

# The Microfinance Promise

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## 1. Introduction

ABOUT ONE billion people globally live in households with per capita incomes of under one dollar per day. The policymakers and practitioners who have been trying to improve the lives of that billion face an uphill battle. Reports of bureaucratic sprawl and unchecked corruption abound. And many now believe that government assistance to the poor often creates dependency and disincentives that make matters worse, not better. Moreover, despite decades of aid, communities and families appear to be

increasingly fractured, offering a fragile foundation on which to build.

Amid the dispiriting news, excitement is building about a set of unusual financial institutions prospering in distant corners of the world—especially Bolivia, Bangladesh, and Indonesia. The hope is that much poverty can be alleviated—and that economic and social structures can be transformed fundamentally—by providing financial services to low-income households. These institutions, united under the banner of microfinance, share a commitment to serving clients that have been excluded from the formal banking sector. Almost all of the borrowers do so to finance self-employment activities, and many start by taking loans as small as \$75, repaid over several months or a year. Only a few programs require borrowers to put up collateral, enabling would-be entrepreneurs with few assets to escape positions as poorly paid wage laborers or farmers.

Some of the programs serve just a handful of borrowers while others serve millions. In the past two decades, a diverse assortment of new programs has been set up in Africa, Asia, Latin America, Canada, and roughly 300 U.S. sites from New York to San Diego (*The Economist* 1997). Globally, there are now about 8 to 10 million households served by microfinance programs, and some practitioners are pushing to expand to

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100 million poor households by 2005. As James Wolfensohn, the president of the World Bank, has been quick to point out, helping 100 million households means that as many as 500–600 million poor people could benefit. Increasing activity in the United States can be expected as banks turn to microfinance encouraged by new teeth added to the Community Reinvestment Act of 1977 (Timothy O'Brien 1998).

The programs point to innovations like “group-lending” contracts and new attitudes about subsidies as the keys to their successes. Group-lending contracts effectively make a borrower's neighbors co-signers to loans, mitigating problems created by informational asymmetries between lender and borrower. Neighbors now have incentives to monitor each other and to exclude risky borrowers from participation, promoting repayments even in the absence of collateral requirements. The contracts have caught the attention of economic theorists, and they have brought global recognition to the group-lending model of Bangladesh's Grameen Bank.<sup>2</sup>

The lack of public discord is striking. Microfinance appears to offer a “win-win” solution, where both financial institutions and poor clients profit. The first installment of a recent five-part series in the *San Francisco Examiner*, for example, begins with stories about four women helped by microfinance: a textile distributor in Ahmedabad, India; a street vendor in Cairo, Egypt; an artist in Albuquerque, New Mexico; and a

furniture maker in Northern California. The story continues:

From ancient slums and impoverished villages in the developing world to the tired inner cities and frayed suburbs of America's economic fringes, these and millions of other women are all part of a revolution. Some might call it a capitalist revolution . . . As little as \$25 or \$50 in the developing world, perhaps \$500 or \$5000 in the United States, these microloans make huge differences in people's lives . . . Many Third World bankers are finding that lending to the poor is not just a good thing to do but is also profitable. (Brill 1999)

Advocates who lean left highlight the “bottom-up” aspects, attention to community, focus on women, and, most importantly, the aim to help the underserved. It is no coincidence that the rise of microfinance parallels the rise of nongovernmental organizations (NGOs) in policy circles and the newfound attention to “social capital” by academics (e.g., Robert Putnam 1993). Those who lean right highlight the prospect of alleviating poverty while providing incentives to work, the nongovernmental leadership, the use of mechanisms disciplined by market forces, and the general suspicion of ongoing subsidization.

There are good reasons for excitement about the promise of microfinance, especially given the political context, but there are also good reasons for caution. Alleviating poverty through banking is an old idea with a checkered past. Poverty alleviation through the provision of subsidized credit was a centerpiece of many countries' development strategies from the early 1950s through the 1980s, but these experiences were nearly all disasters. Loan repayment rates often dropped well below 50 percent; costs of subsidies ballooned; and much credit was diverted to the politically powerful, away from the intended recipients (Dale Adams, Douglas Graham, and J. D. von Pischke 1984).

<sup>2</sup> Recent theoretical studies of microfinance include Joseph Stiglitz 1990; Hal Varian 1990; Timothy Besley and Stephen Coate 1995; Abhijit Banerjee, Besley, and Timothy Guinnane 1992; Maitreesh Ghatak 1998; Mansoor Rashid and Robert Townsend 1993; Beatriz Armendariz de Aghion and Morduch 1998; Armendariz and Christian Gollier 1997; Margaret Madajewicz 1998; Aliou Diagne 1998; Bruce Wydick 1999; Jonathan Conning 1997; Edward S. Prescott 1997; and Loïc Sadoulet 1997.

What is new? Although very few programs require collateral, the major new programs report loan repayment rates that are in almost all cases above 95 percent. The programs have also proven able to reach poor individuals, particularly women, that have been difficult to reach through alternative approaches. Nowhere is this more striking than in Bangladesh, a predominantly Muslim country traditionally viewed as culturally conservative and male-dominated. The programs there together serve close to five million borrowers, the vast majority of whom are women, and, in addition to providing loans, some of the programs also offer education on health issues, gender roles, and legal rights. The new programs also break from the past by eschewing heavy government involvement and by paying close attention to the incentives that drive efficient performance.

But things are happening fast—and getting much faster. In 1997, a high profile consortium of policymakers, charitable foundations, and practitioners started a drive to raise over \$20 billion for microfinance start-ups in the next ten years (*Microcredit Summit Report 1997*). Most of those funds are being mobilized and channeled to new, untested institutions, and existing resources are being reallocated from traditional poverty alleviation programs to microfinance. With donor funding pouring in, practitioners have limited incentives to step back and question exactly how and where monies will be best spent.

The evidence described below, however, suggests that the greatest promise of microfinance is so far unmet, and the boldest claims do not withstand close scrutiny. High repayment rates have seldom translated into profits as advertised. As Section 4 shows, most programs continue to be subsidized directly through grants and indirectly

through soft terms on loans from donors. Moreover, the programs that are breaking even financially are not those celebrated for serving the poorest clients. A recent survey shows that even poverty-focused programs with a “commitment” to achieving financial sustainability cover only about 70 percent of their full costs (*MicroBanking Bulletin 1998*). While many hope that weak financial performances will improve over time, even established poverty-focused programs like the Grameen Bank would have trouble making ends meet without ongoing subsidies.

The continuing dependence on subsidies has given donors a strong voice, but, ironically, they have used it to preach against ongoing subsidization. The fear of repeating past mistakes has pushed donors to argue that subsidization should be used only to cover start-up costs. But if money spent to support microfinance helps to meet social objectives in ways not possible through alternative programs like workfare or direct food aid, why not continue subsidizing microfinance? Would the world be better off if programs like the Grameen Bank were forced to shut their doors?

Answering the questions requires studies of social impacts and information on client profiles by income and occupation. Those arguing from the anti-subsidy (“win-win”) position have shown little interest in collecting these data, however. One defense is that, assuming that the “win-win” position is correct (i.e., that raising real interest rates to levels approaching 40 percent per year will not seriously undermine the depth of outreach), financial viability should be sufficient to show social impact. But the assertion is strong, and the broader argument packs little punch without evidence to back it up.

Poverty-focused programs counter that shifting all costs onto clients would

likely undermine social objectives, but by the same token there is not yet direct evidence on this either. Anecdotes abound about dramatic social and economic impacts, but there have been few impact evaluations with carefully chosen treatment and control groups (or with control groups of any sort), and those that exist yield a mixed picture of impacts. Nor has there been much solid empirical work on the sensitivity of credit demand to the interest rate, nor on the extent to which subsidized programs generate externalities for non-borrowers. Part of the problem is that the programs themselves also have little incentive to complete impact studies. Data collection efforts can be costly and distracting, and results threaten to undermine the rhetorical strength of the anecdotal evidence.

The indirect evidence at least lends support to those wary of the anti-subsidy argument. Without better data, average loan size is typically used to proxy for poverty levels (under the assumption that only poorer households will be willing to take the smallest loans). The typical borrower from financially self-sufficient programs has a loan balance of around \$430—with loan sizes often much higher (*MicroBanking Bulletin* 1998). In low-income countries, borrowers at that level tend to be among the “better off” poor or are even slightly above the poverty line. Expanding financial services in this way can foster economic efficiency—and, perhaps, economic growth along the lines of Valerie Bencivenga and Bruce D. Smith (1991)—but it will do little directly to affect the vast majority of poor households. In contrast, Section 4.1 shows that the typical client from (subsidized) programs focused sharply on poverty alleviation has a loan balance close to just \$100.

Important next steps are being taken

by practitioners and researchers who are moving beyond the terms of early conversations (e.g., Gary Woller, Christopher Dunford, and Warner Woodworth 1999). The promise of microfinance was founded on innovation: new management structures, new contracts, and new attitudes. The leading programs came about by trial and error. Once the mechanisms worked reasonably well, standardization and replication became top priorities, with continued innovation only around the edges. As a result, most programs are not optimally designed nor necessarily offering the most desirable financial products. While the group-lending contract is the most celebrated innovation in microfinance, all programs use a variety of other innovations that may well be as important, especially various forms of dynamic incentives and repayment schedules. In this sense, economic theory on microfinance (which focuses nearly exclusively on group contracts) is also ahead of the evidence. A portion of donor money would be well spent quantifying the roles of these overlapping mechanisms and supporting efforts to determine less expensive combinations of mechanisms to serve poor clients in varying contexts. New management structures, like the stripped-down structure of Bangladesh’s Association for Social Advancement, may allow sharp cost-cutting. New products, like the flexible savings plan of Bangladesh’s SafeSave, may provide an alternative route to financial sustainability while helping poor households. The enduring lesson of microfinance is that mechanisms matter: the full promise of microfinance can only be realized by returning to the early commitments to experimentation, innovation, and evaluation.

The next section describes leading programs. Section 3 considers theoretical perspectives. Section 4 turns to

financial sustainability, and Section 5 takes up issues surrounding the costs and benefits of subsidization. Section 6 describes econometric evaluations of impacts, and Section 7 turns from credit to saving. The final section concludes with consideration of microfinance in the broader context of economic development.

## 2. *New Approaches*

Received wisdom has long been that lending to poor households is doomed to failure: costs are too high, risks are too great, savings propensities are too low, and few households have much to put up as collateral. Not long ago, the norm was heavily subsidized credit provided by government banks with repayment rates of 70–80 percent at best. In Bangladesh, for example, loans targeted to poor households by traditional banks had repayment rates of 51.6 percent in 1980. By 1988–89, a year of bad flooding, the repayment rate had fallen to 18.8 percent (M. A. Khalily and Richard Meyer 1993). Similarly, by 1986 repayment rates sank to 41 percent for subsidized credit delivered as part of India's high-profile Integrated Rural Development Program (Robert Pulley 1989). These programs offered heavily subsidized credit on the premise that poor households cannot afford to borrow at high interest rates.

But the costs quickly mounted and the programs soon bogged down government budgets, giving little incentive for banks to expand. Moreover, many bank managers were forced to reduce interest rates on deposits in order to compensate for the low rates on loans. In equilibrium, little in the way of savings was collected, little credit was delivered, and default rates accelerated as borrowers began to perceive that the banks would not last long. The repeated

failures appeared to confirm suspicions that poor households are neither credit-worthy nor able to save much. Moreover, subsidized credit was often diverted to politically-favored non-poor households (Adams and von Pischke 1992). Despite good intentions, many programs proved costly and did little to help the intended beneficiaries.

