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## RESEARCH ARTICLES

### Microcredit in Theory and Practice: Using Randomized Credit Scoring for Impact Evaluation

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Microcredit institutions spend billions of dollars fighting poverty by making small loans primarily to female entrepreneurs. Proponents argue that microcredit mitigates market failures, spurs micro-enterprise growth, and boosts borrowers' well-being. We tested these hypotheses with the use of an innovative, replicable experimental design that randomly assigned individual liability microloans (of \$225 on average) to 1601 individuals in the Philippines through credit scoring. After 11 to 22 months, we found evidence consistent with unmet demand at the current price (a roughly 60% annualized interest rate): Net borrowing relative to controls. However, the number of business activities and employees in the treatment group decreased relative to controls, and subjective well-being declined slightly. We also found little evidence that treatment effects were more pronounced for women. However, we did find that microloan increase ability to cope with risk, strengthen community ties, and increase access to informal credit. Thus, microcredit may work, but through channels different from those often hypothesized by its proponents.

**M**icrocredit—broadly speaking, the provision of small loans (typically \$100 to \$500 U.S.) to very small businesses, typically self-run enterprises with few if any employees—is an increasingly common response in the fight to reduce poverty and promote economic growth (1). The motivation for the continued expansion of microcredit, at least for the continued flow of subsidies to both nonprofit and for-profit lenders, is the presumption that expanding credit access is a relatively efficient way to fight poverty and promote growth. Yet despite strong claims about the effects of microcredit on borrowers and their businesses (e.g., the 2006 Nobel Peace Prize to Muhammad Yunus and the Grameen Bank), there is relatively little rigorous evidence about these programs (2).

In practice, the policy discussion about micro-lending typically emphasizes the upside, arguing that micro-lending mitigates market failures by making access to credit possible for entrepreneurs previously excluded; get credit, entrepreneurs can, e.g., improve their decision-making power by giving them more financial independence, and spur enterprise growth and improve subjective well-being (e.g., increase in life satisfaction, self-esteem, and optimism; decrease in level of stress).

In theory, expanding credit access may not have positive effects on businesses and could even

have negative effects. Financial institutions may charge relatively efficient "informal" (community- or family-based) mechanisms (3). The often high cost of microcredit, from 10% annualized interest rates to 100%, means that even higher returns to capital are required for microcredit to produce improvements in business income, and thus in household income and consumption. Finally, some argue that psychological biases may induce some to "overborrow" and do themselves more harm than good (4).

"Traditional" micro-lenders target women who operate small-scale businesses and use group lending mechanisms (5). But as micro-lending has expanded and evolved into its "second generation," it often ends up looking more like traditional small or small-business lending. Large-scale lenders extend individual liability credit to increasingly urban and competitive settings. For example, recent estimates suggest that about one-half of microfinance institutions are individual liability lenders, and about one-quarter are for-profits or cooperatives (6–9).

We have conducted a randomized evaluation of second-generation microcredit by working with First Micro Bank (FMB) to implement a novel, replicable experimental design that uses credit scoring to randomly assign individual liability loans to a sector of entrepreneur variation in credit access (10–12). FMB is a for-profit lender that makes small, 3-month loans at 60% annualized interest rates to micro-entrepreneurs in the outskirts of Manila and provides technical assistance from a U.S. Agency for International Development (USAID) contractor (13). Nonrandomized empirical evaluations of microcredit impacts are typically complicated by classic endogeneity problems: Client self-selection and lender strategy

likely produce correlations among credit access, absolute outcomes, and critical unobserved inputs (e.g., client opportunity sets, preferences, and aptitude) that confound attempts to make causal inferences of microcredit impacts (14).

We worked with the lender to build a quantitative model that distinguishes creditworthy or creditworthy applicants from marginal ones. Marginal applicants then get approved for a loan according to some preassigned probability. This method provides lenders with a way to take systematic, controlled risks when selling underwriting strategies. It also provides researchers and policymakers with a source of exogenous variation in access to credit that may be used, in conjunction with follow-up data (e.g., on business and household outcomes), to help identify the impacts of microcredit from a change in the screening criteria of existing lenders on marginal applicants. Note that impacts may differ for credit-marginal applicants; we discuss this and other external validity issues below. Nonetheless, our methodology is transferable to many different types of lenders and settings.

The ability to transfer an evaluation method to a range of contexts is particularly important given the limited state of evidence on microfinance impacts. Prior studies have used various methodologies to address endogeneity problems and have found varied impacts or lack thereof (15–21). In the variation in estimated impacts across studies due to methodology, to true underlying heterogeneity in borrower characteristics and market conditions, or to both? In particular, we draw the reader's attention to (2), which provides a summary of results and methodological issues of several nonexperimental impact evaluations to date. Applying similar experimental methodological approaches across different settings will help us to address these issues and paint a more complete picture for theory testing and policy evaluation.

**Setting.** Our comparing lender, FMB, has operated as a rural bank in the metro Manila region of the Philippines since 1980. FMB's "micro-lenders" include both for-profit and nonprofit lenders offering small loans to micro-entrepreneurs (average \$225) for use in their businesses (1, 10), from formalized, and on fixed schedules of equal periodic repayments.

Most Filipino micro-lenders operate on a small scale relative to microfinance institutions (MFIs) in the rest of Asia (2–6), and our lender is no exception. FMB maintained a portfolio of about 1,400 individual and 2000 group borrowers throughout the course of the study. This portfolio represents a small fraction of its overall lending, which also includes larger business and consumer loans as well as home mortgages.

Manila borrowers typically lack the credit history and/or collateralizable wealth needed to borrow from traditional institutional sources such as commercial banks. This holds for our sample—which is only marginally creditworthy by FMB's

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increased in the treatment group relative to controls. However, the number of business activities and employees in the treatment group decreased relative to controls, and subjective well-being declined slightly. We also found little evidence that treatment effects were more pronounced for women. However, we did find that microloans increase ability to cope with risk, strengthen community ties, and increase access to informal credit. Thus, microcredit here may work, but through channels different from those often hypothesized by its proponents.

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