Access to Finance
FORUM
Reports by CGAP and Its Partners
No. 2, December 2011

Latest Findings from Randomized Evaluations of Microfinance

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Acknowledgments

Our thanks to the following people who reviewed and gave helpful input on this paper: Lasse Brune, Erica Field, Nathanael Goldberg, Dean Karlan, Asim Khwaja, Meng Lu, David McKenzie, Jonathan Morduch, Jonathan Robinson, and Dean Yang, and from CGAP's publications committee Tilman Ehrbeck, Alexia Latortue, Kate McKee, and Richard Rosenberg.

Latest Findings from Randomized Evaluations of Microfinance

In 2009, the results from two microcredit impact studies in Hyderabad, India, and Manila, the Philippines were released to mixed responses (Banerjee, Duflo, Glennerster, and Kinnan 2010; Karlan and Zinman 2011). Some media declared microfinance a failure (Bennett 2009). Many in the microfinance community dismissed these randomized studies as too limited to be a true reflection of the entire sector.[1]

These first randomized studies caused a sensation because they challenged the dominant impact narrative for microcredit—a narrative that rests on loans to capital-constrained microentrepreneurs who earn a steep return on marginal capital and thus can repay a relatively high interest rate and reinvest to grow out of poverty—and the way in which that narrative had been universalized in the popular imagination. In fact, the results were more nuanced. What the microcredit studies really showed is that this model of microcredit works for some populations—those who successfully grow businesses—but not for others.

Many now agree that the expectations for microcredit in the popular discourse were overblown. For some, the pendulum had swung: far from a panacea against poverty, some argued that microcredit was actually doing harm. The evidence supports neither extreme view. In fact, the results of the studies aligned with and confirmed some of the evidence from nonrandomized methods already in the microfinance research literature that found modest but neither revolutionary nor deleterious impacts from credit. While the concept of capital that will allow poor people to unleash small business opportunities remains valid for some poor clients, not every borrower is a microentrepreneur—take-up rates for credit products are often surprisingly low, and not all economic activities that poor people engage in yield high returns. Microcredit is not transforming informal markets and generating significantly higher incomes on average for enterprises. And yet the industry has focused almost exclusively on the rhetoric of entrepreneurship and has overlooked the many important benefits to households that are using loans to accelerate consumption, absorb shocks, or make household investments, such as investments in durable goods, home improvements, or education for their children.

Combined with other evidence, randomized evaluations are contributing to an emerging body of knowledge that is creating a new narrative around how financial services for the poor really work. As the results from new studies have been released, the discussion has evolved, and randomized evaluations are being used to examine when particular products and designs work, for what segments of people, and why.

Today researchers are using randomized techniques to better understand the underlying financial services needs of poor clients and what impacts are achieved when appropriate financial services are offered. Building on evidence from earlier nonrandomized studies, researchers are increasingly able to work with microfinance providers to apply these techniques to product innovation and to tweak product design. In this way, randomized techniques can make a significant contribution to the field by clarifying our understanding of precisely how, and under what conditions, financial services benefit poor people.[2] (See Box 1.)

Poor households clearly have other financial needs that go beyond working capital loans to microentrepreneurs. They use a variety of informal and semi-formal mechanisms to cope with risk,

1. See, e.g., Helms (2010).

2. Naturally, not all settings are appropriate for randomized evaluations. This paper does not discuss such methodological issues in detail, but it does share findings from settings where randomized evaluations were feasible and illuminating.

BOX 1

Frequently Asked Questions about Randomized Evaluations

Why are randomized trials considered the most rigorous method of impact evaluation?
In the case of evaluating a microfinance program, if we simply compare clients to nonclients we are comparing two different types of people: those who choose to borrow or save, and those who do not. The ones who choose to participate likely have different business acumen, tolerance for risk, and other characteristics, and studies have shown that they can be wealthier than nonclients—even before joining a microfinance program. By randomly assigning access to financial services, randomized trials ensure that the only difference, on average, between clients and nonclients is access to the program. Therefore any difference between the groups can be confidently attributed as the impact of the program.

Can results from randomized trials be generalized?
Randomized trials help to establish causality. But they do this only for the particular context of the evaluation (i.e., what we learn from Kenya may or may not apply to Vietnam). This is a limitation of all types of evaluation, however. Randomized trials are no more or less vulnerable than other methods.

An increasing number of credible studies, using both qualitative and quantitative techniques, are helping to build a body of knowledge about how financial services work. But it is not a specific number of studies that will allow researchers to assert a theory to make predictions about what happens in other places. The only way to generalize findings is to conduct a series of careful replications to evaluate similar approaches in different contexts until a clear pattern emerges.

Why do researchers measure results after only one or two years? Microentrepreneurs need much more time to establish their businesses or build up savings, so we should perhaps not expect to see impact on poverty within such a short timeframe.
This is a limitation of randomized evaluations, as well as some other evaluation techniques. Most randomized evaluations of microfinance programs measure results after two years or less, in part, because practitioners are typically reluctant to refrain from serving a control group for longer than a couple years. However, follow-up studies may be employed to estimate long-run effects, and where practical, researchers may go back and resurvey households after a longer period.

Why are randomized trials so expensive?
Randomized evaluations are not more expensive than other types of evaluations. The high cost from many impact evaluations comes from collecting data, such as household surveys, to measure household welfare, whether randomized or not.

Note: For a short history of randomized evaluations, see http://www.povertyactionlab.org/methodology/when/when-did-randomized-evaluations-begin

seize opportunities, manage the risks and inconveniences that come from having uneven cash flows, and smooth household consumption. They use credit or savings to pay school fees, they save to invest in businesses, and they use health and crop insurance, when available, to stave off risk. While these uses of financial services are different from the uses initially anticipated, they are still valuable, and the ability to manage finances is a fundamental part of everyday life for all people (Collins, Morduch, Rutherford, and Ruthven 2009). The financial services needs of poor households may require different product features, and perhaps different payment and delivery structures, but when such needs are met appropriately, the impact should nonetheless be welfare-enhancing.

Recent evaluations are helping us understand when access to the appropriate product is welfare-enhancing, and when it is not. And the emerging body of evidence is both promising and highly practical, allowing practitioners to think more creatively about options that will help their clients. While microcredit in the India study showed no discernible impact on measures of health, education, and female empowerment, it led to more businesses being created and enabled poor households with businesses to change their spending patterns. Further randomized evaluations of other products have been far more positive on welfare impacts. A study

conducted in Kenya shows that access to savings accounts for female market vendors allows them to keep higher levels of inventory and therefore have higher incomes. Consumer credit was shown to have significant welfare benefits for wage earners in South Africa. A study conducted in Ghana provides evidence that rainfall insurance helps farmers use more fertilizers and increase their cultivation area, and results in fewer meals missed for the family. (See Annex 1 for a summary of the research papers discussed in this paper.)

Perhaps one of the greatest contributions from these first randomized evaluations of microcredit will be to help reset expectations. Far from offering the last word on the impact of microfinance, the existing evidence instead offers a foundation for learning what works, for whom, and under what circumstances so that products and delivery approaches can be better used and adjusted to meet the needs of poor people.

This paper summarizes the latest research findings from a new body of empirical evidence that uses randomized evaluations, similar to those used in medical trials, to compare how one group responds to access to specific new financial services against how a comparable group fares without those services. (See Box 2.) This paper goes back a couple of years to the first studies that used this approach, and summarizes a series of research studies presented at the October 2010 Microfinance Impact and Innovation Conference in New York. These studies evaluated product design for a range of financial services, including credit, savings, and insurance. The studies discussed here were undertaken by research affiliates of Innovations for Poverty Action (IPA), the Financial Access Initiative (FAI), and the Abdul Latif Jameel Poverty Action Lab (J-PAL) at the Massachusetts Institute of Technology; they are all randomized evaluations unless otherwise specified.

Part 1 of this paper reviews the main results from randomized evaluations that measure the impact of microcredit and microsavings on business investment and creation, consumption, and household well-being. Part 2 presents evidence from evaluations of products and delivery design. Part 3 discusses the evidence on microinsurance products.

PART 1

Evaluating the Impacts of Microcredit and Microsavings[3]

Many poor families in the developing world have limited access to formal financial services, including credit, savings, and insurance. They instead rely on a variety of informal credit relationships with moneylenders, relatives, friends, or merchants. Poor people also use a number of informal savings devices—for example, they may participate in rotating savings associations or keep their savings at home. These options are not ideal. They tend to be unreliable, and it can be hard to protect savers from the demands of relatives and friends.[4] Traditionally, banks and other formal financial service providers, such as insurance companies, have not considered the poor a viable market, and penetration rates for formal financial services in developing countries are extremely low.[5]

Increasing access to financial services holds the promise to help reduce poverty and improve development outcomes, by enabling the poor to smooth consumption, start or expand a business, cope with risk, and increase or diversify household income. Microcredit stands to benefit poor individuals who lack collateral, steady employment, verifiable credit history, or other requirements necessary to gain access to formal credit. In the past three decades, access to credit has expanded dramatically. Now with nearly 200 million borrowers, microcredit has been successful in bringing formal financial services to the poor.[6] Many believe it has done much more. By putting money into the hands of poor families, and particularly poor women, they argue, microcredit has the potential to increase households' health and education, empower women, and reduce poverty.