The experience of Bangladesh's Grameen Bank turned this around, and now a broad range of financial institutions offer alternative microfinance models with varying philosophies and target groups. Other pioneers described below include BancoSol of Bolivia, the Bank Rakyat Indonesia, the Bank Kredit Deas of Indonesia, and the village banks started by the Foundation for International Community Assistance (FINCA). The programs below were chosen with an eye to illustrating the diversity of mechanisms in use, and Table 1 highlights particular mechanisms. The functioning of the mechanisms is described further in Section 3.<sup>3</sup>

### 2.1 *The Grameen Bank, Bangladesh*

The idea for the Grameen Bank did not come down from the academy, nor from ideas that started in high-income countries and then spread broadly.<sup>4</sup>

<sup>3</sup> Sections 4.1 and 5.1 describe summary statistics on a broad variety of programs. See also Maria Otero and Elisabeth Rhyne (1994); *MicroBanking Bulletin* (1998); Ernst Brugger and Sarath Rajapatirana (1995); David Hulme and Paul Mosley (1996); and Elaine Edgcomb, Joyce Klein, and Peggy Clark (1996).

<sup>4</sup> Part of the inspiration came from observing credit cooperatives in Bangladesh, and, interestingly, these had European roots. The late nineteenth century in Europe saw the blossoming of credit cooperatives designed to help low-income households save and get credit. The cooperatives started by Frederick Raiffeisen grew to serve 1.4 million in Germany by 1910, with replications in Ireland and northern Italy (Guinnane 1994 and 1997; Aidan Hollis and Arthur Sweetman 1997). In the 1880s the government of Madras in South India, then under British rule, looked to the German experiences for solutions in addressing poverty in

TABLE 1  
CHARACTERISTICS OF SELECTED LEADING MICROFINANCE PROGRAMS

	Grameen Bank, Bangladesh	Banco- Sol, Bolivia	Bank Rakyat Indonesia <i>Unit Desa</i>	Badan Kredit Desa, Indonesia	FINCA Village banks
Membership	2.4 million	81,503	2 million borrowers; 16 million depositors	765,586	89,986
Average loan balance	\$134	\$909	\$1007	\$71	\$191
Typical loan term	1 year	4–12 months	3–24 months	3 months	4 months
Percent female members	95%	61%	23%	—	95%
Mostly rural? Urban?	rural	urban	mostly rural	rural	mostly rural
Group-lending contracts?	yes	yes	no	no	no
Collateral required?	no	no	yes	no	no
Voluntary savings emphasized?	no	yes	yes	no	yes
Progressive lending?	yes	yes	yes	yes	yes
Regular repayment schedules	weekly	flexible	flexible	flexible	weekly
Target clients for lending	poor	largely non-poor	non-poor	poor	poor
Currently financially sustainable?	no	yes	yes	yes	no
Nominal interest rate on loans (per year)	20%	47.5– 50.5%	32–43%	55%	36–48%
Annual consumer price inflation, 1996	2.7%	12.4%	8.0%	8.0%	—

*Sources:* Grameen Bank: through August 1998, [www.grameen.com](http://www.grameen.com); loan size is from December 1996, calculated by author. BancoSol: through December 1998, from Jean Steege, ACCION International, personal communication. Interest rates include commission and are for loans denominated in bolivianos; base rates on dollar loans are 25–31%. BRI and BKD: through December 1994 (BKD) and December 1996 (BRI), from BRI annual data and Don Johnston, personal communication. BRI interest rates are effective rates. FINCA: through July 1998, [www.villagebanking.org](http://www.villagebanking.org). Inflation rate: World Bank *World Development Indicators 1998*.

Programs that have been set up in North Carolina, New York City, Chicago, Boston, and Washington, D.C. cite Grameen as an inspiration. In addi-

tion, Grameen's group lending model has been replicated in Bolivia, Chile, China, Ethiopia, Honduras, India, Malaysia, Mali, the Philippines, Sri Lanka,

India. By 1912, over four hundred thousand poor Indians belonged to the new credit cooperatives, and by 1946 membership exceeded 9 million (R. Bedi 1992, cited in Michael Woolcock 1998). The cooperatives took hold in the State of Bengal, the eastern part of which became East Pakistan at independence in 1947 and is now Bangladesh. In the early 1900s, the credit cooperatives of Bengal were so well-known that Edward Filene, the Bos-

ton merchant whose department stores still bear his name, spent time in India, learning about the cooperatives in order to later set up similar programs in Boston, New York, and Providence (Shelly Tenenbaum 1993). The credit cooperatives eventually lost steam in Bangladesh, but the notion of group-lending had established itself and, after experimentation and modification, became one basis for the Grameen model.

Tanzania, Thailand, the U.S., and Vietnam. When Bill Clinton was still governor, it was Muhammad Yunus, founder of the Grameen Bank (and a Vanderbilt-trained economist), who was called on to help set up the Good Faith Fund in Arkansas, one of the early microfinance organizations in the U.S. As Yunus (1995) describes the beginning:

Bangladesh had a terrible famine in 1974. I was teaching economics in a Bangladesh university at that time. You can guess how difficult it is to teach the elegant theories of economics when people are dying of hunger all around you. Those theories appeared like cruel jokes. I became a drop-out from formal economics. I wanted to learn economics from the poor in the village next door to the university campus.

Yunus found that most villagers were unable to obtain credit at reasonable rates, so he began by lending them money from his own pocket, allowing the villagers to buy materials for projects like weaving bamboo stools and making pots (*New York Times* 1997). Ten years later, Yunus had set up the bank, drawing on lessons from informal financial institutions to lend exclusively to groups of poor households. Common loan uses include rice processing, livestock raising, and traditional crafts.

The groups form voluntarily, and, while loans are made to individuals, all in the group are held responsible for loan repayment. The groups consist of five borrowers each, with lending first to two, then to the next two, and then to the fifth. These groups of five meet together weekly with seven other groups, so that bank staff meet with forty clients at a time. According to the rules, if one member ever defaults, all in the group are denied subsequent loans. The contracts take advantage of local information and the “social assets” that are at the heart of local enforcement mechanisms. Those mechanisms

rely on informal insurance relationships and threats, ranging from social isolation to physical retribution, that facilitate borrowing for households lacking collateral (Besley and Coate 1995). The programs thus combine the scale advantages of a standard bank with mechanisms long used in traditional, group-based modes of informal finance, such as rotating savings and credit associations (Besley, Coate, and Glenn Loury 1993).<sup>5</sup>

The Grameen Bank now has over two million borrowers, 95 percent of whom are women, receiving loans that total \$30–40 million per month. Reported recent repayment rates average 97–98 percent, but as Section 4.2 describes, relevant rates average about 92 percent and have been substantially lower in recent years.

Most loans are for one year with a nominal interest rate of 20 percent (roughly a 15–16 percent real rate). Calculations described in Section 4.2 suggest, however, that Grameen would have had to charge a nominal rate of around 32 percent in order to become fully financially sustainable (holding the current cost structure constant). The management argues that such an increase would undermine the bank’s social mission (Shahidur Khandker 1998),

<sup>5</sup> In a rotating savings and credit association, a group of participants puts contributions into a pot that is given to a single member. This is repeated over time until each member has had a turn, with order determined by list, lottery, or auction. Most microfinance contracts build on the use of groups but mobilize capital from outside the area. ROSCA participants are often women, and in the U.S. involvement is active in new immigrant communities, including among Koreans, Vietnamese, Mexicans, Salvadorans, Guatemalans, Trinidadians, Jamaicans, Barbadians, and Ethiopians. Involvement had been active earlier in the century among Japanese and Chinese Americans, but it is not common now (Light and Pham 1998). Rutherford (1998) and Armendariz and Morduch (1998) describe links of ROSCAs and microfinance mechanisms.

but there is little solid evidence that speaks to the issue.

Grameen figures prominently as an early innovator in microfinance and has been particularly well studied. Assessments of its financial performance are described below in Section 4.2, of its costs and benefits in Section 5.1, and of its social and economic impacts in Section 6.3.

## 2.2 *BancoSol, Bolivia*

Banco Solidario (BancoSol) of urban Bolivia also lends to groups but differs in many ways from Grameen.<sup>6</sup> First, its focus is sharply on banking, not on social service. Second, loans are made to all group members simultaneously, and the “solidarity groups” can be formed of three to seven members. The bank, though, is constantly evolving, and it has started lending to individuals as well. By the end of 1998, 92 percent of the portfolio was in loans made to solidarity groups and 98 percent of clients were in solidarity groups, but it is likely that those ratios will fall over time. By the end of 1998, 28 percent of the portfolio had some kind of guarantee beyond just a solidarity group.

Third, interest rates are relatively high. While 1998 inflation was below 5 percent, loans denominated in bolivianos were made at an annual base rate of 48 percent, plus a 2.5 percent commission charged up front. Clients with solid performance records are offered loans at 45 percent per year, but this is still steep relative to Grameen (but not relative to the typical moneylender, who may charge as much as 10 percent per month). About 70–80 percent of

loans are denominated in dollars, however, and these loans cost clients 24–30 percent per year, with a 1 percent fee up front.

Fourth, as a result of these rates, the bank does not rely on subsidies, making a respectable return on lending. BancoSol reports returns on equity of nearly 30 percent at the end of 1998 and returns on assets of about 4.5 percent, figures that are impressive relative to Wall Street investments—although adjustments for risk will alter the picture. Fifth, repayment schedules are flexible, allowing some borrowers to make weekly repayments and others to do so only monthly. Sixth, loan durations are also flexible. At the end of 1998, about 10 percent had durations between one and four months, 24 percent had durations of four to seven months, 23 percent had durations of seven to ten months, 19 percent had durations of ten to thirteen months, and the balance stretched toward two years.

Seventh, borrowers are better off than in Bangladesh and loans are larger, with average loan balances exceeding \$900, roughly nine times larger than for Grameen (although first loans may start as low as \$100). Thus while BancoSol serves poor clients, a recent study finds that typical clients are among the “richest of the poor” and are clustered just above the poverty line (where poverty is based on access to a set of basic needs like shelter and education; Sergio Navajas et al. 1998). Partly this may be due to the “maturation” of clients from poor borrowers into less poor borrowers, but the profile of clients also looks very different from that of the mature clients of typical South Asian programs.

The stress on the financial side has made BancoSol one of the key forces in the Bolivian banking system. The

<sup>6</sup> The financial information is from Jean Steege, ACCION International, personal communication, January 1999. Claudio Gonzalez-Vega et al. (1997) provide more detail on BancoSol. Further information can also be found at <http://www.accion.org>.



institution started as an NGO (PRODEM) in 1987, became a bank in 1992, and, by the end of 1998, served 81,503 low-income clients. That scale gives it about 40 percent of borrowers in the entire Bolivian banking system.

Part of the success is due to impressive repayment performance, although difficulties are beginning to emerge. Unlike most other microfinance institutions, BancoSol reports overdues using conservative standards: if a loan repayment is overdue for one day, the entire unpaid balance is considered at risk (even when the planned payment was only scheduled to be a partial repayment). By these standards, 2.03 percent of the portfolio was at risk at the end of 1997. But by the end of 1998, the fraction increased to 4.89 percent, a trend that parallels a general weakening throughout the Bolivian banking system and which may signal the negative effects of increasing competition. BancoSol's successes have spawned competition from NGOs, new nonbank financial institutions, and even formal banks with new loan windows for low-income clients. The effect has been a rapid increase in credit supply, and a weakening of repayment incentives that may foreshadow problems to come elsewhere (see Section 3.3).

Still, BancoSol stands as a financial success, and the model has been replicated—profitably—by nine of the eighteen other Latin American affiliates of ACCION International, an NGO based in Somerville, Massachusetts. ACCION also serves over one thousand clients in the U.S., spread over the six programs. Average loan sizes range from \$1366 in New Mexico to \$3883 in Chicago, and overall nearly 40 percent of the clients are female. As of December 1996, payments past due by at least thirty days averaged 15.5 percent but ranged as high as 21.2 percent in New York and

32.3 percent in New Mexico.<sup>7</sup> ACCION's other affiliates, including six in the United States, have not, however, achieved financial sustainability. The largest impediments for U.S. programs appear to be a mixed record of repayment, and usury laws that prevent microfinance institutions from charging interest rates that cover costs (Pham 1996).

