three months report also having received a new loan in the previous survey round, and 39 percent who received a loan in survey round  $t$  but not in  $t-1$  report receiving a new loan in survey round  $t+1$ . Since most loans are for periods of one to two years, this likely represents double counting of loans.

A new variable, *unique formal loan*, for firms reporting a formal loan in the last three months but not in the previous survey round finds that 5.9 percent of Galle and Matara firms and 6.7 percent of Kalutara firms obtained a unique formal loan in the 12 months preceding the intervention (survey rounds 3 through 6).

Loan applications were processed during the seventh survey wave; a large spike in new loans appears in the eighth survey wave in January 2007, when most of the loans had been approved. There is some spillover into the ninth survey wave in April 2007—due both to double-counting and to a few loans being approved in January 2007. No spike is apparent in Kalutara.

Difference-in-differences and fixed effects estimations are used to identify the impact of the intervention on new loans issued. The difference-in-differences estimation uses the 574 firms in all surveyed areas to estimate the following equation:

$$FormalLoan_{i,t} = \alpha + \beta Treat_{i,t} + \lambda X_i + \delta_t + \varepsilon_{i,t} \quad (1)$$

where  $FormalLoan_{i,t}$  is an indicator of whether firm  $i$  received a new loan in the three months up to time  $t$ ,  $Treat_{i,t}$  is a dummy variable that takes a value of 1 in survey round 8 for the Galle and Matara firms and 0 otherwise,  $X_i$  are controls for characteristics of the firm and owner, and the  $\delta_t$  are survey round fixed effects. A linear model is used to ease interpretation of the coefficients—the signs and significance remain the same when panel logit models are used. Standard errors are clustered at the firm level.

Column 1 of table 7 presents the ordinary least squares difference-in-difference estimates without firm or owner characteristics included as controls. Although figure 1 shows similar trends for new loans for firms in Kalutara and in Galle/Matara in the period preceding the intervention, table 1 revealed some differences in baseline characteristics between firms in the two areas. Column 2 of table 7 adds controls for these characteristics. Column 3 uses propensity score matching to match Kalutara and Galle/Matara firms on characteristics prior to the intervention, and the analysis is restricted to firms in the domain of overlapping support with estimated propensity score above 0.10 and below 0.90. Column 4 shows that including both controls and propensity matching slightly reduces the estimate of the treatment effect, lowering it from 8.0 percentage points to 5.2–7.7 percentage points. Column 5 presents the panel fixed effects estimate, which is a 7.0 percentage point increase in formal loans. Columns 6 and 7 use the unique loans measure to show robustness to potential double-counting of loans. The sample uses waves 3 through 10 of the SLMS, since it is not possible to distinguish which of the loans reported in the last three months in the wave 2 survey were also reported in the last three months in the baseline survey. The results are robust to using this measure of new loan uptake.

TABLE 7. Did the Intervention Increase the Proportion of Firms with Formal Loans and Crowd Out Informal Loans?

|                                       | Formal loans           |                    |                    |                  |                      | Unique formal loans <sup>a</sup> |                      | Informal loans <sup>b</sup> |                   |
|---------------------------------------|------------------------|--------------------|--------------------|------------------|----------------------|----------------------------------|----------------------|-----------------------------|-------------------|
|                                       | Ordinary least squares |                    |                    |                  | Fixed effects        | Ordinary least squares           | Fixed effects        | Ordinary least squares      |                   |
|                                       | (1)                    | (2)                | (3)                | (4)              |                      |                                  |                      | (6)                         | (7)               |
| Treatment dummy variable <sup>c</sup> | 0.080***<br>(0.027)    | 0.063**<br>(0.029) | 0.077**<br>(0.032) | 0.052<br>(0.032) | 0.0702***<br>(0.025) | 0.054**<br>(0.026)               | 0.0701***<br>(0.024) | 0.015<br>(0.015)            | 0.0164<br>(0.014) |
| Owner and firm controls <sup>d</sup>  | No                     | Yes                | No                 | Yes              | No                   | Yes                              | No                   | Yes                         | No                |
| Matched sample                        | No                     | No                 | Yes                | Yes              | No                   | Yes                              | No                   | Yes                         | No                |
| Firm*Period observations              | 5,089                  | 4,830              | 3,536              | 3,536            | 5,089                | 3,143                            | 4,515                | 3,536                       | 5,089             |
| Number of firms                       | 574                    | 537                | 393                | 393              | 574                  | 393                              | 574                  | 393                         | 574               |

\*\* p < 0.05, \*\*\* p < 0.01.