What does the evidence say?

Recent experimental evidence from three randomized impact evaluations suggests that while increasing access to credit does not produce the kind of dramatic transformations conjured in the popular imagination, with millions of poor people springing out of poverty simply by taking out loans and applying them to their microbusinesses, it does appear to have some important—though more modest—outcomes for some people. These include creating new businesses and tipping consumption away from temptation goods, such as alcohol, tobacco, and snacks, so that households can invest in their businesses or buy more durable goods. This suggests that microloans help some households reprioritize their expenditures and smooth consumption—a valuable function for poor households that suffer from irregular and unpredictable income streams.

The results of these randomized evaluations find little, if any, evidence of impact on use of healthcare,[7] education, or female empowerment within the treatment period (Banerjee, Duflo, Glennerster, and Kinnan 2010; Karlan and Zinman 2009; Crépon, Devoto, Duflo, and Parienté 2011). The groups that benefited most from increased access to credit tended to be men with relatively high incomes, not those typically targeted by microfinance institutions (MFIs) (i.e., poor female entrepreneurs). Significant welfare benefits were found in a study that extended consumer credit to wage earners who were considered marginally creditworthy because it enabled them to withstand shocks and keep their jobs.

One evaluation of the impact of access to formal savings for businesses in Kenya found increased

3. "Impacts" in this context refers to the effect that access to finance has on the well-being of poor people, as indicated by business income, household income, household consumption, health, children's schooling, and other measures.
4. Collins, Morduch, Rutherford, and Ruthven (2009) show that poor people use a variety of informal mechanisms to manage cash flow, cope with risk, and seize opportunities. They also find that at almost every turn poor households are frustrated by the poor quality—particularly the low reliability—of the instruments they use to manage their meager incomes.
5. See CGAP and the World Bank (2010, p. 4).
6. According to the Microcredit Summit, as of 31 December 2009, 3,589 microcredit institutions reported reaching 190,135,080 clients (Reed 2011, p. 5).
7. Microcredit did help families deal with health shocks, but it did not lead to greater expenditure on healthcare or better health outcomes for children.

BOX 2

Randomized Approaches to Measuring Impact[a]

To evaluate the impacts of microfinance, researchers use randomized techniques to assess how the lives of people in a program changed compared to how their lives would have changed if the program had not existed. Simply comparing clients with nonclients cannot account for the fact that those who sign up are likely to have both observable and nonobservable characteristics that make them not comparable to nonclients. Randomized assignment, whereby one group or individual gains access to a particular service while another group or individual does not, allows researchers to compare two statistically equivalent groups.

Existing evaluations follow one of two approaches: randomizing MFI branch placement in new areas, or randomizing loan approval for marginally creditworthy applicants.

Randomizing MFI branch placement

The approach used by Banerjee, Duflo, Glennerster, and Kinnan (2010) in urban India and Crépon, Devoto, Duflo, and Pariente (2011) in rural Morocco is to partner with an MFI and randomize the placement of new branches offering services. From a pool of areas identified by the MFI as being places where it would be interested in opening a new branch, the MFI randomly selects some areas for opening new branches. Areas not selected for the opening of a new branch make up the comparison group.

Randomizing access at the margin

A second approach, used by Karlan and Zinman in South Africa (2010) and the Philippines (2011), is to randomize access to credit among clients that the lending institution has identified as being marginally creditworthy. Applicants for loans are sorted into groups based on a credit scoring mechanism that measures business capacity, personal financial resources, outside financial resources, personal and business stability, and demographic characteristics. Those with high scores are automatically approved, and those with low scores are automatically rejected. From the group that falls in the middle and is scored borderline creditworthy, applicants are randomly assigned a loan. This allows researchers to compare outcomes for groups who received a loan with those who were denied credit. It also provides the lending institution with a way to judge what difference approving more risky loans might make to its business so that it can fine-tune its approval threshold.[b]

a. For more on randomized evaluation methodologies, see Bauchet and Morduch (2010) and Duflo, Glennerster, and Kremer (2008).
b. For a discussion of the advantages and disadvantages of this approach, see Karlan and Zinman (2011).

business investment and personal income growth among women, suggesting that savings could be an effective tool to help the poor accumulate funds for investment or consumption.

Credit

Impact of Grameen-style group lending in an urban setting

Starting in 2005, Banerjee, Duflo, Glennerster, and Kinnan (2010) conducted the first randomized impact evaluation of expanding access to credit in a new urban market. Researchers partnered with Spandana, one of the largest and fastest growing MFIs in India, to identify 104 slums in Hyderabad as places where Spandana would be interested in opening new branches. Fifty-two communities were randomly selected for the opening of a new MFI branch offering loans to self-formed groups of six to ten women. The typical loan averaged Rs. 10,000 (US$200), for families where the average monthly expenditure was Rs. 5,000 (US$100) for a family of five (Banerjee, Duflo, Glennerster, and Kinnan 2010).

Twelve to 18 months after the introduction of an MFI branch, a comprehensive household survey was conducted in a random sample of eligible households in both treatment and comparison areas. Demand for the credit product was not high: take-up was 18.6 percent among households in the treatment group, 8.3 percentage points higher than in comparison areas.

People with access to microcredit were more likely to have started a business. The probability of starting a business increased by 1.7 percentage points relative to comparison areas, implying that approximately one in five of the additional MFI

loans in treatment areas was associated with the opening of a new business. Beyond the impact on new business creation, there was no significant effect on average business profits, monthly revenues, inputs spending, or number of employees.

Access to credit did not change the amount households spent significantly, but researchers did find a change in *how* households spent. Those with an existing business bought more durable goods for their home and business. Households that did not start a business consumed more nondurable goods. But those who started a new business cut back on temptation goods (tobacco, alcohol, tea, betel leaves, gambling, and food consumed outside the home) and invested more—tightening their belts to make the most of the new opportunity.[8] This switch from temptation goods to investment and durable consumption in the groups with businesses is an encouraging finding.

No evidence was found to suggest that microcredit was empowering women, at least along measured dimensions, such as exercising greater control over how the household spent its money. Researchers also found no evidence of improved indicators for the use of healthcare services or education.[9]

While media reports interpreted the lack of positive results along measurable dimensions of health, women's empowerment, and education as signs that microcredit was a failure,[10] Banerjee and Duflo say this study presented clear evidence that microcredit was working along the dimension it was supposed to. The new businesses created and the shift away from small "wasteful" expenditures implied that access to loans enabled households to make clear choices to reprioritize, invest, and make the most of the new opportunity: "The main objective of microfinance seemed to have been achieved. It was not miraculous, but it was working" (Banerjee and Duflo 2011, p. 171).

8. Spending on temptation goods was reduced by Rs 9 per capita per month (Banerjee, Duflo, Glennerster, and Kinnan 2010, p. 19).
9. Households in treatment areas spent no more on medical and sanitation items (e.g., medicines, soap) than comparison households, and among households with children, households in treatment areas were no less likely to report that a child had a major illness in the past year. There was no significant increase in levels of spending on school tuition, fees, and other education expenses or on school enrollment of teenage children (Banerjee, Duflo, Glennerster, and Kinnan 2010).
10. See, e.g., Bennett (2009).

Impact of Grameen-style group lending in a rural setting

In 2006 and 2007, Crépon, Devoto, Duflo, and Pariente (2011) conducted the first randomized impact evaluation of microcredit in a rural setting. While there are some differences, the results show some notable parallels with the Spandana study.

Al Amana, a Moroccan microcredit institution, opened 60 new branches serving 81 rural districts that had no previous access to formal financial services. Taking advantage of this expansion, researchers selected two similar villages at the periphery of each district and offered group loans of 1,000 to 15,000 DH (approximately US$124–1,855) to one randomly selected village, while the other village would be served two years later, after the outcomes of both groups had been compared.

After two years, loan take-up was fairly low. Only 16 percent of people borrowed from Al Amana, and many used loans to pay off existing debt. Similar to the results found by Banerjee, Duflo, Glennerster, and Kinnan (2010) in urban India, there was no increase in consumption and no noticeable welfare improvements. Researchers did not find any evidence that access to credit helped absorb income shocks. Fourteen percent of households experienced health shocks, while 25 percent experienced shocks to business,[11] yet there was no evidence that consumption decreased less for people with access to microcredit, as we would expect to see if access to credit helped families cope with financial shocks (Crépon, Devoto, Duflo, and Parienté 2011, p. 16).