### 2.3 *Rakyat Indonesia*

Like BancoSol, the Bank Rakyat Indonesia *unit desa* system is financially self-sufficient and also lends to “better off” poor and nonpoor households, with average loan sizes of \$1007 during 1996. Unlike BancoSol and Grameen, however, BRI does not use a group lending mechanism. And, unlike nearly all other programs, the bank requires individual borrowers to put up collateral, so the very poorest borrowers are excluded, but operations remain small-scale and “collateral” is often defined loosely, allowing staff some discretion to increase loan size for reliable borrowers who may not be able to fully back loans with assets. Even in the wake of the recent financial crisis in Indonesia, repayment rates for BRI were 97.8 percent in March 1998 (Paul McGuire 1998).

The bank has centered on achieving cost reductions by setting up a network

<sup>7</sup> Data are from ACCION (1997) and hold as of December 1996. Five of the six U.S. affiliates have only been operating since 1994, and the group as a whole serves only 1,695 clients (but with capital secured for expansion). A range of microfinance institutions operate in the U.S. Among the oldest and best-established are Chicago's South Shore Bank and Boston's Working Capital. The Cal-Meadow Foundation has recently provided funding for several microfinance programs in Canada. Microfinance participation in the U.S. is heavily minority-based, with a high ethnic concentration. For example, 90 percent of the urban clients of Boston's Working Capital are minorities (and 66 percent are female). Loans start at \$500. Clients tend to be better educated and have more job experience than average welfare recipients, and just 29 percent of Working Capital's borrowers were below the poverty line (Working Capital 1997).

of branches and posts (with an average of five staff members each) and now serves about 2 million borrowers and 16 million depositors. (The importance of savings to BRI is highlighted below in Section 7.) Loan officers get to know clients over time, starting borrowers off with small loans and increasing loan size conditional on repayment performance. Annualized interest rates are 34 percent in general and 24 percent if loans are paid with no delay (roughly 25 percent and 15 percent in real terms—before the recent financial crisis).

Like BancoSol, BRI also does not see itself as a social service organization, and it does not provide clients with training or guidance—it aims to earn a profit and sees microfinance as good business (Marguerite Robinson 1992). Indeed, in 1995, the *unit desa* program of the Bank Rakyat Indonesia earned \$175 million in profits on their loans to low-income households. More striking, the program's repayment rates—and profits—on loans to poor households have exceeded the performance of loans made to corporate clients by other parts of the bank. A recent calculation suggests that if the BRI *unit desa* program did not have to cross-subsidize the rest of the bank, they could have broken even in 1995 while charging an anomalous interest rate of just 17.5 percent per year on loans (around a 7 percent real rate; Jacob Yaron, McDonald Benjamin, and Stephanie Charitonenko 1998).

#### 2.4 *Kredit Desa, Indonesia*

The Bank Kredit Desa system (BKDs) in rural Indonesia, a sister institution to BRI, is much less well-known. The program dates back to 1929, although much of the capital was wiped out by the hyper-inflation of the middle 1960s (Don Johnston 1996). Like BRI, loans are made to individuals and the operation is financially viable. At the end

of 1994, the BKDs generated profits of \$4.73 million on \$30 million of net loans outstanding to 765,586 borrowers.<sup>8</sup>

Like Grameen-style programs, the BKDs lend to the poorest households, and scale is small, with an emphasis on petty traders and an average loan size of \$71 in 1994. The term of loans is generally 10–12 weeks with weekly repayment and interest of 10 percent on the principal. Christen et al. (1995) calculate that this translates to a 55 percent nominal annual rate and a 46 percent real rate in 1993. Loan losses in 1994 were just under 4 percent of loans outstanding (Johnston 1996).

Also as in most microfinance programs, loans do not require collateral. The innovation of the BKDs is to allocate funds through village-level management commissions led by village heads. This works in Indonesia since there is a clear system of authority that stretches from Jakarta down to the villages. The BKDs piggy-back on this structure, and the management commissions thus build in many of the advantages of group lending (most importantly, exploiting local information and enforcement mechanisms) while retaining an individual-lending approach. The commissions are able to exclude the worst credit risks but appear to be relatively democratic in their allocations. Through the late 1990s, most BKDs have had excess capital for lending and hold balances in BRI accounts. The BKDs are now supervised by BRI, and successful BKD borrowers can graduate naturally to larger-scale lending from BRI units.

#### 2.5 *Village Banks*

Prospects for replicating the BKDs outside of Indonesia are limited, however. A more promising, exportable

<sup>8</sup> Figures are calculated from Johnston (1996) and data provided by BRI in August 1996.

village-based structure is provided by the network of village banks started in the mid-1980s in Latin America by John Hatch and his associates at the Foundation for International Community Assistance (FINCA). The village banking model has now been replicated in over 3000 sites in 25 countries by NGOs like CARE, Catholic Relief Services, Freedom from Hunger, and Save the Children. FINCA programs alone serve nearly 90,000 clients in countries as diverse as Peru, Haiti, Malawi, Uganda, and Kyrgyzstan, as well as in Maryland, Virginia, and Washington, D.C.

The NGOs help set up village financial institutions in partnership with local groups, allowing substantial local autonomy over loan decisions and management. Freedom from Hunger, for example, then facilitates a relationship between the village banks and local commercial banks with the aim to create sustainable institutional structures.

The village banks tend to serve a poor, predominantly female clientele similar to that served by the Grameen Bank. In the standard model, the sponsoring agency makes an initial loan to the village bank and its 30–50 members. Loans are then made to members, starting at around \$50 with a four month term, with subsequent loan sizes tied to the amount that members have on deposit with the bank (they must typically have saved at least 20 percent of the loan value). The initial loan from the sponsoring agency is kept in an “external account,” and interest income is used to cover costs. The deposits of members are held in an “internal account” that can be drawn down as depositors need. The original aim was to build up internal accounts so that external funding could be withdrawn within three years, but in practice growing credit demands and slow savings accu-

mulation have limited those aspirations (Candace Nelson et al. 1995).

Like the Indonesian BKDs, the village banks successfully harness local information and peer pressure without using small groups along BancoSol or Grameen lines. And, as with the BKDs, sustainability is an aim, with nominal interest rates as high as 4 percent per month. Most village banks, however, still require substantial subsidies to cover capital costs. Section 4.1 shows evidence that village banks as a group cover just 70 percent of total costs on average. Partly, this is because many village banks have been set up in areas that are particularly difficult to serve (e.g., rural Mali and Burkina Faso), and the focus has been on outreach rather than scale. Worldwide, the number of clients is measured in the tens of thousands, rather than the millions served by the Grameen Bank and BRI.

### 3. *Microfinance Mechanisms*

The five programs above highlight the diversity of approaches spawned by the common idea of lending to low-income households. Group lending has taken most of the spotlight, and the idea has had immediate appeal for economic theorists and for policymakers with a vision of building programs around households’ “social” assets, even when physical assets are few. But its role has been exaggerated: group lending is not the only mechanism that differentiates microfinance contracts from standard loan contracts.<sup>9</sup> The programs described above also use dynamic incentives, regular repayment schedules, and collateral substitutes to help maintain high repayment rates. Lending to

<sup>9</sup> Ghatak and Guinnane (1999) provide an excellent review of group-lending contracts. Monica Huppi and Gershon Feder (1990) provide an early perspective. Armendariz and Morduch (1998) describe the functioning of alternative mechanisms.

women can also be a benefit from a financial perspective.

As shown in Table 1, just two of the five use explicit group-lending contracts, but all lend in increasing amounts over time (“progressive” lending), offer terms that are substantially better than alternative credit sources, and cut off borrowers in default. Most also require weekly or semi-weekly repayments, beginning soon after loan receipt. While we lack good evidence on the relative importance of these mechanisms, there is increasing anecdotal evidence on limits to group lending *per se* (e.g., the village studies from Bangladesh in Aminur Rahman 1998; Imran Matin 1997; Woolcock 1999; Sanae Ito 1998; and Pankaj Jain 1996). This section highlights what is known (or ought to be known) about the diversity of technologies that underlie repayment rates and screening mechanisms.

### 3.1 Peer Selection

Group lending has many advantages, beginning with mitigation of problems created by adverse selection. The key is that group-lending schemes provide incentives for similar types to group together. Ghatak (1999) shows how this sorting process can be instrumental in improving repayment rates, allowing for lower interest rates, and raising social welfare. His insight is that a group-lending contract provides a way to price discriminate that is impossible with an individual-lending contract.<sup>10</sup>

To see this, imagine two types of potential investors. Both types are risk neutral, but one type is “risky” and the other is “safe”; the risky type fails more often than the safe type, but the risky types have higher returns when successful. The bank knows the fraction of

each type in the population, but it is unable to determine which specific investors are of which type. Investors, though, have perfect information about each other.

Both types want to invest in a project with an uncertain outcome that requires one unit of capital. If they choose not to undertake the project, they can earn wage income  $m$ . The risky investors have a probability of success  $p_r$  and net return  $R_r$ . The safe investors have a probability of success  $p_s$  and net return  $R_s$ . When either type fails, the return is zero. Returns are statistically independent.

Risky types are less likely to be successful ( $p_r < p_s$ ), but they have higher returns when they succeed. For simplicity, assume that the expected net returns are equal for both safe and risky types:  $p_r R_r = p_s R_s \equiv \bar{R}$ . The projects of both types are socially profitable in that expected returns net of the cost of capital,  $\rho$ , exceed earnings from wage labor:  $\bar{R} - \rho > m$ .

Neither type has assets to put up as collateral, so the investors pay the bank nothing if the projects fail. To break even, the bank must set the interest rate high enough to cover its per-loan capital cost,  $\rho$ . If both types borrow, the equilibrium interest rate under competition will then be set so that  $r\bar{p} = \rho$ , where  $\bar{p}$  is the average probability of success in the population. Since the bank can't distinguish between borrowers, all investors will face interest rate,  $r$ . As a result, safe types have lower expected returns than risky types—since  $\bar{R} - rp_s < \bar{R} - rp_r$ —and the safe types will enter the market only if their expected net return exceeds their fallback position:  $\bar{R} - rp_s > m$ . If the safe types enter, the risky types will too.

But the safe types will stay out of the market if  $\bar{R} - rp_s < m$ , and only risky types might be left in the market. In that case, the equilibrium interest rate

<sup>10</sup> Armendariz and Gollier (1997) also describe this mechanism in parallel work.

will rise so that  $rp_r = \rho$ . Risky types drive out the safe. The risky types lose the implicit cross-subsidization by the safe types, while the safe types lose access to capital. This second-best scenario is inefficient since only the risky types borrow, even though the safe types also have socially valuable projects.

Can a group-lending scheme improve on this outcome? If it does, it must bring the safe types back into the market. For simplicity, consider groups of two people, with each group formed voluntarily. Individuals invest independently, but the contract is written to create joint liability. Imagine a contract such that each borrower pays nothing if her project fails, and an amount  $r^*$  if her project is successful. In addition, the successful borrower pays a joint-liability payment  $c^*$  if the other member of the group fails.<sup>11</sup> The expected net return of a safe type teamed with a risky type is then  $\bar{R} - p_s(r^* + (1 - p_r)c^*)$ , with similar calculations for exclusively safe and exclusively risky groups.