Note: Dependent variable is the proportion of firms with a loan in last three months. Numbers in parentheses are standard errors clustered at the firm level. All interventions also include survey wave dummy variables.

a. Loans for which there is no new formal loan in the previous survey round.

b. Loans from moneylenders and family.

c. Takes a value of 1 in round 8 (January 2007) and 0 in other survey rounds.

d. Include gender, age, marital status, education, Muslim dummy variable, digitspan recall, risk aversion, overall risk seeking behavior, financial risk seeking behavior, entrepreneurial self-efficacy, household asset index, number of wage workers in household, and dummy variables for financial literacy, formality, manufacturing and services, age of firm less than three years, home business, keeps business records, ever received grant, and previously received credit in baseline survey. These variables were also used for propensity score matching, and the matched sample is trimmed to include only firms with propensity scores above 0.10 and below 0.90.

Source: Authors' analysis based on responses from Sri Lanka Microenterprise Survey (various rounds).



TABLE 8. What Did Borrowers Report Using Loans For?

| Reported loan use                              | Proportion spending on this use | Average amount spent (rupees) | Share of total spent | Share excluding Rs. 75,000 outlier |
|--|---------------------------------|-------------------------------|----------------------|------------------------------------|
| Household durables                             | 0.08                            | 608                           | 2.5                  | 2.8                                |
| Food for home consumption                      | 0.16                            | 788                           | 3.3                  | 3.6                                |
| School supplies or fees                        | 0.08                            | 297                           | 1.2                  | 1.3                                |
| Religious festivals and ceremonies             | 0.03                            | 270                           | 1.1                  | 1.2                                |
| Repairs to the house                           | 0.08                            | 1064                          | 4.4                  | 4.8                                |
| Repayment of loans                             | 0.14                            | 851                           | 3.5                  | 3.9                                |
| Savings  | 0.30                            | 3935                          | 16.3                 | 14.8                               |
| Inventories and raw material for business      | 0.59                            | 9195                          | 38.1                 | 41.7                               |
| Equipment for business                         | 0.16                            | 2504                          | 10.4                 | 11.3                               |
| Inventories and equipment for another business | 0.11                            | 2432                          | 10.1                 | 4.9                                |
| Other  | 0.11                            | 2162                          | 9.0                  | 9.8                                |
| <b>Total</b>                                   |                                 | <b>24106</b>                  |                      |                                    |

*Source:* Authors' analysis based on responses from January 2007 Sri Lanka Microenterprise Survey (round 8).

Both the difference-in-difference matching and fixed effects estimates therefore show that the intervention increased access to credit, leading to a 5.4–7.0 percentage point increase in the proportion of firms receiving loans in the past three months. Since only 5.9–7.2 percent of Galle and Matara firms were receiving loans in the period prior to the intervention, this represents a doubling of the proportion receiving loans, a sizable treatment effect.

Finally, columns 8 and 9 of table 7 examine whether the increase in formal loans substituted for or crowded out informal loans from moneylenders, friends, and family. Use of informal loans is limited, and the results show that the treatment had no significant effect on use of informal credit. Thus, the increase in credit from the intervention did not come from a substitution away from informal credit.

WHAT WAS THE IMPACT OF THIS CREDIT ON THE FIRMS RECEIVING IT? The January 2007 survey found that the most common use for the loan was buying inventories and raw materials: 59 percent of firms had done this by January 2007, with the amount spent averaging 38 percent of the loan amount—42 percent when the outlier firm that received a Rs. 75,000 loan is removed from the analysis (table 8). The next most common items were savings (reflecting that in January 2007 many firms had just received the loan and had not yet spent it) and business equipment. Together, business assets and savings accounted for 67 percent of the loan amount. Household uses accounted for 14 percent; capital stock for other household businesses, 5 percent; and repayment of prior loans, 4 percent. The remaining 10 percent was spent on miscellaneous items. The categories and shares are similar to those observed in a previous project in

which firms received grants of Rs. 10,000–20,000 (de Mel, McKenzie, and Woodruff 2008).