Contrary to what was found in India, the number of new businesses did not increase in rural Morocco as a result of the loans, even though there was a lot of activity in the sample in terms of businesses starting and finishing. For individuals with existing farming activities, access to credit increased the volume of activity: more employees were hired from outside the household, and sales, expenses, and profits increased. In the case of livestock activities, most of the expansion can be explained by higher savings (livestock accumulation). There were some minor effects on sales but no effect on profits. Animal husbandry also increased, and loans were used to diver-

11. Esther Duflo presentation at *Microfinance Impact and Innovation Conference* in New York, October 2010.

sify the types of animals raised, increasing the asset value of the livestock. On the other hand, microcredit had no effect on nonagricultural businesses.

Those with an existing business at the start of the study reduced consumption (presumably as they expanded their business) and considerably increased savings. But for those without prior business activities, consumption increased. These changes in consumption patterns are similar to those of the Hyderabad study (Banerjee, Duflo, Glennerster, and Kinnan 2010). The findings suggest that microcredit is an opportunity that different people will take advantage of in different ways—whether because of disposition or circumstances. More evidence could help us understand the factors that affect a person's ability to make good use of loans.

Impact of individual microcredit loans in a peri-urban setting

Karlan and Zinman (2011) published the first randomized impact study to evaluate access to individual microcredit loans in the Philippines. Researchers worked with First Macro Bank, a for-profit lender offering small, short-term, uncollateralized credit with fixed repayment schedules to microentrepreneurs on the outskirts of Manila. While the study focused on microentrepreneurs, the average income and education level of these customers is somewhat higher than that of traditional microcredit borrowers.[12] The bank used credit-scoring software to rate applicants based on business capacity, personal financial resources, outside financial resources, and personal and business stability. Some applicants scored well above the bank's base requirements and some scored well below, but there was a marginal group that just barely failed to meet the bank's criteria for lending. For the study, a number of the 1,601 sample of marginally creditworthy applicants were randomly approved for a loan of around 10,000 pesos (US$220), equivalent to 37 percent of the average borrower's net monthly income (Karlan and Zinman 2011).

Eleven to 22 months later, the researchers found that even though they borrowed more, those given access to credit did not increase investment in their business and they reduced their overall number of business activities and employees. Subjective well-being slightly declined.

But access to credit helped borrowers cope with risk, strengthened community ties, and increased their access to informal credit. Karlan and Zinman (2011) conclude that microcredit may work, "but through channels different from those often hypothesized by its proponents ... and that start with the household rather than with the business." Access to credit lowered the demand for other kinds of risk mitigation tools, a similar result to a study Karlan and Zinman (2010) conducted in South Africa, where wage earners with access to consumer credit were more able to absorb shocks, and therefore more likely to keep their jobs.

Impact of consumer credit

Karlan and Zinman (2010) worked with a consumer finance company in South Africa in designing an experiment to estimate the effects of expanding consumer credit to low-income workers in South Africa.[13] The lender had operated for over 20 years as one of the largest, most profitable consumer lenders in South Africa, offering small loans at high interest rates, frequently to low-income workers who have no collateral and must make payments on a fixed schedule. Just over half of the sample of 787 loan applicants who had narrowly failed to qualify under the normal underwriting criteria was offered standard loans of US$127 (equivalent to 40 percent of the median borrower's gross monthly income) at a 200 percent annual percentage rate (APR).[14]

The results were quite striking. Expanding access to credit increased borrower well-being. Six to 12 months after taking out the loan, incomes were higher for applicants in the treatment group, and applicants in the treatment group were more likely to have kept their jobs than those in the comparison group. Twenty-six percent of treated households reported an improvement in food consumption. Subjective measures of decision-making within the household, community status, and overall optimism were also higher. In addition, the creation of a credit history increased the probability of future loan

12. Households in the study had incomes averaging 5,301 pesos/month/household member (US$106/month/person, or about US$3.50/day). The Manila borrowers were far above the official Philippines poverty line of about 1,000 pesos/month/person, and well above the Hyderabad slum dwellers in the Banerjee, Duflo, Glennerster, and Kinnan (2010) study, who earned about $20/month/person.

13. Income averaged about $300 a month.

14. APR describes the interest rate for a whole year (annualized). In this case, effective APR is used (the fee plus compound interest rate calculated across a year).

approval in the sample by 19 percent over a 15 to 27 month horizon. All these outcomes were measured well after the loan had been taken out and repaid.

Savings[15]

To study the effects of savings constraints on the poor, Dupas and Robinson (2011) worked in collaboration with the Bumala village bank in Kenya to randomly provide small business owners with access to savings accounts.

The accounts offered no interest on deposits and included substantial withdrawal fees. There was nonetheless high demand for these costly savings strategies, which suggests that the available alternatives were worse.[16]

The potential savers were market vendors, bicycle taxi drivers, and self-employed artisans who did not already have a savings account, but were interested in opening one. The researchers had them keep daily logbooks with detailed information on business investments, expenditures, and health shocks.[17] From this information, Dupas and Robinson were able to examine the impact of the savings accounts along a variety of dimensions.

Data from the bank showed that many women used the accounts quite intensively. For example, 25 percent of women saved more than 1,000 K Sh (US$14.28) in the accounts, a substantial amount given daily income of about $2 per day. Some women saved much more. These savings translated into other positive outcomes. Four to six months after account opening, women in the treatment group had 45 percent higher daily investment in their businesses than women in the comparison group. These findings suggest that women faced significant barriers to saving, and those constraints were important for the businesses they run. There was no measurable impact for men in the study.

Several categories of expenditures were also higher for women in the treatment group. Food expenditures were 10–20 percent higher, suggesting that income had increased. Daily private expenditures were also 27–40 percent higher. This latter result also suggests higher income, though another possible explanation is that women were better able to shield their income from others, thus spending a higher share of their income for themselves and their children.

Savings accounts also seemed to make women somewhat less vulnerable to health shocks, which were particularly common in this sample. The logbooks showed that women without savings accounts were forced to draw down their working capital in response to illness. In contrast, female savers did not have to reduce their business investment levels when dealing with a health shock, and were better able to afford medical expenses for more serious illness episodes.

The study suggests that the bank accounts offered were effective in increasing savings by overcoming pressure on market women to share their cash with others. Putting money into formal accounts seemed to reduce the risk of appropriation by relatives, friends, and neighbors.[18] However, the sample size of this study was too small to be definitive, so future work will be needed to explore how robust this finding is.

Despite the lack of evidence for positive effects on welfare from credit, the studies so far offer tantalizing evidence that there could be important potential benefits for some poor households to be gained by helping the poor reprioritize their expenditures. Notably, the impact study for savings showed positive outcomes for female savers. While it is still too early to reach any definitive conclusions, particularly for savings where there is just one existing impact study with a small sample size, the findings give researchers cause to explore further, and more studies are underway to see if these findings hold up in other contexts. The next generation of studies is examining product design to see how small changes can improve outcomes for poor clients.

15. In Part 2 we consider the impact of savings accounts combined with commitment devices that address the issue of self-control among farmers.
16. From the whole sample only 8 percent of respondents refused to open an account; 39 percent opened an account but never made a deposit.
17. Dupas, Karlan, and Robinson are currently replicating this study in four different settings: Chile, Malawi, Uganda, and the Philippines.
18. We use the term "formal" for consistency with the original research paper, but the savings accounts offered by Bumala village bank would often be called "semi-formal" since Bumala village bank is not regulated by the Central Bank of Kenya. It is affiliated with K-Rep bank and has private deposit insurance.

PART 2

Evaluations of Product Features—Design Matters

As the headlines and bloglines buzz with discussion of whether or not microfinance—or more precisely, microcredit—works, several evaluations have started using randomized approaches to explore specific questions around product design. What would be the impact of offering flexible repayment options, of allowing for grace periods, or of replacing group liability with individual loans? This ongoing work reveals that small details matter, sometimes enormously.

This section reviews a series of recent studies that isolate specific features or attributes of products to show how even small changes in their design can yield significantly different results. These studies offer insights for how financial service providers can tweak or improve their products to benefit poor and low-income clients. We begin with some studies that have explored variations on traditional microcredit products and, indeed, challenge some core tenets of the microcredit movement. We then discuss the latest evidence on the effect of commitment savings, reminders to save, and account "labeling."

Microcredit Design—Disrupting Tradition

Targeting women, group liability, and weekly repayments that start immediately have long been considered defining attributes of a classic microcredit model that is particularly strong throughout South Asia and in some other places. Some providers see them as keys to success in keeping default rates close to zero.