Will the groups be homogeneous or mixed? Since safe types are always preferred as partners (since their probability of failure is lower), the question becomes: will the risky types be willing to make a large enough transfer to the safe types such that both risky and safe types do better together? By comparing expected returns under alternative scenarios, we can calculate that a safe type will require a transfer of at least  $p_s(p_s - p_r)c^*$  to agree to form a partnership with a risky type. Will risky types be willing to pay that much? Their ex-

pected net gain from joining with a safe type is as much as  $p_r(p_s - p_r)c^*$ . But since  $p_r < p_s$ , the expected gains to risky types are always smaller than the expected losses to safe types. Thus, there is no mutually beneficial way for risky and safe types to group together. Group lending thus leads to assortative matching: all types group with like types (Gary Becker 1991).<sup>12</sup>

How does this affect the functioning of the credit market? Ghatak (1999) demonstrates that the group-lending contract provides a way to charge different effective fees to risky and safe types—even though all groups face exactly the same contract with exactly the same nominal charges,  $r^*$  and  $c^*$ . The result arises because risky types will be teamed with other risky types, while safe types team with safe types. Risky types then receive expected net returns of  $\bar{R} - p_r(r^* + (1 - p_r)c^*)$ , while safe types receive expected net returns of  $\bar{R} - p_s(r^* + (1 - p_s)c^*)$ . Thus, a successful risky type is more likely to have to pay the joint-liability payment  $c^*$  than a successful safe type. If  $r^*$  and  $c^*$  are set appropriately, the group-lending contract can provide an effective way to price discriminate that is impossible under the standard second-best individual-lending contract. If  $p_s = 0.9$  and  $p_r = 0.8$ , for example, the safer types can expect to pay less than the riskier types as long as the joint liability payment is set so that  $c^* > 1.4r^*$ .

Efficiency gains result if the difference is large enough to induce the safe types back into the market. When this happens, average repayment rates rise, and the bank can afford to maintain a lower interest rate  $r^*$  while not losing money.

<sup>11</sup> In typical contracts, group members are responsible for helping to pay off the loan in difficulty, rather than having to pay a fixed penalty for a group member's default. While clients lack collateral, they are assumed to have a large enough income flow to cover these costs if needed. In practice this may impose a constraint on loan size since individuals may have increasing difficulty paying  $c^* + r^*$  when loan sizes grow large.

<sup>12</sup> Ghatak (1998) extends the results to groups larger than 2, a continuum of types, and preferences against risk. See also Varian (1990) and Armendariz and Gollier (1997) on related issues of efficiency and sorting.

### 3.2 Peer Monitoring

Group lending may also provide benefits by inducing borrowers not to take risks that undermine the bank's profitability (Stiglitz 1990; Besley and Coate 1995). This can be seen by slightly modifying the framework in Section 3.1 to consider moral hazard. Instead, consider identical risk averse borrowers with utility functions  $u(x)$ .

Each borrower may do either risky or safe activities, and each activity again requires the same capital cost. The bank, as above, has imperfect information about borrowers—in particular, here it cannot tell whether the borrowers have done the safe or risky activity. Moral hazard is thus a prime concern. When projects fail, borrowers have a return of zero, and a borrower's utility level when projects fail is normalized to zero as well.

We start with the standard individual-lending contract. Borrowers either have expected utility  $p_s u(R_s - r)$  or  $p_r u(R_r - r)$ , depending on whether they do the safe or risky activity. If everyone did the safe activity, the bank could charge an interest rate of  $r = \rho/p_s$  and break even. But, since the bank cannot see which activity is chosen (and thus cannot contract on it), borrowers may fare better doing the risky activity and getting expected utility  $E[U_{sr}] = p_r u(R_r - \rho/p_s)$ . The bank then loses money. Thus, the bank raises interest rates to  $r = \rho/p_r$ . Now the borrower gets expected utility of  $E[U_{rr}] = p_r u(R_r - \rho/p_r)$ , and she is clearly worse off than with a lower interest rate. In fact, if the borrower could somehow commit to doing the safe activity, she could be better off—with expected utility  $E[U_{ss}] = p_s u(R_s - \rho/p_s)$ . Thus the borrower prefers  $E[U_{sr}]$  to  $E[U_{ss}]$  to  $E[U_{rr}]$ , but the information problem and inability to commit means that she always gets the worst outcome,  $E[U_{rr}]$ .

How can a group-lending contract improve matters? The key is that it can create a mechanism that gives borrowers an incentive to choose the safe activity. Again consider groups of two borrowers and group-lending contracts like those in Section 3.1 above. The borrowers in each group have the ability to enforce contracts between each other, and they jointly decide which types of activities to undertake. Now their problem is to choose between both doing the safe activity, yielding each borrower expected utility of  $p_s^2 u(R_s - r^*) + p_s(1 - p_s)u(R_s - r^* - c^*)$ , or doing the risky activity with expected utility  $p_r^2 u(R_r - r^*) + p_r(1 - p_r)u(R_r - r^* - c^*)$ . If the joint-liability payment  $c^*$  is set high enough, borrowers will always choose to do the safe activity (Stiglitz 1990).

This is good for the bank, but it saddles borrowers with extra risk. The bank, though, knows borrowers will now do the safe activity, and it earns extra income from the joint-liability payments. The bank can thus afford to lower the interest rate to offset the burden.

Thus, through exploiting the ability of neighbors to enforce contracts and monitor each other—even when the bank can do neither—the group-lending contract again offers a way to lower equilibrium interest rates, raise expected utility, and raise expected repayment rates.

### 3.3 Dynamic Incentives

A third mechanism for securing high repayment rates with high monitoring costs involves exploiting dynamic incentives (Besley 1995, p. 2187). Programs typically begin by lending just small amounts and then increasing loan size upon satisfactory repayment. The repeated nature of the interactions—and the credible threat to cut off any future lending when loans are not repaid—can

be exploited to overcome information problems and improve efficiency, whether lending is group-based or individual-based.<sup>13</sup>

Incentives are enhanced further if borrowers can anticipate a stream of increasingly larger loans. (Hulme and Mosley 1996 term this “progressive lending,” and the ACCION network calls it “step lending.”) As above, keeping interest rates relatively low is critical, since the advantage of microfinance programs lies in their offering services at rates that are more attractive than competitors’ rates. Thus, the Bank Rakyat Indonesia (BRI) and BancoSol charge high rates, but they keep levels well below rates that moneylenders traditionally charge.

However, competition will diminish the power of the dynamic incentives against moral hazard—a problem that both the Bank Rakyat Indonesia and BancoSol are starting to feel as other commercial banks see the potential profitability of their model. In practice, though, real competition has yet to be felt by most microfinance institutions (perhaps because so few are actually turning a profit). As competition grows, the need for a centralized credit rating agency will also grow.

Dynamic incentives will also work better in areas with relatively low mobility. In urban areas, for example, where households come and go, it may not be easy to catch defaulters who move across town and start borrowing again with a clean slate at a different branch or program. BRI has faced greater trouble securing repayments in their urban programs than in their rural ones, which may be due to greater urban mobility.

<sup>13</sup> See the general theoretical treatment in Bolton and Scharfstein (1990) and the application to microfinance contracts in Armendariz and Morduch (1998).

Relying on dynamic incentives also runs into problems common to all finite repeated games. If the lending relationship has a clear end, borrowers have incentives to default in the final period. Anticipating that, the lender will not lend in the final period, giving borrowers incentives to default in the penultimate period—and so forth until the entire mechanism unravels. Thus, unless there is substantial uncertainty about the end date—or if “graduation” from one program to the next is well-established (*ad infinitum*), dynamic incentives have limited scope on their own.

One quite different advantage of progressive lending is the ability to test borrowers with small loans at the start. This feature allows lenders to develop relationships with clients over time and to screen out the worst prospects before expanding loan scale (Parikshit Ghosh and Debraj Ray 1997).

Dynamic incentives can also help to explain advantages found in lending to women. Credit programs like those of the Grameen Bank and the Bangladesh Rural Advancement Committee (BRAC) did not begin with a focus on women. In 1980–83, women made up 39 percent and 34 percent of their respective memberships, but by 1991–92, BRAC’s membership was 74 percent female and Grameen’s was 94 percent female (Anne Marie Goetz and Rina Sen Gupta 1995). As Table 2 shows, many other programs also focus on lending to women, and it appears to confer financial advantages on the programs. At Grameen, for example, 15.3 percent of male borrowers were “struggling” in 1991 (i.e., missing some payments before the final due date) while this was true for just 1.3 percent of women (Khandker, Baqui Khalily, and Zahed Kahn 1995).

The decision to focus on women has some obvious advantages. The lower mobility of women may be a plus where

TABLE 2  
PERFORMANCE INDICATORS OF MICROFINANCE PROGRAMS

	Observations	Average loan balance (\$)	Avg. loan as % of GNP per capita	Average operational sustainability	Average financial sustainability
<i>Sustainability</i>					
All microfinance institutions	72	415	34	105	83
Fully sustainable	34	428	39	139	113
<i>Lending method</i>					
Individual lending	30	842	76	120	92
Solidarity groups	20	451	35	103	89
Village bank	22	94	11	91	69
<i>Target Group</i>					
Low end	37	133	13	88	72
Broad	28	564	48	122	100
High end	7	2971	359	121	76
<i>Age</i>					
3 to 6 years	15	301	44	98	84
7 or more years	40	374	27	123	98

Source: Statistical appendix to *MicroBanking Bulletin* (1998). Village banks have a "B" data quality; all others are graded "A". Portfolio at risk is the amount in arrears for 90 days or more as a percentage of the loan portfolio. Averages exclude data for the top and bottom deciles.

*ex post* moral hazard is a problem (i.e., where there is a fear that clients will "take the money and run"). Also, where women have fewer alternative borrowing possibilities than men, dynamic incentives will be heightened.<sup>14</sup>

Thus, ironically, the financial success of many programs with a focus on women may spring partly from the *lack* of economic access of women, while, at the same time, promotion of economic access is a principal social objective (Syed Hashemi, Sidney Ruth Schuler, and Ann P. Riley 1996).

<sup>14</sup> Rahman (1998) describes complementary cultural forces based on women's "culturally patterned behavior." Female Grameen Bank borrowers in Rahman's study area, for example, are found to be much more sensitive to verbal hostility heaped on by fellow members and bank workers when repayment difficulties arise. The stigma is exacerbated by the public collection of payments at weekly group meetings. According to Rahman (1998), women are especially sensitive since their misfortune reflects poorly on the entire household (and lineage), while men have an easier time shaking it off.

### 3.4 Regular Repayment Schedules

One of the least remarked upon—but most unusual—features of most microfinance credit contracts is that repayments must start nearly immediately after disbursement. In a traditional loan contract, the borrower gets the money, invests it, and then repays in full with interest at the end of the term. But at Grameen-style banks, terms for a year-long loan are likely to be determined by adding up the principal and interest due in total, dividing by 50, and starting weekly collections a couple of weeks after the disbursement. Programs like BancoSol and BRI tend to be more flexible in the formula, but even they do not stray far from the idea of collecting regular repayments in small amounts.

The advantages are several. Regular repayment schedules screen out undisciplined borrowers. They give early warning to loan officers and peer group members about emerging problems.



TABLE 2 (Cont.)

	Avg. return on equity	Avg. percent of portfolio at risk	Avg. percent female clients	Avg. number of active borrowers
<i>Sustainability</i>				
All microfinance institutions	-8.5	3.3	65	9,035
Fully sustainable	9.3	2.6	61	12,926
<i>Lending method</i>				
Individual lending	-5.0	3.1	53	15,226
Solidarity groups	-3.0	4.1	49	7,252
Village bank	-17.4	2.8	92	7,833
<i>Target Group</i>				
Low end	-16.2	3.8	74	7,953
Broad	1.2	3.0	60	12,282
High end	-6.2	1.9	34	1,891
<i>Age</i>				
3 to 6 years	-6.8	2.2	71	9,921
7 or more years	-2.4	4.1	63	16,557

And they allow the bank to get hold of cash flows before they are consumed or otherwise diverted, a point developed by Stuart Rutherford (1998).

More striking, because the repayment process begins before investments bear fruit, weekly repayments necessitate that the household has an additional income source on which to rely. Thus, insisting on weekly repayments means that the bank is effectively lending partly against the household's steady, diversified income stream, not just the risky project. This confers advantages for the bank and for diversified households. But it means that microfinance has yet to make real inroads in areas focused sharply on highly seasonal occupations like agricultural cultivation. Seasonality thus poses one of the largest challenges to the spread of microfinance in areas centered on rainfed agriculture, areas that include some of the poorest regions of South Asia and Africa.

