Expanding Credit Access: Improving Microfinance Operations and Measuring Impact with Credit Scoring

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Microfinance and consumer credit

The microfinance industry grew exponentially over the past 20 years under the premise that expanding access to credit for entrepreneurial activities helps improve the welfare of the poor. With some microfinance institutions (MFIs) now moving beyond entrepreneurial credit and offering consumer loans, practitioners and policymakers have expressed concern that the poor may be harmed by costly interest payments on loans that do not directly enhance income generation.

We designed and conducted a field experiment in South Africa to determine the impact of consumer credit on marginal groups. We also looked into whether lenders are pursuing optimal, profit-maximizing lending strategies.

Expanding the client base

Entrepreneurial credit is not the focus of microfinance in South Africa, as most microfinance institutions lend only to employed individuals. Microfinance clients in South Africa, even those employed, generally lack the credit history or collateralizable wealth needed to borrow from traditional institutional sources such as commercial banks. Their main source of credit in the formal sector is a segment of for-profit financial institutions granting "cash loans": small, high-interest (up to 30% per *month*), and short-term credit with fixed repayment schedules.

Our experiment focused on credit scoring as a potential method to expand the client base by bringing in additional profitable clients who might have been overlooked under previous methods of selection. Traditional approaches to microcredit expansion—creating new microfinance institutions and adding branches to existing MFIs—may not be the most cost-effective method to support efficient expansion. A simpler way to expand access to credit is to liberalize screening criteria.

Credit scoring, a process of estimating the probability of default for a given loan applicant, is generating interest in the microfinance industry as a tool for reducing risk and increasing the efficiency of MFIs. Instead of relying on subjective judgments of potential clients' risk levels, loan officers input a standard set of data, and the computer calculates the likelihood of each applicant going into arrears based on actual historical repayment data from clients with similar characteristics. The process is essentially no different for microfinance clients than it is for borrowers in developed countries, except that the available data may be different. In developing countries there may be no credit bureau or income statements to rely on, but scoring can be used with whatever data may be available, or the MFI can collect its own.

Credit scoring has the advantage of systematizing the process. Instead of dividing loan applicants into simple "yes" and "no" categories for credit, applicants

fall on a scale between 100 (most likely to repay) and 0 (least likely to repay) and can be divided into categories based on their potential risk to the institution. This allows the lender to refine its decision-making process and approval standards by adjusting the line between 0 and 100 where it has determined applicants to be creditworthy. Our experiment allowed the lender to offer credit to applicants who had narrowly missed the cutoff for approval, while limiting the volume of this riskier portfolio.

We worked with one of the larger cash loan companies. Its standard loan product was a four-month loan at 11.75% per month, charged on the original balance (200% APR). Interest was charged up front, and the loan was then amortized into four equal monthly repayments. The median loan size made under the experiment was $127, or 40% of the median borrower's gross monthly income.

Evaluating welfare effects

Many advocates for the poor are concerned about high-interest consumer loans. Recent studies find that consumers systematically underestimate the interest rate on short-term installment loans, which is correlated with borrowing heavily and expensively. Worrisome as these findings are, they do not tell us the *welfare effects* of borrowing among the poor in developing countries. Are borrowers purchasing televisions or using the loan for health emergencies? Both may be welfare enhancing but the doctor's visit has the potential to affect income generation over the long run, for example, by helping a sick employee to keep his or her job. Also, we cannot be certain that borrowers are not in fact using consumer loans for entrepreneurial activity, just as in the United States where entrepreneurs often use credit cards as a source of working capital.

The impact of credit may be particularly problematic to evaluate because of selection bias. It is likely that those who choose to borrow are more "driven" in some way than those who do not, yet there is no way to account for unobservables like "drive." Simply comparing borrowers to non-borrowers will yield a flawed estimate of the impact of credit. This issue seems particularly relevant in developing countries where microfinance organizations tout the entrepreneurial spirit of their borrowers as a critical component of success. Comparing these clients to non-clients would likely overstate the impact of credit. Conversely, programs that target the poor might appear less effective than they are in reality because their clients are poorer than non-clients. The randomized controlled trial we used avoids these problems. Although this study focuses on consumer credit, the methodology can and should be applied to other forms of credit.

We used the lender's screening process to create similar treatment and control groups by randomly selecting some rejected applicants to be reconsidered for a loan. Loan officers were required to label applications rejected by the scoring system as either egregiously or marginally uncreditworthy. Among the marginal applications, the loan officer's computer produced a message (randomly selected) instructing the loan officer to "approve" or "still reject." Neither the treatment (computer said "approve") nor the control (computer said "reject") group was informed by the lender that a component of the loan decision was randomized. Loan officers retained the right to reject applicants who had been "unrejected" by the computer program, and they approved only 53% of those selected to be unrejected. For the analysis, though, the treatment group remains all those flagged by the computer to be reconsidered for loans. This experimental setup assures us that, given a sufficiently large sample, *on average*, the treatment and control groups are identical except for the effect of the credit itself. Our design, then, can identify the effects of expanding access to credit to the people most relevant to the practitioner and policy community: those applicants deemed by loan officers to be closest to the margin of creditworthiness.

The lender's interest in expanding its approval criteria was purely for business reasons. The experiment provided the lender with information about the expected profitability of changing its underwriting in a way that induces branch personnel to approve more risky loans. Randomization provides a way to do this in a controlled manner that mitigates risk.