Especially in the early days of the modern microcredit movement, each of these features was seen as key to reducing the risk for the provider of uncollateralized lending, allowing many MFIs to operate as sustainable, even profitable, businesses. Group liability ensures repayment by enlisting the benefits of screening and peer monitoring. Women, it is believed, pay back their loans more reliably than men (Armendariz and Morduch 2007). (Lending to women also supports the social mission of many MFIs, since women are more likely than men to be poor, and income in the hands of women is more often spent to benefit the household and the children.)[19] And weekly repayment that begins right after the loan is given decreases credit risk by creating immediate discipline and a pattern of repayment.

Simply put, the model works for MFIs. But does it work for borrowers?

Increasing evidence suggests that some of these key design features may be far from optimal and may actually bring negative trade-offs. Some recent studies look in turn at group liability, the effects of lending to women, the importance of timing for ensuring repayment, and emerging tools for lenders to assess and monitor the credit worthiness of clients. Collectively, these results provide insight into important product design options that may be used to improve financial outcomes for poor clients.

Questioning group liability

Group liability has been at the center of the peer pressure model, which assumes that borrowers will choose members they know to be reliable. Yet there are some very real disadvantages of group liability. If an emergency leads a group borrower to default, her social and community support system can unravel with it.

Beginning in 2004, Giné and Karlan (2011) ran a study with Green Bank in rural areas of the Philippines to explore whether group liability was in fact necessary for managing default risk. The study examined what happened when the bank switched its existing group liability model to an individual liability model, as well as when groups of new borrowers started out with individual liability loans.

19. See Thomas (1990), Engle (1993), and Schultz (1990).

The results showed that the shift to individual liability did not negatively affect loan repayment for either group. The bank also saw an increase in outreach, as more customers, attracted by the individual liability option, sought loans from the bank. The study was extended to new areas, in which groups either formed initially as individuals or as groups. Here, too, no difference in repayment was observed, although the credit officers were more reluctant to open up lending groups without individual liability. Given how such results likely rely heavily on cultural context and institutional incentives, these results should not be extrapolated without caution, but they do provide cause for challenging the presumption that group liability is a key to successfully lending to poor people.

Strengthening the case against group liability for MFIs is the continued low demand for formal microcredit. As mentioned in the microcredit impact studies described earlier, poor people are not pounding down the doors of microlenders,[20] despite widespread, documented use among the poor of informal loans from friends, neighbors, or moneylenders.[21] One possible reason why so few poor people take out formal loans is that the group liability model repels risk-adverse individuals who are not willing to co-sign for their peers.[22]

Women, men, and returns to capital

MFIs' focus on lending to women is partly a consequence of commercial interest, given women's higher loan repayment rates. Development research also suggests that women tend to put more of their earnings back into the home or into services for their children (health, education, etc.) than men do.[23] Serving women, therefore, is good for business and good for fulfilling a social mission.

As mentioned, the vast majority of microcredit programs nominally extend loans for the purpose of starting or running a business. Business loans are seen as addressing a critical need, since formal-sector jobs are scarce in poor communities and poor, unemployed women often do not have the necessary capital available all at once to invest in inventory or equipment to start a business or make necessary investments for growth. Giving women credit, cash, or business inputs theoretically relieves capital constraints and helps them take business opportunities.

In practice, however, access to capital does not seem to be having as large an effect on increasing women's incomes as development experts had thought. The three microcredit impact studies conducted in India, the Philippines, and Morocco showed that increasing the availability of credit had no impact on the profits of women-owned businesses (Banerjee, Duflo, Glennerster, and Kinnan 2010; Karlan and Zinman 2011; Crépon, Devoto, Duflo, and Parienté 2011).

A 2008 study by de Mel, McKenzie, and Woodruff on returns to capital for businesses in Sri Lanka found that the average real return to capital was 5.7 percent per month—substantially higher than the market interest rate—and the returns varied with measures of ability, household liquidity, and the gender of the owner. In a follow-up study (2009) the researchers show that women-owned businesses earned no returns from either cash or in-kind grants, compared to men in the study who earned high returns from both. These results could have been entirely explained by environment, however, given that only 35 percent of women participate in the work force in Sri Lanka and may choose low-return sectors for their businesses (World Bank n.d.).

To test whether the results held in an environment with higher female participation, McKenzie and Woodruff partnered with Fafchamps and Quinn from the University of Oxford to study female and male entrepreneurs in Ghana, a country in which 74 percent of women participate in the workforce (World Bank n.d.). In Ghana, the researchers gave either cash grants or grants of in-kind inventory or equipment to different male and female entrepreneurs, to see whether cash had a different effect than in-kind capital, and whether

20. Loan take-up from MFIs was only 16 percent in rural Morocco (Crépon, Devoto, Duflo, and Parienté 2011) and 18.6 percent in urban India (Banerjee, Duflo, Glennerster, and Kinnan 2010).
21. See Collins, Morduch, Rutherford, and Ruthven (2009).
22. Context may make a big difference to the effects of the group lending approach, and not all of the literature points in the same direction. For example, a World Bank study (Carpela, Cole, Shapiro, and Zia 2010) exploits a natural experiment and shows benefits of group lending.
23. See, e.g., Engle (1991).

women responded differently than men.[24] They did, on both counts.

Cash grants to female entrepreneurs in Ghana produced no return on capital, just as in Sri Lanka. Yet in Ghana, the in-kind gifts of inventory or equipment showed a significant average return for women. The researchers found that when given cash, women invested less of the gift in the business, splitting pieces off for household purchases or other expenses. They also found an important nuance: the high returns from in-kind gifts came entirely from the women who had larger, higher profit businesses at the outset. Women with below-average profits (around $1 a day) saw no benefit in terms of profit from either form of grant. Male business owners, on the other hand, saw significant returns to capital from both the in-kind grants and the cash grants.

These findings from Ghana are certainly more encouraging for female microentrepreneurs than the earlier findings from Sri Lanka. But even in Ghana, it was only the larger female-owned businesses that benefited in terms of profit. Women from the general population are not always, nor, indeed, more likely to be, able to convert capital into profits, and men tend to be more successful overall.

These results suggest opportunities to adjust to whom MFIs lend and how they structure their products. MFIs may have a greater impact on the women they serve if they can filter their applicant pool to identify and target high performers. It is relevant not only for knowing which clients can excel, but also for the MFIs' ability to offer more flexible products. Knowing what the client is likely to earn can allow lenders to adjust the risk profile—and the interest rate. It even may allow institutions to add microequity to their product portfolio, assuming they can find effective ways to accurately monitor business performance. It may also be time for microfinance providers to redesign their loan products to acknowledge what many already know—that loans are often used for nonbusiness purposes.[25]

The role of timing—delaying repayment

Growing a business, no matter the size, often requires entrepreneurs to make investments and then wait for those investments to mature. Yet the inflexible nature of the typical microcredit programs, involving weekly, or monthly, repayments that begin the first week or month after the loan is given, may not provide the necessary time for investments to show a yield. Many loan recipients, in fact, set aside part of the loan from the beginning to ensure they can make the first two or more payments. So clients are not investing the full bulk of the funds, and they may be avoiding investments that require a longer period to yield returns.

When Field, Pande, Papp, and Rigol (2011) looked at small business loan design in the United States, they saw that business loans build in a grace period of a few months between when the funds are given and when the borrower has to begin paying the loan back. Between 13 percent and 15 percent of U.S. business borrowers default, compared to between 2 percent and 5 percent of microcredit borrowers in developing countries, a significant increase in default risk for the lender. Yet the key question—does increased repayment flexibility correlate with increased profit and still allow the lender to manage default risks adequately—is important enough from the development perspective to warrant examination.

In West Bengal, India, the researchers (2011) compared the outcomes of two groups of microcredit borrowers with the Village Welfare Society. One group received a traditional group microcredit product with semi-weekly payments that started immediately after receipt of the loan, and the second group was awarded a two-month grace period before repayment began.

24. Fafchamps, McKenzie, Quinn, and Woodruff (2011) offer grants instead of loans because many banks require that their clients already be business owners or have an idea for a start-up that the banks deem worthy; likewise, entrepreneurs who take loans may be more willing to take risks. Both factors potentially create a study population that is more savvy or more likely to be successful than the average population, so they work with existing entrepreneurs and provide them with grants as a technique for preventing bias.

25. As noted, in practice poor clients are not only using loans to invest in businesses, but also as a means to manage their household cash flow, for emergencies, and to smooth consumption. While theory of impact is quite different, the use of microcredit or savings for consumption smoothing may nonetheless be important for the overall well-being of clients.

The grace period group members invested 6 percent more of their loans in their businesses than borrowers who received no grace period, and two years after the loans were given, those grace period borrowers saw 30 percent higher average profits. Household income was also higher on average for the grace period borrowers.

However, the average result masks significant variation within the grace period group. The 25 percent average profit increase came about because some of the women did extremely well with the delayed payment loans. Unfortunately, big wins for some were matched by big losses for others—9 percent of the individuals in the grace period group ultimately defaulted on their loans, compared with a 2 percent default rate among individuals with the standard weekly repayment structure.