Of course, money is fungible, so simply asking people how they spent the loan may not reflect its true marginal effect. While an ideal comparison group against which to measure marginal impacts is lacking, a before-after comparison and a comparison with the group of firms not receiving a loan provide suggestive evidence on the marginal returns to capital. Fixed effects panel instrumental variables are used to estimate the return to capital for the firms receiving loans (only firms with approved loans are included):

$$profits_{i,t} = \alpha_i + \beta K_{i,t} + \varepsilon_{i,t} \quad (2)$$

Capital stock,  $K_{i,t}$ , is instrumented, with a dummy variable that takes a value of 0 in the period before the loan was approved and 1 afterwards. Loan approval does significantly predict capital stock; the first stage  $F$ -statistic is 13.53. This estimates the return to the change in capital coming from the loan.

Although equation (2) is estimated on a self-selected group of borrowers, the timing of loan approval was dictated by the loan intervention rather than the firm's decision to seek out a loan, providing at least some level of exogeneity. Moreover, so long as the return to capital is stable over the survey period, equation (2) will still correctly identify the return to capital for the firms receiving the loans. De Mel, McKenzie, and Woodruff (2008) find evidence consistent with constant returns to capital among the full sample of enterprises.

Alternatively, the Galle and Matara firms that did not receive a loan can be used as controls for time effects in the following estimate, using instrumental variables:

$$profits_{i,t} = \alpha_i + \beta K_{i,t} + \delta_t + \varepsilon_{i,t} \quad (3)$$

Column 1 of table 9 then reports the implied real monthly return to capital under equation (2), which is 5.7 percent, and column 2 reports the implied return under equation (3), which is 6.6 percent. Returns to capital are similar under the two estimation strategies, suggesting that it is reasonable to assume that returns to capital are fairly constant for these firms over the period studied. The estimated return is very similar to the 5.8 percent average return estimated in de Mel, McKenzie, and Woodruff (2008) for the full sample of firms not directly affected by the tsunami and lower than the 9.9 percent average return for tsunami-affected firms reported in de Mel, McKenzie, and Woodruff (2008).<sup>13</sup> Since 32 percent of firms receiving loans were directly affected by the

13. De Mel, McKenzie, and Woodruff (2008) discuss adjustments to account for changes in the labor hours worked by the owner in response to the intervention, which lower the returns to capital to closer to 5.0 percent. Given the small number of firms receiving loans and the sensitivity of some of these adjustments to outliers, no adjustment is made here for hours worked, and the results are compared to the specifications in de Mel, McKenzie, and Woodruff (2008) that also do not adjust for hours worked.

TABLE 9. Impact of Loan on Return to Capital (instrumental variable, fixed effects estimation)

|                          | Before–after<br>(1) | Other Galle/Matara firms as controls<br>(2) |
|--------------------------|---------------------|---|
| Capital Stock            | 0.0577*<br>(0.031)  | 0.0663<br>(0.085)                           |
| Firm*Period observations | 345                 | 3434  |
| Number of Firms          | 37                  | 376   |

\*  $p < 0.1$ .

*Note:* Dependent variable is real profits (rupees). Numbers in parentheses are robust standard errors clustered at the firm level. Receipt of loan is used as an instrument for capital stock.

*Source:* Authors' analysis based on responses from Sri Lanka Microenterprise Survey (various rounds).

tsunami, the weighted average of the 5.8 and 9.9 returns is 7.1 percent. For comparison with returns to the grant, the 1.3 percent monthly interest rate is subtracted from profits when calculating the return to the loan, yielding a 5.8 percent real return. The fact that the point estimate of the return to capital for firms receiving loans is the same as that for the full sample using grants suggests that loans were not made to firms with particularly high returns to capital.

DID THE FIRMS REPAY THEIR LOANS? The intervention succeeded in increasing the number of firms with loans. These loans were associated with higher capital stocks and higher profits for the firms receiving them. A key question for banks considering extending credit to such marginal firms is whether the loans will be repaid. Data from wave 10 of the SLMS in October 2007 provide evidence on repayment during the first year of the loan. Monthly installments ranged from Rs. 500 (\$5) to Rs. 2,000 (\$20), with a median of Rs. 1,325. One of the 38 firms was approved but ultimately decided not to take the loan. All 37 other firms had begun repayments, and no firms had defaulted. Five of the 37 firms say they had delayed a loan payment at least once: 2 had delayed one payment, and 3 had delayed two payments. However, at the time of final repayment, administrative data indicate that repayment rates exceeded the RDB average.