### 3.5 *Collateral Substitutes*

While few programs require collateral, many have substitutes. For example, programs following the Grameen model require that borrowers contribute to an "emergency fund" in the amount of 0.5 percent of every unit borrowed (beyond a given scale). The emergency fund provides insurance in cases of default, death, disability, etc., in amounts proportional to the length of membership. An additional 5 percent of the loan is taken out as a "group tax" that goes into a group fund account. Up to half of the fund can be used by group members (with unanimous consent). Typically, it is disbursed among the group as zero-interest loans with fixed terms. Until October 1995, Grameen Bank members could not withdraw these funds from the bank, even upon leaving. These "forced savings" can now be withdrawn upon leaving, but only after the banks have taken out what they

are owed. Thus, in effect, the funds serve as a form of partial collateral.

The Bank Rakyat Indonesia's *unit desa* program is one of the few programs to require collateral explicitly. Its advocates, however, emphasize instead the role of dynamic incentives in generating repayments (Richard Patten and Jay Rosengard 1991; Robinson 1992). It is impossible, though, to determine easily which incentive mechanism is most important in driving repayment rates. While bank officials point out that collateral is almost never collected, this does not signal its lack of importance as an incentive device. If the threat of collection is believable, there should be few instances when collateral is actually collected.

BancoSol also stresses the role of solidarity groups in assuring repayments, but as its clients have prospered at varying rates, lending approaches have diversified as well. As noted in Section 2.2, by the end of 1998, 28 percent of its portfolio had some kind of guarantee beyond the solidarity group.

### 3.6 *Empirical Research Agenda*

Do the mechanisms above function as advertised? Is there evidence of assortative matching through group lending as postulated by Ghatak (1999)? Are future loan terms predicted by lagged performance, as suggested by the theory of dynamic incentives? Extending the theory further, does the group-lending contract heighten default probabilities for the entire group when some members run into difficulties, as predicted by Besley and Coate (1995)? Does group lending lead to excessive monitoring and excessive pressure to undertake "safe" projects rather than riskier and more lucrative projects (Banerjee, Besley, and Guinnane 1992)? Is the group-lending structure less flexible than individual lending for

borrowers in growing businesses and those that outstrip the pace of their peers (Madajewicz 1997; Woolcock 1998)? Are weekly meetings particularly costly (for both borrowers and bank staff) in areas of low population density and at busy agricultural seasons? Do social programs enhance economic performance? When default occurs, do bank staff follow the letter of the law and cut off good clients with the misfortune to be in groups with unlucky neighbors? Or is renegotiation common (Hashemi and Sidney Schuler 1997; Matin 1997; Armendariz and Morduch 1998)?

Most of the theoretical propositions are supported with anecdotes from particular programs, but they have not been established as empirical regularities. Better research is needed to sharpen both the growing body of microfinance theory and ongoing policy dialogues.

Empirical understandings of microfinance will also be aided by studies that quantify the roles of the various mechanisms in driving microfinance performance. The difficulty in these inquiries is that most programs use the same lending model in all branches. Thus, there is no variation off of which to estimate the efficacy of particular mechanisms. Well-designed experiments would help (e.g., individual-lending contracts to some of the sample, group-lending contracts to others; weekly repayments for some, monthly or quarterly schedules for others).

Lacking well-designed experiments, a collection of studies instead presents regressions in which repayment rates are explained by proxies for forces behind particular mechanisms. The variation thus arises from features of the economic environment that affect the efficacy of particular program features: How good are information flows? How competitive are credit markets? How strong are informal enforcement mechanisms? The variation in answers to

these questions allows econometric estimation, but the evidence is indirect and subject to multiple interpretations since the strength of information flows, markets, and enforcement mechanisms is unlikely to matter only through the form of credit contract. In addition, selection biases of the sort raised in Section 6.1 are likely to apply. Still, some results are provocative.

For example, Wydick (1999) reports on a survey of an ACCION International affiliate in western Guatemala tailored to elicit information about groups. He finds that improvements in repayment rates are associated with variables that proxy for the ability to monitor and enforce group relationships, such as knowledge of the weekly sales of fellow group members. He finds little impact, though, of social ties *per se*: friends do not make more reliable group members than others. In fact, members are sometimes softer on their friends, worsening average repayment rates.

Mark Wenner (1995) investigates repayment rates in 25 village banks in Costa Rica affiliated with FINCA. He finds active screening that successfully excludes the worst credit risks, working in a more straightforward way than in the simple model of peer selection in Section 3.1 above. He also finds that delinquency rates are higher in better off towns. This lends support to the theory of dynamic incentives: where borrowers have better alternatives, they are likely to value the programs less, and this drives up default rates.

The result is echoed by Manohar Sharma and Manfred Zeller (1996) in their study of three programs in Bangladesh (but not Grameen). They find that repayment rates are higher in remote communities—i.e., those with fewer alternative credit programs. Khandker et al. (1995, Table 7.2), however, find the

opposite in considering other Bangladesh banks (including Grameen). Both drop-out rates and repayment rates increase in better-developed villages. This may be a product of improved liquidity and better business opportunities in better-off villages, but it might also reflect selection bias.

These bits of evidence show that group lending is a varied enterprise and that there is much to microfinance beyond group lending. Narrowing the gap between theory and evidence will be an important step toward improving and evaluating programs.

#### 4. *Profitability and Financial Sustainability*

Microfinance discussions pay surprisingly little attention to particular mechanisms relative to how much attention is paid to purely financial matters. Accordingly, this section considers finances, and social issues are taken up again in Section 5.

How well in the end have microfinance programs met their financial promise? A recent survey finds 34 profitable programs among a group of 72 with a “commitment” to financial sustainability (*MicroBanking Bulletin* 1998). This does not imply, however, that half of all programs worldwide are self-sufficient. The hundreds of programs outside the base 72 continue to depend on the generosity of donors (e.g., Grameen Bank and most of its replicators do not make the list of 72, although BancoSol and BRI do). Some experts estimate that no more than 1 percent of NGO programs worldwide are currently financially sustainable—and perhaps another 5 percent of NGO programs will ever cross the hurdle.<sup>15</sup>

<sup>15</sup> The figures are based on an informal poll taken by Richard Rosenberg at a microfinance conference (personal communication, Nov. 1998).

The other 95 percent of programs in operation will either fold or continue requiring subsidies, either because their costs are high or because they choose to cap interest rates rather than to pass costs on to their clients. Although subsidies remain integral, donors and practitioners have been reluctant to discuss optimal subsidies to alleviate poverty, perhaps for fear of appearing retrograde in light of the disastrous experiences with subsidized government-run programs. Instead, rhetoric privileges financial sustainability.

#### 4.1 *International Evidence*

Table 2 gives financial indicators for the 72 programs in the *MicroBanking Bulletin* survey.<sup>16</sup> The 72 programs have been divided into non-exclusive categories by age, lending method, target group, and level of sustainability.<sup>17</sup> (There is considerable overlap, for example, between the village bank category and the group targeting “low end” borrowers.)

The groups, divided by lending method and target group, demonstrate the diversity of programs marching behind the microfinance banner. Average loan balances range from \$94 to \$842 when comparing village banks to those that lend exclusively to individuals. The focus on women varies from 92 percent to 53 percent. The target group category makes the comparison starker,

<sup>16</sup>The project started as a collaboration with the American Economic Association’s Economics Institute in Boulder, Colorado.

<sup>17</sup>Those with low end target groups have average loan balances under \$150 or loans as a percentage of GNP per capita under 20 percent (they include, for example, FINCA programs). Those with broad targets have average balances that are 20–85 percent of GNP per capita (and include BancoSol and the BRI *unit desa* system). The high end programs make average loans greater than 120 percent of GNP per capita. The solidarity group methodology is based on groups with 3–5 borrowers (like BancoSol). The village banks have groups with over five borrowers.

with average loan balances varying from \$133 to \$2971. Averages for the 34 fully sustainable institutions are not, however, substantially different from the overall sample in terms of average loan balance or the percentage of female clients.

Sustainability is generally considered at two levels. The first is *operational sustainability*. This refers to the ability of institutions to generate enough revenue to cover operating costs—but not necessarily the full cost of capital. If unable to do this, capital holdings are depleted over time. The second level of concern is *financial sustainability*. This is defined by whether or not the institution requires subsidized inputs in order to operate. If the institution is not financially sustainable, it cannot survive if it has to obtain all inputs (especially capital) at market, rather than concessional, rates.

Most of the programs in the survey have crossed the operational sustainability hurdle. The only exceptions are the village banks and those with low end targets, both of which generate about 90 percent of the required income.<sup>18</sup>

Many fewer, however, can cover full capital costs as well. Overall, programs generate 83 percent of the required income and the village bank/low end target groups generate about 70 percent. Strikingly, the handful of programs that focus on “high end” clients are just as heavily subsidized as those on the low end. Similarly, the financial performance of programs with individual

<sup>18</sup>See Mark Schreiner (1997) and Khandker (1998) for discussions of alternative views of sustainability. Unlike other reported figures, those here make adjustments to account for subsidies on capital costs, the erosion of the value of equity due to inflation, and adequate provisioning for non-recoverable loans. To the extent possible, the figures are comparable to data for standard commercial enterprises.

loans is roughly equivalent to that of programs using solidarity groups, even though the former serve a clientele that is more than twice as rich.

The greatest financial progress has been made by broad-based programs like BancoSol and BRI that serve clients across the range. Financial progress also improves with age (although comparisons of young and old groups can only be suggestive as their orientations tend to differ).<sup>19</sup>

The returns to equity echo the data on financial sustainability. The numbers give profits relative to the equity put into the programs. The table shows that this is not a place to make big bucks. While average returns to equity of 9.3 percent for the financially-sustainable programs are respectable, they do not compete well with alternative investments and often carry considerable risk. At the same time, social returns may well be high even if financial returns are modest (or negative). On average, the broad-based programs, for example, cover all costs and serve a large pool of clients with modest incomes, most of whom are women. Wall Street would surely pass by the investment opportunity, but socially-minded investors might find the trade-off favorable.

If returns to equity could be increased through more effective leveraging of equity, however, Wall Street might eventually be willing to take a look. Increasing leverage is thus the cutting edge for financially-minded microfinance advocates, and it has taken microfinance discussions to places far from their original focus on how to make \$100 loans to Bolivian street vendors.

<sup>19</sup> None of the U.S. programs that I know of are profitable, and some are very far from financial sustainability, held back by legal caps on interest rates (Michael Chu 1996). None of the U.S. programs are included in the *MicroBanking Bulletin* survey.

If donors tire of footing the bill for microfinance, achieving financial sustainability and increasing returns to equity is the only game to play. The issue is: will donors tire if social returns can be proven to justify the costs? Answering the question puts impact studies and cost-benefit analyses high on the research agenda. It also requires paying close attention to the basis of self-reported claims about financial performance.

#### 4.2 *The Grameen Bank Example*

The data above have been adjusted to bring them into rough conformity with standard accounting practices. This is not typical: microfinance statistics are often calculated in idiosyncratic ways and are vulnerable to misinterpretation. The Grameen Bank has been relatively open with its data, and it provides a full set of accounts in its annual reports.

Table 3 provides evidence on the Grameen Bank's performance between 1985 and 1996.<sup>20</sup> The table shows Grameen's rapid increase in scale, with the size of the average annual loan portfolio increasing from \$10 million in 1985 to \$271 million by 1996. Membership has expanded 12 times over the same period, reaching 2.06 million by 1996.