In 2008, the Village Welfare Society participated in a study measuring the effects of weekly versus monthly meetings on loan repayment (conducted by Feigenberg with Field and Pande). When the researchers found that the monthly meetings did not affect repayment, the bank switched to monthly meetings, as the operational savings were substantial.

These results again suggest significant opportunities for both high-functioning borrowers and the institutions that serve them. Banks could commercialize business loans with a two-month grace period for all borrowers who want it by increasing the interest rate on those loans sufficiently to make up the losses from default. It is not clear how much such high rates would affect demand.

Another, more nuanced, approach is to identify who the high-potential borrowers are before setting product terms. Such individualized service offers the possibility of creating a targeted product—whether loan or microequity—built around that person's potential earnings, and tailoring loan amount, term, and price accordingly.

The role of the borrower—client screening as a product design tool

Financial service providers would be well-served by any technique or tool that would allow them to predict in advance who the high performers might be. Banerjee, Duflo, Glennerster, and Kinnan (2010) delved into their microcredit impact data from Hyderabad to identify some shared characteristics among those individuals in their sample who were more likely to start a business, but they have not tested whether that information predicts successful use of a loan when used as a selection tool.

Creating that selection tool is a high priority for Khwaja, of Harvard's Kennedy School. Khwaja's work focuses on the developing world's small firms—enterprises that have outgrown microcredit, but that still lack the collateral and the size to easily secure financing from a mainstream bank. These businesses typically find it very difficult to grow past the micro level for lack of investment capital.

This absence of small, formal firms is known as the "missing middle," and it is a problem, not only for the high-potential poor who have the ability to grow but lack the necessary capital, but also for poor entrepreneurs who have trouble increasing their income from self-employment. High-potential microentrepreneurs need financing, and the banks that fund them need an inexpensive and reliable way to sift through a pool of candidates and pull out those with the highest potential for success.

The challenge is not insignificant. The banks and venture capital firms that typically provide business financing screen ideas for their business value and the entrepreneur's ability to pay back by delving into credit or business histories or conducting an in-depth evaluation of the business idea. These options are not viable with microfirms, however, because of their small size and smaller predicted returns. For small firms, banks really need to know about the ideas, skills, and trustworthiness of the individual borrower.

Khwaja focused on the potential of automated psychographic evaluation tools for measuring an entrepreneur's ability and honesty. The psychographic test is based on tools used by human resource departments in developed countries. These tests are prevalent in other contexts, they are difficult to game, and the results tend to correlate with entrepreneurial success.

To test their appropriateness for funding high-potential microbusinesses, Khwaja has conducted a number of tests around the world to see if the psychographic tools work to identify high potential entrepreneurs with good ideas, strong business ability, and honest character. Khwaja and his colleagues

developed a 30–40 minute computerized psychographic test to measure the test taker's intelligence; implicit, practical business skills; and psychology or character (Is he honest? How does she view the world, etc.?). To date, more than 2,000 entrepreneurs in seven countries have taken the test. They have had different levels of experience, and they have sought loans of varying sizes (from $2,000 to $150,000). Khwaja's pilot data show that the test meets or exceeds the predictive ability of credit scoring models used in developed countries, and it effectively predicts financial success for micro or small business entrepreneurs who do not have financial histories.

The test is also uncovering some nonintuitive indicators of business failure. For example, test takers who scored higher for intelligence actually achieve lower profits; honesty also correlates with lower than average profits—in both cases, these effects were stronger for women than men. The indicators of success seem more obvious. Individuals with strong drive do much better, and those with business skills do moderately better than the average.

Making the borrower do the work

Khwaja's approach puts the onus on the lender to extract and evaluate that information and use it to make a lending decision. Giné, Goldberg, and Yang take a different approach.

Giné, Goldberg, and Yang (2011) evaluated the impact of improving the lending institution's ability to withhold credit from past defaulters and reward good borrowers with expanded credit on borrower behavior. Their study focuses on paprika farmers in rural Malawi, where group liability and frequent repayments are impractical, since crop failure usually affects everyone in a region, and farm income from this cash crop arrives all at once. Likewise, there is no central identification system in Malawi, so borrowers who default have little problem accessing future loans, either by using a different name or seeking financing somewhere else. Together, these factors make it difficult for the lender to use loan access as an incentive to encourage repayment—the customer knows default will likely have little consequence.

The researchers sought to improve the lender's ability to identify borrowers through the use of biometric identifiers. Applicants in the study answered questions about their business, their past borrowing experiences, and their households, and they were given a presentation on the importance of maintaining a clean credit history to ensure future access to credit. Some of the borrowers then had their thumbprint recorded and were given a further demonstration of how the print would be used to identify them in the future.

Data collected at the beginning of the study were used to identify borrowers predicted to be high-risk, based on their probability of business success and likelihood of repayment. As a result of the fingerprinting intervention, borrowers predicted to be least likely to repay showed a significant change in behavior. Fingerprinted borrowers in this group took smaller loans when they knew they could be identified and were more likely to repay their loans on time as well as eventually, compared to equivalent borrowers in the comparison group.

Fingerprinted borrowers in the high-risk group also allocated more of their land to the production of paprika (the crop that the in-kind loan was intended to finance) and invested more inputs, such as fertilizer, in the paprika crop. In addition to improving the repayment performance of high-risk borrowers, being in the fingerprinting system may have further benefits for well-performing borrowers if their good credit histories can be stored and used to access better borrowing conditions from other institutions.

Savings Design

As early as 1999, Rutherford showed that poor people are active money managers: they look for ways to "save up" (to create a usefully large sum of money by storing it somewhere) or to "save down" (taking a loan and repaying it later out of future savings). Given that the poor do save, why don't they use those savings to finance business investments?

Experts agree it might be hard for poor individuals with variable income to get together enough money to start a business, but running a business theoretically should not require further outside funding, given that many microenterprises earn high returns. Ananth, Karlan, and Mullainathan (2007) conducted a survey that showed it would

not take much for vegetable market sellers in India—who usually finance the purchase of daily inventory with loans from the moneylender—to save a very small amount from the business every day, equivalent to the amount needed to buy a cup of tea. Within 28 days, those market sellers would have saved the same amount that they borrow every day. At this point, they would no longer need cash from the moneylender and could instead use savings for inventory purchases, thus saving even more because they don't have to pay the moneylender's high interest rates (Ananth, Karlan, and Mullainathan 2007). Yet the vegetable vendors do not do it. Ananth, Karlan, and Mullainathan tried a number of different techniques to nudge the market sellers to use savings for their businesses. For instance, they tried giving vendors a "top up" grant that restored savings after an emergency. They also offered "financial literacy" training that taught the vendors about the compounding effects of increased savings and decreased interest rate payments, under the theory that the vendors did not fully understand how much the moneylender was costing them. Yet nothing seemed to change the typical practice of frequent borrowing from the moneylender.

Psychology offers a number of theories for why people do not save enough for productive investments, despite having the apparent means to do so. One theory suggests that some individuals simply value the present more, and therefore prefer spending available funds immediately rather than saving them. The future is unknown, so they don't see much use in considering it. Another possibility is that people want to save, but self-control issues make it difficult for them to resist the temptation to use extra cash today rather than save it for tomorrow. Limited attention can also explain the lack of savings as people fail to foresee the need for cash in the future. Last, there is the reality that not-quite-as-poor individuals may receive a lot of pressure from friends and family members to share any (relative) windfalls or help on a day-to-day basis pay for recurring or emergency expenses, which eat away at savings. Innovations in savings product design therefore aim to help savers overcome one or more of these challenges.

Commitment savings

Commitment savings accounts are one of the prime innovations that have come out of recent efforts to help poor people save. Commitment savings accounts require the saver to deposit a certain amount of money in a bank account and relinquish access to the cash for a period of time—usually until a certain date or until a certain dollar amount has accumulated. Such lack of access is valuable as a way of protecting the cash both from the impulses of the savers themselves, and from the hands of family and neighbors. Ashraf, Karlan, and Yin (2006) conducted a study on commitment savings accounts in the Philippines that show they are effective at increasing savings, especially for people with self-control issues.

More recent studies have examined how a commitment savings product helps farmers to adopt the use of fertilizer and invest more in their crops. As shown in randomized evaluations, farmers can earn much stronger yields from their crops when they take small steps, such as using fertilizer at specific points during the growing season. Duflo, Kremer, and Robinson (2008) show that, among maize farmers in western Kenya, the annualized return to ½ teaspoon of fertilizer at top dressing (when the maize plant is knee high) was almost 70 percent per year.

Despite this evidence, few farmers consistently use fertilizer, largely because they earn all their income for the year at harvest and do not have sufficient funds left over to buy it at planting. In a follow-up study, Duflo, Kremer, and Robinson (2010) show how a simple commitment product can increase fertilizer use. A field officer visited farmers immediately after harvest and offered them an opportunity to buy a voucher for fertilizer, at the regular price, but with free delivery. The results showed that free delivery early in the season increases fertilizer use by 47–70 percent.