Preliminary data from a resurvey of firms in December 2010 show that 35 of 37 firms had fully repaid their loans. Only 5 of the 37 had subsequently taken another RDB loan, and only 12 currently had a loan from any formal source. Those who took the first RDB loan are still more likely to have a formal loan than the other firms in Galle and Matara or than the average firm in Kalutara. When asked the reason for not taking another loan, approximately two-thirds of the RDB loan sample gave reasons related to lack of demand (for example, no need for a loan, it is too difficult to repay a loan), while one-third gave reasons related to loan supply (for example, bank rejected my application, difficult to find guarantor, my age is higher than the threshold the bank uses now

so they rejected the loan). Supply reasons still appear to affect the ability to obtain loans.

#### IV. DISCUSSION AND CONCLUSIONS

The average microenterprise in Sri Lanka has returns to capital well above market interest rates but is not receiving credit. The intervention provided information on loans offered by one financial institution, reduced the requirement for loan guarantors from two to one, and made minor additional changes. One in 10 microenterprises participating in the intervention received a new loan, doubling the proportion of firms receiving a loan in the last three months. Information therefore appears to have had some impact. One-third of the microenterprises receiving the new loans had not previously thought that the bank would lend to firms like theirs, and before the interventions few knew the interest rate and other loan terms. Since the general financial literacy of microenterprise owners was relatively high, it can be concluded that providing product-specific financial information can improve access to credit for microenterprises. Since repayment rates exceeded the RDB average, neither reducing the number of guarantors nor expanding the pool of borrowers appears to have had an adverse effect on the quality of the loans. This is consistent with [Karlan and Zinman's \(2010\)](#) finding that expanding the borrowing pool is profitable for lenders.

However, because the intervention also modestly relaxed lending conditions, this is likely an upper bound on the impact of information. Information alone is not enough for most microenterprises to get credit. Among those not receiving loans, demand and supply constraints both contributed to the lack of credit. Some 36 percent of nonborrowers said that they did not apply for reasons attributable to a lack of demand at prevailing interest rates. However, 44 percent said they did not apply for reasons related to bank requirements for obtaining a loan. The most important of these was the need to find a guarantor. A second administrative barrier, necessitated by the absence of a credit bureau for microfinance, was the requirement to travel to other financial institutions and obtain letters of endorsement showing that the firm did not have any outstanding loans.

The results suggest several avenues for policymakers and financial institutions seeking to expand access to credit to small-scale entrepreneurs. The first is development of a credit registry that includes information from microfinance organizations and development banks. This would remove the barrier of having to seek endorsements from other lenders. Second, banks and other financial institutions can expand their customer base through product-specific financial education. Third, more innovative ways of delivering collateral-free individual loans to microenterprises need to be developed. The establishment of a credit registry that includes microfinance would also aid in this regard.

## APPENDIX

TABLE A1. Summary of Loan Conditions and Modifications

| Condition                                      | Usual Ruhuna Development Bank (RDB) condition            | Modification  |
|--|--|---|
| Loan amount (rupees)                           | 5,000–25,000   | None  |
| Interest rate (annual, percent)                | 16   | None  |
| Repayment period                               | 2 years, equal installment or declining balance          | Equal installment offered   |
| Collateral                                     | Often waived on small loans                              | Waived  |
| Guarantors                                     | Two guarantors required                                  | Allowed family members and mutual loan applicants to act as guarantors; branch discretion on number |
| Endorsements from other financial institutions | Required   | None  |
| Residence verification by Grama Niladhari      | Required   | None  |
| Oath attested by justice of the peace          | Required   | Branch discretion   |
| Salary certification by employer               | Not required for self-employed                           | None  |
| Business registration                          | Not required for self-employed                           | None  |
| Age  | If over 55, joint application with younger family member | None  |
| RDB account holder                             | Must be existing account holder, 3 month waiting period  | 3 month waiting period waived   |
| Loan application fee (rupees)                  | 250  | None  |

Source: Authors' detailing of loan requirements.

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