The bank reports repayment rates above 98 percent and steady profits—and this is widely reported (e.g., *New York Times* 1997). All accounting definitions are not standard, however. The reported overdue rates are calculated by Grameen as the value of loans overdue greater than one year, divided by

<sup>20</sup> The base data are drawn from Grameen Bank annual reports. This section draws on Morduch (1999). Summaries of Grameen's financial performance through 1994 can be found in Hashemi and Schuler (1997) and Khandker, Khalily, and Kahn (1995). Schreiner (1997) provides alternative calculations of subsidy dependence with illustrations from Grameen. The adjustments here capture the most critical issues, but they are not comprehensive—for example, no adjustment is made for the erosion of equity due to inflation.

TABLE 3  
 GRAMEEN BANK: SELECTED FINANCIAL INDICATORS  
 (Millions of 1996 U.S. dollars)

	1985	1990	1992	1994	1996	1985– 1996 average
<i>Size</i>						
Average annual loans outstanding	10.0	58.3	83.8	211.5	271.3	108
Members (thousands)	172	870	1,424	2,013	2,060	1,101
<i>Overdues rates (%)</i>						
Reported overdues rate	2.8	3.3	2.5	0.8	13.9	1.6 <sup>A</sup>
Adjusted overdues rate	3.8	6.2	1.9	15.0	—	7.8 <sup>A</sup>
<i>Profits</i>						
Reported profits	0.02	0.09	–0.15	0.56	0.46	1.5 <sup>B</sup>
Adjusted profits	–0.33	–1.51	–3.06	–0.93	–2.28	–17.8 <sup>B</sup>
<i>Subsidies</i>						
Direct grants	0.0	2.3	1.7	2.0	2.1	16.4 <sup>B</sup>
Value of access to soft loans	1.1	7.0	5.8	9.0	12.7	80.5 <sup>B</sup>
Value of access to equity	0.0	0.4	2.7	8.0	8.8	47.3 <sup>B</sup>
Subsidy per 100 units outstanding	11	21	16	7	9	11
<i>Interest rates (%)</i>						
Average nominal on-lending rate	16.8	11.1	15.8	16.7	15.9	15.9
Average real on-lending rate	5.9	3.0	11.6	13.1	10.1	10.1
Benchmark cost of capital	15.0	15.0	13.5	9.4	10.3	11.3
Average nominal cost of capital	7.9	2.2	2.1	5.5	3.4	3.7
Subsidy dependence index	80	263	106	45	65	74
Avg. nominal “break-even” rate	30.2	40.2	32.6	24.2	26.2	25.7

Source: Morduch (1999) based on data from various years of the Grameen Bank *Annual Report*.

Notes: A: average for 1985–94, weighted by portfolio size. B: Sum for 1985–96.

the current portfolio. A problem is that the current portfolio tends to be much larger than the portfolio that existed when the overdue loans were first made. With the portfolio expanding 27 times between 1985 and 1996, reported default rates are considerably lower than standard calculation of arrears (which instead immediately captures the share of the portfolio “at risk”). The adjusted rates replace the denominator with the size of the portfolio at the time that the loans were made.

Doing so can make a big difference: overall, overdues averaged 7.8 percent between 1985 and 1996, rather than the reported 1.6 percent. The rate is still impressive relative to the performance of government development banks, but

it is high enough to start creating financial difficulties. More dramatically, the bank reported an overdue rate of 0.8 percent in 1994, while at the same time I estimate that 15 percent of the loans made that year were unrecovered.

Similarly, reported profits differ considerably from adjusted profits in Table 3. The main adjustment is to make adequate provision for loan losses. Until recently, the bank had been slow to write off losses, and the adjusted rates ensure that in each year the bank writes off a modest 3.5 percent of its portfolio (still, considerably less than the 7.8 percent average overdue rate). The result is losses of nearly \$18 million between 1985 and 1996, rather than the bank’s reported \$1.5 million in profits.

Grants from donors are considered part of income in the profit calculations. If the bank had to rely only on income from lending and investments, it would have instead suffered losses of \$34 million between 1985 and 1996.

The bulk of the bank's subsidies enter through soft loans, however. Grameen paid an average of 3.7 percent on borrowed capital (a -1.7 percent real rate). Had it not had access to concessional rates, it would have had to pay considerably more. Here, an alternative benchmark capital cost measure is approximated as the Bangladesh deposit rate from IMF *International Financial Statistics* (1996) plus a 3 percent adjustment for transactions costs. The difference in rates yields a total value of access to soft loans of \$80.5 million between 1985 and 1996. An additional implicit subsidy of \$47.3 million was received by Grameen through access to equity which was used to generate returns below opportunity costs.

Although subsidies have increased over time in absolute quantities, the bank's scale has grown even more quickly. As a result, the annual subsidy per dollar outstanding has fallen substantially, leveling off at about ten cents on the dollar.

The subsidy dependence index summarizes the subsidy data by yielding an estimate of the percentage increase in the interest rate required in order for the bank to operate without subsidies of any kind (Yaron 1992). The result for 1985-96 indicates that in the early 1990s Grameen would have had to increase nominal interest rates on its general loan product from 20 percent to above 50 percent. Overall, the average break-even rate is 32 percent (the average on-lending rate is lower than 20 percent since about one quarter of the portfolio is comprised of housing loans offered at 8 percent interest per year).

While borrowers would not be happy, it is not obvious that they would defect. Clients of the Bangladesh Rural Advancement Committee, a Grameen competitor with a similar client base, are already paying 30 percent nominal base interest rates, for example.

Alternatively, radically stripping down administrative costs would provide breathing room. In the early 1990s salary and personnel costs accounted for half of Grameen's total costs, while interest costs were held below 25 percent. Decreasing wages has been impossible since they are linked to government wage scales, so the emphasis has had to be on increasing efficiency. By 1996, salary and personnel costs were roughly equal to interest costs (Morduch 1999). Training costs have also been high. One study found that in 1991, 54 percent of female trainees and 30 percent of male trainees dropped out before taking up first positions with Grameen—and much of Grameen's direct grants are funneled to supporting training efforts (Khandker, Khalily, and Kahn 1995).

The Association for Social Advancement (ASA), another large microfinance presence in Bangladesh, demonstrates a more radical approach to cost control. They have streamlined record keeping and simplified operations so that, for example, only one loan type is offered—versus Grameen's choice of general loans, housing loans, collective loans, seasonal loans, and, more recently, lease/loan arrangements. ASA thus feels comfortable hiring staff with fewer formal qualifications than Grameen, and staff retention is aided. ASA has also eliminated mid-level branch offices and has centered nearly exclusively on the larger groups of forty village members, rather than the five-member subgroups.

The Grameen Bank's current path, pursuing cross-subsidization and alternative

income generation projects (including an internet provision service and other for-profit spin-offs) is appealing in the medium term, but it has its own perils: the bank's mission risks getting diluted, and profitable sectors are vulnerable to competition over time.

Grameen's self-reported successes have been exaggerated, but even if the bank is not the economic miracle that many have claimed, it is not obvious that its failure to reach financial self-sufficiency is in itself a problem. As long as benefits sufficiently exceed costs and donors remain committed to the cause, Grameen could hold up as a wise social investment.

### 5. *Costs and Benefits of Credit Subsidies*

Nearly all programs espouse financial sustainability as a key principle. At the same time, nearly all programs rely on subsidies of one sort or another. These subsidies are typically viewed as temporary aids that help programs overcome start-up costs, not as ongoing program features. It is the familiar "infant industry" argument for protection.

The anti-subsidy stance springs from a series of worries. First, donors can be fickle, and programs that aim to exist into the future feel the need for independence. Second, donor budgets are limited, restricting the scale of operations to the size of the dole. Self-sufficient programs, on the other hand, can expand to meet demand. Third, subsidized programs run the risk of becoming inefficient without hard bottom lines. Fourth, in the past subsidies have ended up in the wrong hands, rather than helping poor households.

The view that subsidies should just be temporary has meant that calculating the costs and benefits of subsidies has not been an important part of microfinance practice, and there have been no

careful cost-benefit studies to date. But the fact is that subsidies are an ongoing reality: some "infants" are getting old. Moreover, many of the worries about problems associated with subsidies can likely be overcome.<sup>21</sup>

It is true that donors can be fickle, but governments will remain committed to poverty alleviation well after international agencies have moved on to the next Big Idea. If subsidized microfinance proves to deliver more bang for the buck than other social investments, should subsidies be turned down?

Scale certainly matters, but often a small well-targeted program may do more to alleviate measured poverty than a large, poorly-targeted program. Consider this example from Morduch (2000). Assume that the typical client in a subsidized program has an income of, say, 50 percent of the poverty line, while the typical client of a sustainable (high interest rate) program has an income of 90 percent of the poverty line. To clarify the comparison, assume that the net impacts on income per borrower are identical for the programs (after repaying loans with interest).

Minimizing poverty as measured by the commonly-used "squared poverty gap" of James Foster, Joel Greer, and Erik Thorbecke (1984), for example, suggests that raising the poorer borrower's income by one dollar has five times greater impact than doing the same for the less poor borrower. If the sustainable program has 63,000 clients (roughly the size of Bolivia's BancoSol in the early 1990s), the subsidized program would need to reach just 12,600 clients to have an equivalent impact. The

<sup>21</sup>This section draws heavily on Morduch (2000). Adams, Graham, and von Pischke (1982) present a well-argued alternative perspective. Schreiner (1997) presents a framework for considering cost-effectiveness applied to BancoSol and the Grameen Bank.



comparison is too simple, but it amply illustrates how social weights and depth of outreach can outweigh concerns with scale.

The third issue, the danger of slipping into inefficiency, has been demonstrated many times over by large public banks in low-income countries. But the key to efficiency is the maintenance of hard budget constraints, not necessarily profits. Several donors already use strict and explicit performance targets when lending to microfinance institutions, conditioning future tranches on performances to date. The lessons can be applied more widely and used to promote efficiency and improve targeting in a broader range of subsidized programs.

### 5.1 Simple Cost–Benefit Ratios

How should costs and benefits be compared? A simple gauge can be formed by dividing the value of subsidies by a measure of benefits accruing to borrowers. For example, Khandker (1998) reports a cost–benefit ratio of 0.91 with respect to improvements in household consumption via borrowing by women from the Grameen Bank. This means that it costs society 91 cents for every dollar of benefit to clients. A similar calculation leads to a cost–benefit ratio of 1.48 for borrowing by men. The ratio is higher, since lending to men appears to have a smaller impact on household consumption (Mark Pitt and Khandker 1998), but Khandker stresses that even the ratio for male borrowers compares favorably to alternative poverty alleviation programs in Bangladesh, like the World Food Programme’s Food-for-Work scheme (cost–benefit ratio = 1.71) and CARE’s similar program (cost–benefit ratio = 2.62). The microfinance programs of the Bangladesh Rural Advancement Committee (BRAC) compare less favorably, however. Khandker (1998) reports ra-

tios of 3.53 and 2.59 for borrowing from BRAC by women and men, respectively.

These calculations provide an important first-cut at taking costs and benefits seriously. They suggest that investing in microfinance is not a universal winner, but some programs beat alternatives. Like all quick calculations, though, they rest on a series of simplifications. Most immediately, only measurable benefits can be considered, thus excluding much-discussed social impacts like “gender empowerment.” Other limits hinge on how the measurable impacts are quantified. For example, the 0.91 ratio for lending to women by Grameen draws on an estimated 18 cent increase in household consumption for every additional dollar borrowed by women from Grameen (Pitt and Khandker 1998). The estimate is a marginal impact of an additional dollar lent, but the average impact is more appropriate here since the entire program is being evaluated, not just the expansion of scale.<sup>22</sup> If average benefits were used instead and if marginal returns diminish with amounts borrowed, the cost–benefit ratio will be overstated. Supporting the Grameen Bank will then yield a greater impact than \$1 benefit for each \$0.91 spent. On the other hand, if there are large fixed costs in production technologies, marginal returns may well be higher than average returns, weakening support for Grameen. There is evidence to suggest that this may be the case: as discussed further in Section 6.3, *average* impacts estimated with the same data are close to zero (Morduch 1998b).