To benchmark this effect, a second treatment group was made the same offer of free delivery later in the season, while a third was offered a 50 percent subsidy later in the season. If farmers are completely rational, then the effect of free delivery later in the season should be the same as earlier, and the effect of the subsidy should be greater. However, the effect of the commitment device was greater than offering free delivery, even with a 50 percent subsidy on fertilizer, later in the season.

Based on that knowledge, Brune, Giné, Goldberg, and Yang (2011) estimated the impacts of facilitating access to a savings account coupled with a commitment device as a mechanism to encourage savings among cash crop farmers in Malawi. The evaluation allowed farmers to put funds into a special account where withdrawals were restricted for defined periods. The idea was to help farmers to buy inputs by better dealing with self-control problems and cash demands from their social network. In the study, farmers in the treatment group were randomly assigned to receive assistance in either opening an ordinary savings account or opening an ordinary account with a commitment device.

The results of the evaluation showed the commitment treatment had a large positive effect on the amounts of deposits and withdrawals made immediately before the planting season. On average, the net effect on deposits (savings balance) was positive although not statistically significant. Along with increasing savings previous to the planting seasons, the commitment device also had positive effects in terms of a number of outcomes of interest. Farmers in this treatment group had a 26 percent increase in agricultural input use, 22 percent increase in value of crop output in subsequent harvest, and 17 percent increase in household total expenditure reported in the past 30 days. Farmers who had access to only the ordinary account showed lower or nonsignificant impacts in terms of those same outcomes, suggesting the commitment device played an important role for these results.

Commitment savings accounts seem to help this community of farmers less by increasing their self-control than by shielding funds from an individual's social network (for better or worse).[26] The study data show that actual amounts saved in the accounts were very low, ruling out that it helped individuals with self-control problems by restricting their options to spend. Additionally, study participants who were identified as having self-control problems experienced no different effects from the commitment savings than their peers. Instead, the commitment savings accounts had a higher impact for wealthier households, a subgroup that may be under more pressure to share. The existence of the commitment device may have allowed farmers to credibly claim that money was inaccessible.

Reminders to save—making tomorrow real today

Beyond commitment savings, there are other innovations in savings product design that try to combat the tendency to spend, rather than save, limited resources, by making the future seem more real and relevant. These design innovations try to call the saver's attention to her long-term goals, based on the theory that people get distracted by the everyday and need help remembering, and properly prioritizing, the future. For example, a number of efforts to promote savings accounts ask the savers what goals they have for their savings, and then find ways to regularly remind them of that goal. One program had savers bring a representative photograph of their goal—the new bicycle she wanted, for example, or the new cook stove. The bank then created puzzles with the pictures and gave the saver a piece of the puzzle every time she made a deposit (Karlan, McConnell, Mullainathan, and Zinman 2011).

Four recent studies have examined the effects of two different approaches to making the present more salient to savers: one approach is to use reminders, the other is to offer "labeled" accounts.

The studies on savings reminders took place in Peru, Bolivia, and the Philippines, where savers were sent either letters (in Peru) or SMS text messages (in Bolivia and the Philippines) reminding them to save. Karlan, McConnell, Mullainathan, and Zinman (2011) varied the messages to test the effects of different wording. Some savers received generic messages that said simply that they should save; others received messages that referenced a specific purchase that the saver said she wanted to make with her savings.

The studies found that reminders increased average savings balances overall by 6 percent, but this impact increased substantially, to 16 percent, for the Peruvian savers when the reminder referred to a purchase goal. In the environments where SMS text reminders were employed and automatically executed, the cost of employing reminders to save

26. Note that this important finding points to a tension between individual well-being and that of the community. It could be that the introduction of commitment savings devices work well for those who take them up but could also harm members of their social network.

is very low, making text reminders a highly cost-effective way to increase savings.

Account labeling offered an even greater return for study participants in eastern Ghana.[27] People have long used the technique of "labeling" to allocate funds for different purposes, and such labeling can be highly effective at protecting the funds allocated for, say, the rent from being siphoned for other purposes. Some use mental tallying to allocate the funds; others literally place different amounts in different jars or envelopes. With this approach in mind, existing clients of the Mumuadu Rural Bank in eastern Ghana were asked about their savings goals; some were given the opportunity to open separate, parallel savings accounts labeled "education," "business," "housing," or some other category. The study found that savers eligible to open parallel accounts saved 31 percent more on average than those in the comparison group, with the greatest effect seen for the education label.

The strong effects of commitment savings, text reminders, and account labeling show that small design changes can help poor people save more, and in some cases, to leverage those savings for positive income-generating purposes.

Financial Product Plus: Improving Results with Improved Skills

Many MFIs use the weekly or monthly repayment meetings they hold with their clients as an opportunity to teach some other relevant skill. No discussion of financial product design would be complete without commenting on these add-ons as a function of product design.

Add-on services—sometimes referred to as "microfinance plus"—vary significantly in their focus and goals. Some of these programs provide useful secondary skills, such as health education, with the goal of helping customers avoid or lessen the impacts of disruptive events on income and savings. Others aim to equip customers with business or financial management skills that they can use to improve income generation.

A lack of financial literacy and basic accounting skills offers one hypothesis for why the poor as a whole do not experience significant income gains when given access to formal credit—perhaps they do not have the skills to compare the likely returns of different investments and account for them accordingly. Yet there is little concrete evidence on the effects of business or financial management skills training on poor entrepreneurs. Karlan and Valdivia (2011) found positive impacts of a business training program for microcredit borrowers in a study they conducted in Peru. Yet a paper by Cole and Shastry (2009) on U.S. participation in savings and investment markets showed that the education level and cognitive ability of the participant correlated with positive gains, but that financial literacy training had no effect.

With the jury still out on the value of providing financial and business training, Drexler, Fischer, and Schoar (2011) tested whether financial literacy training can improve business outcomes for small businesses in the Dominican Republic. The researchers tested the effect of two different sets of content: one focused on traditional, principles-based accounting rules taught in the curriculum offered by organizations, such as Freedom from Hunger and BRAC; the other taught simple accounting rules of thumb, which essentially amounted to instructing the business owners to keep personal and business accounts separate.

The researchers found that the business owners who received the rules-of-thumb training applied sound accounting principles more often than their peers. For example, they were more likely to keep their business and personal cash and accounts separate, they were more likely to keep records, they were more likely to calculate their revenues, and they were less likely to make mistakes when reporting any of their results. Those who received the rules-of-thumb curriculum also earned more revenue than their peers, especially during "bad" weeks.

Though the researchers are careful not to extend their findings outside the specific group studied, the results seen from rules-of-thumb education in this one study suggest that less may well be more when it comes to training poor business owners in sound financial practices.

27. Study by Karlan, Osei-Akoto, Osei, and Udry (forthcoming).

PART 3

Microinsurance and Household Decision-Making

Poor people face an enormous amount of risk in their lives. A major effort is currently underway to expand access to insurance products that improve upon traditional risk-sharing arrangements and informal insurance networks to help poor households deal with weather shocks and irregular income from agriculture. In theory, microinsurance—insurance targeted to the poor through low premiums and/or low coverage limits—should be in strong demand to act as a safety net for poor families whose crops may fail, whose livestock may die, and who may suffer from the effects of bad weather and health shocks. This section introduces some encouraging research results on innovations in microinsurance. Recent findings suggest that microinsurance has positive impacts on poor households, but persistent low rates of take-up, even for effective products, show that product design matters tremendously.

Design matters

The difficulty in designing good insurance products partly comes from problems of information asymmetry—when one party to a contract holds more information than the other. For one thing, people who are insulated against risk may behave differently than they would have if they were fully exposed to the risk (what insurers call moral hazard). Second, higher risk individuals may be more likely to buy more insurance, which would not matter as long as the insurer could charge that individual higher premiums to cover the risk. But if the insurance company is unable to identify the higher risk individuals, it responds by increasing the premium for everyone. Both these information asymmetries can push up premiums and contribute to low take-up of products.

No perfect design solution has been found to eliminate issues of asymmetric information, but some types of risk should be easier to insure than others. Rainfall insurance stands out among these (Karlan and Morduch 2009; Banerjee and Duflo 2011). Rainfall insurance pays a set amount when rainfall, as measured by a local weather station, is lower or higher than established thresholds. Because rainfall is not under the control of insurance clients, their behavior does not influence the possibility of a payout (moral hazard is eliminated). Rainfall insurance is also simpler and cheaper to administer than many other types of insurance; because rainfall is a public event, insured households do not need to file claims, and insurance companies do not need to spend time and resources verifying the validity of claims.[28]

Rainfall microinsurance holds promise to help households reduce their exposure to risk, and may modify farmers' incentives to invest in riskier but more profitable crops or varieties. But take-up rates remain puzzlingly low.