Impact assessment

Our outcome data comes from the lender's records on repayment and profitability, from credit bureau reports over two years after the start of the experiment, and from household surveys conducted by an independent firm at the home or workplace of the marginal applicants 6-12 months after the start of the experiment. The survey measures borrowing activity, loan uses, and household wellbeing.

Financial access

To understand the policy relevance of expanding financial access it is necessary to know how credit constrained the poor are. If rejected applicants can easily borrow elsewhere (at similar terms) there would not be a compelling policy prescription to expand financial access. We examine this by comparing the borrowing history of both treatment and control groups. If there are no binding credit constraints we should see no difference between the two. Interestingly, we did not find that the treatment group was more likely to have obtained a loan in the 6-12 months after applying to the lender. However, treated applicants borrowed 28% more in total than control households and were more likely to report borrowing from a microlender and less likely to report borrowing from other formal sources.

Loan uses

The table lists the most common loan uses for households in our sample. The number one use is to pay off other debts. Even with their high monthly interest, cash loans from our lender seem to be a cheaper source of credit for these households than other options.

Household welfare

Expanded access to credit significantly improved average outcomes. Applicants in the treatment group were significantly more likely to retain their job over the study period, and treatment-group incomes were significantly higher. Treated households were 5.8 percentage points less likely to report hunger, and 3.7 percentage points more likely to report a food quality improvement.

The median treatment household showed an estimated R3,500 (or 16%) increase in income and treated households were 7.4 percentage points more likely to fall above the poverty line, a 19% reduction in poverty. These measures were taken well after the initial loan repayments were due, so these treatment effects are not simply picking up a transitory spike in consumption.

The relatively low position of business uses (see table) implies that the households were not, in fact, using consumer loans for entrepreneurial activity. It is likely that the welfare gains from access to credit were driven by a sizable difference in formal employment. Questions on job history reveal that treated applicants were 11 percentage points more likely to be working at the time of the survey. Since everyone in our sample had verified employment at the time they entered the experiment, it appears that the treatment effect operates by enabling households to *maintain* employment by smoothing or avoiding shocks that prevent them from getting to work. The popularity of transportation expenses (including buying or repairing a car and public transport) combined with expenditures on clothing and health care suggest that people in the treatment group used loans, in part, to make expenditures necessary to keep their jobs.

Loan uses since application

Loan Use	All loans	Micro-lender loans	Other formal loans	Informal loans
Pay other debts	28.30%	31.70%	27.70%	15.20%
Transportation	19.40%	12.70%	9.20%	24.20%
Events	16.90%	15.50%	17.70%	21.20%
School/university	13.70%	15.50%	12.30%	9.10%
Improve/build house	11.50%	6.30%	18.50%	6.10%
Buy/improve food	9.90%	23.20%	6.90%	0.00%
Bills	7.30%	7.00%	8.50%	6.10%
Durable goods	6.70%	4.20%	10.80%	0.00%
Health care	5.10%	5.60%	3.80%	24.20%
Other personal uses	4.50%	3.50%	6.90%	6.10%
Buy clothes	3.50%	4.90%	3.10%	0.00%
Business uses	3.20%	2.80%	4.60%	0.00%
Total	129.90%	133.10%	130.00%	112.10%
No. of loans	314	142	130	33

Columns sum to more than 100% because respondents could state more than one use of the loan.

Profitability

Marginal loans were less likely to have been paid back in full (71.5% vs. 76.4%), yet determining whether they were ultimately profitable for the lender requires

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Briefs

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separating revenues and expenses for the marginal loans from the lender's other revenues and expenses. Loan advances and proceeds are relatively straightforward to account for: we discount all loan advances and payments made on the marginal loans (including principal, interest, and late fees) back to the start date of the experiment. The lender did not hire any new staff for this experiment, nor did it incur any additional marketing expense. There may be additional costs to the lender if staff are forced to divert time spent processing, monitoring, and enforcing other loans to the marginal loans. We estimate this cost using the lender's estimate of marginal labor costs and quantities for each type of activity.

We conclude that marginal loans are profitable, yielding R201 ($32) per marginal loan. This, however, is substantially less profitable than comparable loans in the lender's normal portfolio. Nonetheless, combined with impacts on household welfare, the findings from this study suggest a double imperative for expanding financial access: it can be good for both lender profitability and social welfare.

Improving and extending microfinance

We find clear evidence that expanding access to consumer credit is welfare enhancing and that these loans are indeed profitable for the lender. The study demonstrates the potential for credit scoring to assist MFI managers in improving microfinance operations. As credit-scoring systems are enhanced for MFIs, scoring will lower costs by reducing both the number of defaults and the amount of time credit officers spend recovering loans. Further, by identifying potential credit risks in advance, credit officers can pay special attention to certain cases, perhaps allowing them to prevent defaults before they happen. With more field experiments we can develop a scorecard that can produce a comprehensive loan recommendation, including loan term and interest rate, instead of a simple accept or reject decision. We can also develop a scorecard to screen for clients who are most likely to drop out after any given loan.

By improving efficiency and reducing arrears, credit scoring will ultimately lower costs to the client. Lower interest rates can attract more (and potentially poorer) clients to formal financial services. Credit scoring, therefore, promises to be a key ingredient in expanding financial access. Further evidence is required before we can make unqualified recommendations to practitioners and policymakers about the applicability of these findings to other settings. To that end, we currently are replicating this study, starting in the Philippines.

Related reading

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