Putting aside the average-marginal

<sup>22</sup> The econometric structure required for identification in fact rests on the assumption that marginal and average impacts are equated (see Section 6.3 below), although Pitt and Khandker interpret the impacts as marginal. Average impacts estimated with more limited econometric structure turn out to look very different (Morduch 1998).

distinction, simple cost–benefit ratios fail to capture dynamics. Imagine that borrowing allows a client to purchase a sewing machine. Owning the machine (and being able to set up a small-scale tailoring business) creates benefits into the future, and using impacts on current household consumption does not capture the full value of borrowing since cost is a stock variable, while benefit is a flow. In principle, costs should be compared to the present value of the flow of future impacts, not the current impact, and doing so will lower cost–benefit ratios.

Perhaps the most difficult problem—and the one most relevant from the vantage of the current debate into microfinance—is that simple cost–benefit calculations fail to provide insight about the relevant counterfactual scenario. Cost–benefit ratios might be improved (or worsened) by reducing subsidies slightly, and the simple cost–benefit ratios provide no sense of the optimality of such a move. Thus, while it might be that a dollar used to subsidize an existing microfinance program helps poor households more than other uses, it might *also* be that the microfinance program would ultimately help more poor people if it was *not* subsidized (or if it was subsidized at a much lower level). This kind of argument has been put forward often by observers skeptical of subsidies (e.g., CGAP 1996).

Again consider the hypothetical comparison above of a sustainable program with 63,000 clients versus a subsidized program with just 12,600. If society judged that one dollar in the hands of a poor borrower is worth just ten times the value of a dollar to a less poor borrower (rather than 5 times the value as assumed above), the larger (nonsubsidized) program will now do more to improve social welfare than the one with subsidies. Resolving the issues requires

making explicit social valuations and evaluating the sensitivity of impacts and credit demand to the rate of subsidy.

The assertion that borrowers desire *access* to credit, not subsidized credit, implies that this hypothetical example misses another aspect that militates against subsidies. The example assumes that the subsidized program reaches much poorer clients, but if it is true that credit demand by poor borrowers is not very sensitive to the interest rate, the profile of borrowers should be similar at subsidized and non-subsidized programs. Pushing for financial sustainability should not limit the depth of outreach by much, and the case for subsidization weakens considerably.

Anecdotal evidence for this claim, however, tends to rely on either partial analytics (e.g., application of the principle of declining marginal returns to capital when all else is not held constant) or incomplete views of demand conditions (e.g., seeing demand at high interest rates but overlooking the pool of potential borrowers that are discouraged by high costs). Some argue that interest costs are a small fraction of overall production costs, so households can absorb high interest rates. But, all the same, *net* profits could remain sensitive to interest rates.

Practitioners in Bangladesh tend to believe that the elasticity of credit demand with respect to the interest rate is high, and accordingly they keep interest rates relatively low (below 25 percent real). Practitioners in Latin America tend to believe that the elasticity is low, and they set interest rates as high as needed (approaching 60 percent real). Both could be correct in their contexts, but serious empirical work is lacking.

The issue relates to a broader concern with impacts on non-borrowers. Specifically, why is it assumed that a *choice* must be made between program

types? Why can't different types of programs coexist? More generally, how will the existence of a subsidized program affect the profitability of both formal and informal institutions operating nearby?

Theorists have made progress here, although solid empirical evidence remains scant. Karla Hoff and Stiglitz (1998) and Pinaki Bose (1998), for example, illustrate cases in which the entry of a subsidized program worsens the terms and availability of loans offered by moneylenders in the informal sector. The negative impacts occur because the subsidized programs reduce optimal scale and siphon off the best borrowers, leaving the non-subsidized lenders with a riskier pool of clients and higher enforcement costs than before. Sanjay Jain (1999) similarly considers the case in which clients might borrow simultaneously from both formal and informal sources but where the scale advantages of the formal sector outweigh the informational advantages of local moneylenders. The three papers give examples of cases in which the clients of subsidized programs do well but at the expense of borrowers (and lenders) elsewhere. However, the papers also describe the possibility of favorable counter-examples in which everyone benefits. In this line, Maria Floro, and Ray (1997) and Gabriel Fuentes (1996) provide cases in which increasing formal sector credit may eventually percolate down to the informal sector, increasing credit availability there as well. Unfortunately, for now policymakers have little to go on beyond a handful of small-scale case studies and these theoretical examples and counterexamples.

## 5.2 Empirical Research Agenda

The issues above can be put together formally to show the kinds of informa-

tion that are needed to put numbers on the ideas under debate. The starting point is a social welfare function  $W = W(w_1, w_2, \dots, w_N)$ , which is assumed to be additively separable and indexed over the entire population  $i = 1, 2, \dots, N$ ; social weights are given by  $\alpha_i$ , and  $w_i$  is a measure of the lifetime welfare of household  $i$ :<sup>23</sup>

$$W = \sum_{i=1}^N \alpha_i w_i.$$

The total amount borrowed from all sources is  $L_i$ , and the borrower's average return per unit is  $\delta_i$ , where returns are both pecuniary and non-pecuniary. Borrowers pay an average interest rate  $r_i$ , depending on the sources of loans. Those who borrow only from the subsidized source pay an interest rate  $r_i = r$ . The net return from borrowing is thus  $y_i = L_i(\delta_i - r_i)$ , and I assume that household welfare is derived from base income  $Y$  plus income from borrowing:  $w_i = w(Y + y_i)$ . The change in social welfare for a small decrease in subsidization (i.e., a small increase in  $r$ ) is thus:

$$\frac{dW}{dr} = \sum_{i=1}^N \alpha_i \frac{dw_i}{dy_i} \frac{dr_i}{dr} \left[ \frac{dL_i}{dr_i} (\delta_i - r_i) + L_i \left( \frac{d\delta_i}{dr_i} - 1 \right) \right].$$

<sup>23</sup> To see the key issues most easily, I ignore the heterogeneity in capital and non-credit services like savings. In thinking about the place of subsidized microfinance institutions more generally, we would also want to consider impacts on the fundamental economic and social structures in rural villages: the role microfinance can play in empowering women, in encouraging better health practices, in promoting education, in reducing vulnerability, and in encouraging community cohesion. It is here that many microfinance programs may make the greatest impacts, but it is also the set of impacts that are hardest to measure. The focus is on impacts on poverty rather than purely efficiency—although there may be pure efficiency-based justifications for intervention (Besley 1994).

The equation illustrates points of contention and priorities for empirical research. The first issue, moving from the left, is the need to make explicit social judgements about the distribution of social weights  $\alpha_i$ , and this will hinge on knowledge of the baseline welfare levels of all households—a critical determinant of how income affects welfare,  $dw_i/dy_i$ . A starting point is documentation of the baseline income levels and demographic characteristics of both participants and non-participants, a task possibly made easier by linking surveys of participants with existing randomized household surveys.

The term  $dr_i/dr$  reflects externalities associated with the impact of subsidized interest rates on interest rates in other sectors, as well as the degree to which clients of subsidized programs get a break on average capital costs. Both supply and demand factors are reflected in the sensitivity of equilibrium credit to interest rates,  $dL_i/dr_i$ . The sort of supply-side spillovers that drive  $dr_i/dr$  are at play here, as well as the sensitivity of credit demand to the interest rate—will reducing subsidies make credit too costly for borrowers? The supply-side issues could be evaluated with household surveys that have information on the availability and terms of credit; for example, it would be natural to gauge spillover effects by matching those surveys to information on the timing and scope of new microfinance programs. Those same household surveys could also be used to measure the sensitivity of credit demand to interest rates. Selection problems are notorious in these kinds of studies, but instrumental variables like inherited assets have been shown to have potential.

Finally, the term  $d\delta_i/dr_i$  reflects the interaction of average returns, production technologies, risk, and capital costs. Will increased interest rates push borrowers toward riskier but more prof-

itable technologies? Will it reduce equilibrium credit demand and thus limit scale economies (and thus reduce average returns)? Do better-off households have projects with higher returns than poorer households? Household surveys with disaggregated production data can be used to address these questions through estimates of profit functions, again with an eye to the responsiveness to capital availability and capital costs.

Debates about microfinance subsidization have often been stymied by differences of opinion about the levels of these parameters. Those who oppose subsidization tend to assume a relatively flat distribution of social weights  $\alpha_i$ , low sensitivity of credit demand to interest rates  $dL_i/dr_i$ , positive impacts of interest rates on returns  $d\delta_i/dr_i$ , very low returns to investments by poorer households, and negative externalities of subsidized credit programs on other lenders:  $dr_i/dr < 0$ . Those who support subsidization, on the other hand, tend to put much greater social weight on consumption by the poor, assume highly sensitive credit demand to interest rates, low impacts or perhaps negative impacts of interest rates on returns, moderately high (but not extremely high) returns to investments by poor households, and small or beneficial spillovers onto other lenders.

Despite the lack of evidence, experienced practitioners on both sides of the debate hold their views strongly. Discussion about the role of microfinance in development thus remains stalemated early in the game, with assertions checked by counter-assertions and no immediate route to resolution. Fortunately, apart from the social judgements, these are all issues that can be resolved by fairly straightforward empirical studies. It is the peculiar circumstance of the microfinance policy context—with donors eager to spend on

new programs and ample funds available for subsidization—that has prevented further progress in getting to the roots of these most basic issues.

### 6. *Social and Economic Impacts*

In principle, self-employment activities started due to microfinance participation can affect households in many ways (if, indeed, that is what households actually do with loans). First, there should be an income effect, pushing up consumption levels and, holding all else the same, increasing the demand for children, children's education, and leisure. But there will also be effects on the value of time, yielding a variety of counterbalancing effects. With increased female employment, having more children becomes costlier, pushing fertility rates downward. The need to have children help at home (to compensate for extra work taken on by parents) could decrease schooling levels, and, most obviously, leisure may fall if opportunity costs are sufficiently increased. On top of these forces, many programs directly advocate family planning and stress the importance of schooling, so participation may also bring shifts in attitudes, as well as shifts in the relative bargaining positions of husbands and wives. Thus, while consumption and income levels ought to increase, it is not clear *a priori* what will happen to fertility, children's education, and leisure.

Moreover, the extent of net impacts depends on the opportunities open to households in the absence of microfinance. Households that do not participate in microfinance programs may have access to a wide range of informal financial mechanisms and other services provided by NGOs and government social programs.

Not long ago, similar claims to those

made for microfinance were made for publicly-funded job training programs and for Head Start in the U.S.—that they could ultimately pay for themselves while generating fundamental changes in the lives of poor households. And they too received enthusiastic bipartisan support from the outset. Head Start, which aims to help 3–5 year-old children with disadvantaged backgrounds get an extra leg up on early education, has proved to be a success in general. For African-American children, however, it has been largely ineffective, with average impacts rapidly diminishing over time (Janet Currie and Duncan Thomas 1995). Publicly-funded job training has also had real successes, especially when programs center on teaching basic job skills. However, more intensive programs have been expensive and seldom justify their costs (Robert Lalonde 1995). These mixed reports do not overshadow the argument that both programs have played important roles for many beneficiaries, but they suggest that marginal dollars would have been more effectively used by alternative programs.

As noted above, microfinance programs have yet to receive that kind of scrutiny. Visits to areas served by microfinance programs show what cannot be seen in books of accounts—earnings from microfinance participation are funding new houses, further education for children, new savings accounts, and new businesses. But are these changes more remarkable than those occurring elsewhere?

Simple measures can be deceiving. For example, a recent survey shows that 57 percent of the school-age sons of Grameen Bank borrowers are enrolled in school—versus 30 percent of the sons of eligible households that do not borrow. The difference is sharp, but does Grameen attract households with *greater*

*propensities* for education, or is this difference a *result* of the program? A different view of the data is obtained by pooling information on all children in villages served by the Grameen Bank. Taken together, the average enrollment rate for sons from a random sample of all eligible households is 46 percent (combining those that borrow and those that do not). But the fraction is 48 percent in a random sample of comparable households in control villages without program access. Assuming that control and treatment groups are comparable, the Grameen education advantage disappears.<sup>24</sup>

Unfortunately, there are few reliable estimates of the net impacts of programs. The failures which dot the microfinance landscape are also frequently overlooked, overshadowed by the impressive claims that arise from successful programs.