Impact of rainfall microinsurance on household decision-making

Giné, Menand, Townsend, and Vickery (2010) measured two different types of possible impacts of rainfall microinsurance in Andhra Pradesh, India: how well does having insurance help farmers cope with an agricultural shock (in their case, a drought), and how does having access to insurance affect household decision-making, even in the absence of a claim? Preliminary results indicate that insurance does not increase the use of inputs or change the allocation of land, although having access to rainfall insurance does cause farmers to shift toward more risky, rain-sensitive crops, which typically provide higher profit.

In an ongoing project in Ghana, Karlan, Osei-Akoto, Osei, and Udry (forthcoming) focus on how

28. One potential drawback in the design of rainfall insurance is the possibility of a gap between the amount of rainfall measured at the weather station and the actual losses suffered by clients at their precise location, particularly if the two are far from each other.

rainfall insurance helps rural households improve their farm decision-making, in particular whether microinsurance can help lower the risks of agriculture production and counter farmers' risk aversion. The study couples rainfall insurance with cash grants in four randomly selected groups of farmers: in one group, farmers receive both insurance and subsidy, another group receives insurance only, another group receives capital only, and a final group receives neither capital nor insurance, serving as a comparison group.

Providing insurance and capital together (i.e., subsidizing the purchase) produced the most impact. Farmers in the insurance and capital group increased their spending on farm chemical inputs by 47 percent, increased their cultivation area by 22 percent, and were less likely to have members of their household miss meals than the comparison group. Farmers in the insurance-only group changed some of their farming decisions, but to a lower extent than farmers in the insurance and capital group. This suggests that reducing risk is beneficial by itself, but much greater impact may come by looking at poor households' financial needs in a more comprehensive way.

Challenges in promoting microinsurance products

Why, if having insurance has such potentially large impacts, are take-up rates among poor farmers so low?[29] Cole et al. (2011) report take-up rates for a rainfall insurance product in India between 23 and 29 percent, even though the households cited droughts as the most significant risk they face. About 40 percent of households in the Karlan, Osei-Akoto, Osei, and Udry Ghana project bought a rainfall insurance product at the actuarially fair price (the price that covers average payouts, but not the costs of administering the product).

In a 1994 study in rural Thailand, Townsend showed that households use informal insurance mechanisms to maintain a certain level of consumption even when income fluctuates. Other research, however, indicates that these informal mechanisms do not cover all risks. Duflo and Udry (2004), for example, showed that husbands and wives fail to insure each other perfectly when a lack of rainfall affects the yield of crops grown exclusively by one or the other. In a survey in Andhra Pradesh (Cole et al. 2011), 89 percent of households reported that drought is the most significant risk they face. Asked why they do not purchase insurance, less than 25 percent of the surveyed households (and as low as 3 percent in one sample) indicated that they did not need it.

Cole et al. presents the best evidence to date to explain why take-up rates remain so low. Researchers measured take-up of a microinsurance product that protects farmers in Andhra Pradesh, India, against too little or too much rainfall. The researchers assigned a sample of potential clients to receive various offers and information about the product. Each offer or information set was designed to isolate one possible cause of low take-up: the price of the policy, the availability of cash in the household to purchase the policy, the understanding of rainfall measurements by the potential client, the level of trust of the potential client toward the insurance scheme or the insurance marketing agent, and the framing of the information describing the insurance.

As expected, the price of the insurance policy is a strong determinant of whether households buy the product. Take-up increased by 10.4 percent on average (from an overall average of 24–29 percent) when the premium decreased by 10 percent. Price, however, is not the only determinant of demand. In Cole et al.'s survey, "lack of available funds" was the most commonly cited reason for not purchasing insurance.

Potential clients may also lack information about and understanding of how formal insurance works. However, Cole et al. show that receiving additional information about the product did not cause an increase in take-up.

Finally, lack of trust in the insurance provider may be another reason why poor households do not buy policies. To measure whether trust is indeed a significant driver of take-up, Cole et al. evaluated takeup of the insurance product when the marketing team was accompanied on their visits to households by an individual from Basix, a nongovernmental organization that the farmers know well,

29. See also Karlan, McConnell, Mullainathan, and Zinman (2010).

versus when the team went out on its own. The researchers found that households that were visited by a marketer accompanied by a member of Basix were 10 percentage points more likely to purchase a policy, suggesting that trust is a significant issue.

While far from providing a complete picture, these studies together do provide a more nuanced and precise set of information on how to better design, price, and market microinsurance products so that the supply of products for poor clients can meet the real need in a cost-effective manner.

Conclusion

While still based on a relatively small number of studies, the work of researchers and participating microfinance providers is bringing new knowledge about how clients use capital, what helps them to save, and what constraints they face that prevent them from benefiting more from financial access. The overall message from this body of work is that poor people face various limits, and their ability to capitalize on opportunities varies greatly. One of the next steps is to find simple ways to identify those differences and cater to them with the right products delivered with the right design.

Details matter. Purpose does as well—not all borrowers want to grow a business. The variable results seen can be as much a function of borrower intent as borrower ability. A one-size-fits-all product will not bring benefit to the borrowers or profit to the providers. Instead, the microfinance industry needs to continue to mature in ways that allow it to view poor customers as individuals. Some of those individuals will leverage financial services to smooth consumption; some to manage risk; some to make investments they have the skill and resources to profit from; some will do all of the above. With a view of serving all of these needs, microfinance providers may evolve a new generation of improved services and products that reliably and flexibly help poor people.

Annex 1

RESEARCHERS	LOCATION	FINANCIAL SERVICE	INTERVENTION
Abhijit Banerjee, Esther Duflo, Rachel Glennerster, and Cynthia Kinnan (2010)	India	microcredit	Researchers evaluate the impact of access to credit by randomizing the placement of new Spandana MFI branches in Hyderabad, India.
Lasse Brune, Xavier Giné, Jessica Goldberg, and Dean Yang (2011)	Malawi	microsavings	Researchers evaluate whether commitment devices can reduce self-control problems and cash demands from social networks. Farmers were randomly assigned to receive either assistance to open an ordinary savings account, or to open an ordinary account with a commitment device.
Shawn Cole, Xavier Giné, Jeremy Tobacman, Petia Topalova, Robert Townsend, and James Vickery (2011)	India	microinsurance	Researchers investigate the importance of price and nonprice determinants in the demand for rainfall insurance by randomly varying the price of the insurance policy, randomly assigning certain households' positive liquidity shocks, or randomly assigning endorsements by a trusted agent. Other experiments test the role of financial literacy, product framing, and other behavioral biases.
Bruno Crépon, Florencia Devoto, Esther Duflo, and William Pariente (2011)	Morocco	microcredit	Researchers evaluate the impact of access to credit in a rural setting by randomizing the placement of new Al Amana MFI branches in Morocco.
Alejandro Drexler, Greg Fischer, and Antoinette Schoar (2011)	Dominican Republic	financial literacy/ business training	Researchers evaluate the impact of financial literacy training on business outcomes for small enterprises in the Dominican Republic. Two methods of financial literacy training are tested: (1) classic accounting principles, and (2) simple accounting "rules of thumb."
Esther Duflo, Michael Kremer, and Jonathan Robinson (2008)	Kenya	return to capital/ inputs	Researchers measure the rates of return for different quantities of fertilizer used on crops in Kenya.
Esther Duflo, Michael Kremer, and Jonathan Robinson (2010)	Kenya	commitment device	Researchers evaluate an intervention to test whether providing mechanisms to save harvest income for future fertilizer purchases could be effective in increasing fertilizer use among farmers.
Pascaline Dupas and Jonathan Robinson (2011)	Kenya	microsavings	Researchers investigate the importance of savings constraints for microenterprise development by randomly providing small business owners in Kenya with access to savings accounts.
Erica Field, Rohini Pande, John Papp, and Natalie Rigol (2010)	India	microcredit	Researchers investigate how the term structure of debt influences entrepreneurship among the poor. Borrowers were randomly assigned either the classic microfinance contract with repayment beginning immediately after loan disbursement or a contract that provides a two-month grace period prior to repayment.
Xavier Giné, Jessica Goldberg, and Dean Yang (2011)	Malawi	microcredit	Researchers evaluate the impact of an improved personal identification system on loan repayment. Randomly selected borrowers who applied for loans for agricultural inputs in rural Malawi had fingerprints collected as a part of the loan application process.

MAIN FINDINGS	PAPER
No discernible impact on measures of health, education, and female empowerment. More businesses were created. While some households increased nondurable consumption, others reduced expenditure on temptation goods, such as alcohol, tobacco, tea, and snacks, and instead invested in their businesses, or bought more durable goods.	The Miracle of Microfinance? Evidence from a Randomized Evaluation
The commitment treatment had a large positive effect on the amounts of deposits and withdrawals made immediately prior to the planting season and a positive effect on agricultural input use, leading to a 22 percent increase in the value of the crop output, and a 17 percent increase in total household expenditure. Farmers who had access only to the ordinary account showed lower or nonsignificant impacts on the same outcomes.	Commitments to Save: A Field Experiment in Rural Malawi
Insurance did not increase the use of inputs or change allocation of land, but having access to rainfall insurance did cause farmers to shift toward more risky, rain-sensitive crops, which typically provide higher profit.	Barriers to Household Risk Management: Evidence from India
No discernible impact on measures of health, education, and female empowerment. For individuals with existing farming activities, access to credit increased the volume of activity. Microcredit had no impact on nonagricultural businesses. Those with an existing business at the start of the study reduced consumption and considerably increased savings. But for those without prior business activities, consumption increased.	Impact of Microcredit in Rural Areas of Morocco: Evidence from a Randomized Evaluation
Business owners who received the rules-of-thumb training applied sound accounting principles more than their peers. Those who received the rules-of-thumb training also earned more revenues than their peers, especially during "bad" weeks.	Keeping It Simple: Financial Literacy and Rules of Thumb
Farmers earn much stronger yields by using fertilizer at specific points during the growing season. The annualized return to half a teaspoon of fertilizer at top dressing (when the maize plant is knee high) was almost 70 percent per year.	How High are Rates of Return to Fertilizer? Evidence from Field Experiments in Kenya
The commitment device offering an opportunity to buy a voucher for fertilizer but with free delivery early in the season increased fertilizer use by 47 to 70 percent. The effect of the commitment device early in the season was greater than other offers, such as free delivery later in the season, and a 50 percent subsidy also offered later in the season.	Nudging Farmers to Use Fertilizer: Theory and Experimental Evidence from Kenya
Access to formal savings accounts for market stallholders led to increased business investment and personal income growth. Four to six months after account opening, women in the treatment group had a 4.5 percent higher daily investment in their businesses than women in the comparison group. There was was no measurable impact for men in the study. Several categories of expenditures were higher for women in the treatment group. Savings accounts also seemed to make women somewhat less vulnerable to health shocks.	Savings Constraints and Microenterprise Development: Evidence from a Field Experiment in Kenya
The grace period group members invested 6 percent more of their loans in their businesses than borrowers who received no grace period, and two years after the loans were given, they had 30 percent higher average profits. Household income was also higher. However, the average result masks significant variation within the grace period group: some of the women did really well, while others suffered losses. Nineteen percent of the individuals in the grace period group ultimately defaulted on their loans compared with 2 percent default for the individuals with the standard repayment structure.	Term Structure of Debt and Entrepreneurial Behavior: Experimental Evidence from Microfinance
As a result of the fingerprinting intervention, borrowers predicted to be least likely to repay showed a significant change in behavior. Fingerprinted borrowers in this group took smaller loans when they knew they could be identified, and were more likely to repay their loans on time as well as eventually, compared to equivalent borrowers in the comparison group.	Credit Market Consequences of Improved Personal Identification: Field Experimental Evidence from Malawi

Annex 1, continued

RESEARCHERS	LOCATION	FINANCIAL SERVICE	INTERVENTION
Xavier Giné, Lev Menand, Robert Townsend, and James Vickery (2010)	India	microinsurance	Researchers summarize results of previous research on rainfall insurance markets in India, which provides evidence that price, liquidity constraints, and trust all present significant barriers to increased take-up.
Xavier Giné and Dean Karlan (2011)	Philippines	microcredit	Researchers investigate whether group liability is in fact necessary for managing default risk. In one treatment, existing group-lending clients of the Green Bank of Caraga were randomly converted to an individual liability model. In a second treatment, new borrowers started out with individual liability loans.
Dean Karlan, Edward Kutsoati, Margaret McConnell, Margaret McMillan, and Christopher Udry (forthcoming)	Ghana	microsavings	Researchers evaluated the impact of a new type of "labeled" savings account that was intended to help clients save by focusing their attention on their savings goals. Existing clients of the Mumuada Rural Bank in Eastern Ghana were asked about their savings goals, and some were given the opportunity to open separate, parallel savings accounts labeled "education," "business," "housing," or some other category.
Dean Karlan, Margaret McConnell, Sendhil Mullainathan, and Jonathan Zinman (2011)	Peru, Bolivia, Philippines	microsavings	Researchers measure the effectiveness of sending savings reminders in the form of letters (in Peru) or SMS text messages (in Bolivia and the Philippines) to clients holding programmed savings accounts.
Dean Karlan, Isaac Osei-Akoto, Robert Osei, and Chris Udry (forthcoming)	Ghana	microinsurance	Researchers investigate the role of risk in constraining farmer investment and technology adoption choices, and to evaluate its importance relative to constraints on credit, by coupling rainfall insurance with cash grants.
Dean Karlan and Martin Valdivia (2011)	Peru	financial literacy/ business training	Researchers evaluate the marginal impact of adding business training to a group lending program in Peru.
Dean Karlan and Jonathan Zinman (2010)	South Africa	microcredit	Researchers estimate the effects of expanding access to expensive consumer credit in South Africa by randomizing loan approval for clients identified by the cooperating lender as being marginally creditworthy.
Dean Karlan and Jonathan Zinman (2011)	Philippines	microcredit	Researchers evaluate the impact of increasing access to credit in the Philippines by randomizing loan approval for clients identified as marginally creditworthy.
Suresh de Mel, David McKenzie, and Christopher Woodruff (2008)	Sri Lanka	return to capital/inputs	To evaluate whether there are high returns to capital for micro-enterprises, researchers randomize the provision of cash and equipment grants to small firms in Sri Lanka, and measure the increase in profits arising from exogenous (positive) shock to capital stock.
Marcel Fafchamps, David McKenzie, Christopher Woodruff, and Simon Quinn (2011)	Ghana	return to capital/inputs	Researchers evaluate the differential effects of providing either cash grants or in-kind grants of inventory or equipment on both male and female entrepreneurs.

MAIN FINDINGS	PAPER
Preliminary results indicate that insurance does not increase the use of inputs or change the allocation of land, although having access to rainfall insurance does cause farmers to shift toward more risky, rain-sensitive crops, which typically provide higher profit.	Microinsurance: A Case Study of the Indian Rainfall Index Insurance Market
The shift to individual liability did not negatively affect loan repayment for either group. The bank also saw an increase in outreach, as more customers, attracted by the individual liability option, sought loans from the bank.	Group versus Individual Liability: Short and Long-Term Evidence from Philippine Microcredit Lending Groups
Savers eligible to open parallel accounts saved 31 percent more on average than those in the comparison group, with the greatest effect seen for the accounts labelled "Education."	
Reminders increased average savings balances overall by 6 percent. This impact increased substantially, to 16 percent, for the Peruvian savers when the reminder referred to a purchase goal.	Getting to the Top of Mind: How Reminders Increase Saving
Farmers who receive both insurance and capital (i.e., subsidizing the purchase) increased their spending on farm chemical inputs by 47 percent, increased their cultivation area by 22 percent, and were less likely to have members of their household miss meals than the comparison group. Farmers who received insurance changed only some of their farming decisions, but to a lower extent than those who had the capital also.	Examining Underinvestment in Agriculture: Measuring Returns to Capital and Insurance
The results found positive impacts from business training.	Teaching Entrepreneurship: Impact of Business Training on Microfinance Clients and Institutions
Expanding access to credit increased borrower well-being: incomes increased, food consumption went up, and measures of decision-making within the household went up, alongside community status and overall optimism.	Expanding Credit Access: Using Randomized Supply Decisions to Estimate the Impacts
Net borrowing increased in the treatment group relative to the comparison. However, the number of business activities and employees in the treatment group decreased relative to the comparison, and subjective well-being declined slightly. However, microloans increased ability to cope with risk, strengthened community ties, and increased access to informal credit.	Microcredit in Theory and Practice: Using Randomized Credit Scoring for Impact Evaluation
The average real return to capital was 5.7 percent per month—substantially higher than the market interest rate. Returns varied with measures of ability, household liquidity, and the gender of the owner (men fared better than women).	Returns to Capital in Microenterprises: Evidence from a Field Experiment
Cash grants to women entrepreneurs produced no return on capital, whereas in-kind gifts of inventory or equipment to women showed a significant average return. When given cash, women invested less of the gift in the business, splitting off pieces for household purchases or other expenses. The high returns from in-kind gifts came entirely from the women who had larger, higher profit businesses at the outset. Women with below-average profits (around $1 a day) saw no benefit in terms of profit from either form of grant. Men-owned businesses, on the other hand, saw signficant returns from both the in-kind grants and the cash grants.	When Is Capital Enough to Get Female Enterprises Growing? Evidence from a Randomized Experiment in Ghana

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