Why the lack of sound statistical evaluations? First, many donors and practitioners argue that as long as programs cover costs and appear to serve poor households, serious evaluations are a waste of time and money—a diversion from running the programs themselves. But as the simple education example above demonstrates, quick looks can mislead. Moreover, almost no programs are covering costs. Second, sound evaluations pose difficult statistical issues.

Many evaluations, not surprisingly, stress the banking side. As above, the evaluations generally measure performance by on-time repayment rates and the ability to generate revenues which

cover costs.<sup>25</sup> More recently, evaluations have included simple measures of outreach—the number of borrowers below official poverty lines, the gender of borrowers, and the average size of loans and savings accounts (e.g., *MicroBanking Bulletin* 1998; Robert Peck Christen *et al.* 1995).

But nothing is ever truly simple. When money is fungible within the household and fungible between different activities and assets, the *net* impact on women and saving cannot be gauged without taking into account reallocations between men and women and between multiple forms of saving and investment. For example, although 95 percent of Grameen borrowers are female, Goetz and Sen Gupta (1995) find that in just 37 percent of cases do female borrowers from Grameen Bank retain significant control over loan use (Hashemi, Schuler, and Riley 1996, however, find control is retained in 63 percent of cases). Addressing these issues—as well as selection bias—requires evaluations with carefully constructed control and treatment groups.

### 6.1 Selection

Microfinance programs can boast that their mechanisms ensure that borrowers are more entrepreneurial, better connected, more dedicated, and less risky than non-participants. This success in screening applicants makes addressing selection biases due to non-random participation that much more important. Would borrowers have done just as well without the programs?

The biases can be large. In evaluating the Grameen Bank, Signe-Mary McKernan (1996, p. 31) finds that not controlling for selection bias can lead to overestimation of the effect of participation

<sup>24</sup> Comparisons are from Morduch (1998) and are restricted to households with less than half an acre. The Grameen advantage remains elusive even after controlling for child-specific, household-specific, and village-specific variables. Pitt and Khandker (1998a), however, find some positive effects on male schooling using a structural econometric model to estimate parameters with the same data set.

<sup>25</sup> See, e.g., Richard Patten and Donald Snodgrass (1987), Yaron (1992), Bruce Bolnick (1988), and Mahabub Hossain (1988).

on profits by as much as 100 percent. This is a testament to the great success that the Grameen Bank has had in identifying and targeting good clients. It also means that every dollar lent by Grameen may be responsible for as little as half of the profits reported by their clients.

Selection bias may also go in the opposite direction. Many microfinance institutions target women and poor households. Pitt and Khandker (1998a), for example, find that poorer households are more likely to be Grameen borrowers than their neighbors, conditional on village of residence and other observable characteristics. In cross-sectional studies, this outreach can lead to a downward bias on the estimated effect of credit on earnings. At the extreme, the effective targeting of poor households can yield the impression that participation in the program makes clients *poorer*. Addressing the selection bias reveals how participation increases earnings.

The second important source of bias is non-random program placement. Many programs are set up specifically to serve the under-served. Thus, they are located where there has long been weak financial service. This may lead to apparent negative impacts relative to control areas. Alternatively, the programs may set up where there is good complementary infrastructure (von Pischke 1991, pp. 305–306), biasing estimates upward. The size and signs of the biases are likely to change as programs expand over time into new areas.

A natural response has been to exploit variation over time by collecting information on borrowers before and after program participation.<sup>26</sup> The ap-

proach has been popular because data collection is simple, with recall data often used in the absence of a baseline survey, and because it promises to control for both non-random participation and non-random program placement. Even so, it is subject to potential biases due to time-varying unobservables (James Heckman and Jeffrey Smith 1995).<sup>27</sup>

The best known examples are the studies collected in the Hulme and Mosley (1996) volumes. The studies offer before-after comparisons, as well as comparisons between participants and control groups (where the control groups are often households that have been selected for program participation but that have yet to begin borrowing).

Two results are striking. Comparison of the second and final columns of Table 4 shows that programs that have achieved higher levels of financial sustainability make larger net impacts on changes in their borrowers' incomes. (It is not incidental that those programs tend to cater to wealthier households.) Table 4 orders the programs in the study by their degree of subsidy dependence, ranging from –9 percent (full profitability) to 1884 percent (dire financial straits). The ranking is nearly identical to that based on the ratio of participant-control comparisons of income changes, ranging from 544 percent to 117 percent (a negligible net impact). Their second result is that, even within given programs, wealthier households benefit more than poorer households.

These results combine to suggest that microfinance programs targeted to poor

<sup>26</sup> Microfinance evaluations based on before-after comparisons include Eric Nelson and Bolnick (1986), Barbara McNelly and Chatree Watetip (1993), Craig Churchill (1995), Richard Vengroff and Lucy Greevey (1994), and J. R. Macinko et al. (1997)

<sup>27</sup> The reliability of methods based on differences is reduced as the time periods get closer together, reducing temporal variation. Differencing noisy data can also exacerbate measurement error; in the "classical" case this leads to attenuation bias. Noisy recall may thus bias downward coefficients which show program impacts.

TABLE 4  
IMPACT AND FINANCIAL PERFORMANCE INDICATORS FOR SELECTED MICROFINANCE PROGRAMS, 1992

Program	Number of borrowers (1992)	1988–92 Subsidy dependence index	Percent female clients	Average loan size for case studies (\$)
BRI <i>unit desa</i> , Indonesia	2,400,000	–9	24	600
BKK, Indonesia	499,000	32	55	38
Two RRBs, India	25,000	106	9	99
BancoSol, Bolivia	45,000	135	74	322
TRDEP, Bangladesh	25,000	199	38	—
KREP Juhudi, Kenya	2,400	217	51	72
Nine PTCCSs, Sri Lanka	700,000	226	50	50
SACA, Malawi	400,000	398	28	70
BRAC, Bangladesh	650,000	408	75	—
Mudzi Foundation, Malawi	223	1884	82	57
KIE-ISP, Kenya	1,700	—	23	—

*Source:* Data are from Hulme and Mosely (1996), volume 1, tables 3.3, 3.7, 4.1, and 5.1. The final four columns pertain to case studies. Abbreviations—BancoSol: Banco Solidario. BRI: Bank Rakyat Indonesia. BRAC: Bangladesh Rural Advancement Committee. BKK: Badan Kredit Kecamatan. PTCCS: Primary Thrift and Credit Cooperative Society. RRB: Regional rural banks. KREP: Kenya Rural Enterprise Programme. KIE-ISP: Kenya Industrial Estates-Informal Sector Programme. SACA: Smallholder Agricultural Credit Administration. The subsidy dependence index gives the percentage increase in the interest rate required if the program is to exist without subsidies; negative numbers indicate profitability without subsidies (Yaron 1992).

households may offer only limited benefits. The results have been used to buttress arguments that pursuing full financial sustainability is the surest way to deliver the most bang for the buck—and that poorer households should be served by other interventions than credit.

But observers have too quickly pointed to the apparent dichotomy. The unresolved empirical issue is whether there is often an important group in the middle—neither the destitute nor petty entrepreneurs able to pay high interest rates. Is the typical middle-rung borrower at the Grameen Bank the norm or the exception?

Given the sharpness of the results, the Hulme-Mosley studies deserve to be read carefully. Unfortunately, doing so yields as many questions as answers. Corners were cut in the rush to get the volumes out, and substantial inconsistencies slipped by. Key results vary by

as much as 40 percent even where the (ostensibly) identical series is presented in more than one table (e.g., increases in family income in their tables 4.1 and 4.2 or a similar series in tables 4.1, 4.3, and 8.1). Even if the calculations were consistent, sample sizes are small for some of the most important studies. The distribution of impacts in Mosley's (1996) BancoSol study, for example, rests on evidence on just 24 borrowers. In addition, the quality of control groups is inconsistent. For example, the Indonesian studies draw on a control group with fewer women and less access to formal financial services than the overall borrower group (p. 55). Table 4 shows that the average control group income for BRI is 40 percent lower than for the borrower group—and the BancoSol control group has income *one third* the level of the borrower group. Even if the income levels started closer together, one is left to wonder why some



TABLE 4 (Cont.)

Program	1992 family income— borrowers (\$)	1992 family income— controls (\$)	Average annual % change in borrower income	As ratio of control group percent change
BRI <i>unit desa</i> , Indonesia	1722	1074	20.7	544
BKK, Indonesia	702	570	5.2	216
Two RRBs, India	505	496	46.0	191
BancoSol, Bolivia	3028	1121	28.1	193
TRDEP, Bangladesh	1138	816	38.7	126
KREP Juhudi, Kenya	1756	1307	1.5	133
Nine PTCCSs, Sri Lanka	1301	981	15.6	157
SACA, Malawi	830	276	2.8	175
BRAC, Bangladesh	517	552	19.8	143
Mudzi Foundation, Malawi	665	669	1.4	117
KIE-ISP, Kenya	2807	1759	0.5	125

households were already borrowing but the control groups had yet to receive loans. Selection bias associated with fixed characteristics will be eliminated through the differencing procedure, but selection bias associated with growth prospects remains. The Hulme-Mosley hypotheses are provocative, but policy decisions should wait for more careful studies.

### 6.2 *The Search for Instruments*

More careful work would be helped by the availability of instrumental variables. The search for convincing instrumental variables for credit has yielded little, however. The problem is compounded since variables that may be unrelated in more developed economies—such as the structure of production and consumption—may be integrally linked due to non-separabilities driven by imperfect and incomplete markets (Morduch 1995). It then becomes less likely

that a production-side variable that explains credit use does not also help explain expenditure-related outcomes independently.

The interest rate is a potential identifying variable, but since achieving uniformity across branches is a common goal of microfinance programs, interest rates are unlikely to vary within a given program area—and estimation is impossible without some variation. Even if interest rates vary, it is likely that the variation will at least partly reflect unobserved attributes of the borrower, undermining their use as instruments (Pitt and Khandker 1998a).

Other likely identifying variables are those which affect the supply of credit but not demand. Zeller et al. (1996, p. 60), suggest community-level variables, proxies for “social capital,” lender characteristics, and program eligibility requirements. The first two suggestions work as long as the community-level

variables and social capital do not directly affect profitability, investment, etc. This is a high hurdle for social capital to pass.

Lender characteristics have appeal. Like community-level variables, though, they will be wiped out when using village-level fixed-effects methods if there is no variation in program access within a village. When there is within-village variation in program access, however, rules determining eligibility can be the basis of an identification strategy, a tack taken by Pitt and Khandker (1998a,b). The approach is considered in greater detail below.

### 6.3 *Exploiting a Quasi-Experiment: An Example*

The Hulme-Mosley (1996) studies and similar small-scale evaluations build on simple methods with small samples. In contrast, a series of recent papers on programs in Bangladesh exploit a sample of 1800 households and carefully considered econometric approaches (Pitt and Khandker 1998a,b; Pitt et al. 1999; McKernan 1996; Morduch 1998). The programs include the Grameen Bank, Bangladesh Rural Advancement Committee (BRAC), and the Bangladesh Rural Development Board (BRDB). All use a Grameen-style lending model and nominally restrict access to households holding under half an acre of land.

The Bangladesh survey includes samples from villages with no access to programs, and the approach exploits program rules that bar wealthier households from participating. These two features form the core of the quasi-experiment, offering two types of control groups. The main constraint is restriction to cross-sectional information on outcomes.

The range of questions asked in these studies is ambitious, and answering the

questions requires technical sophistication and a series of identifying assumptions tied to the structure of the econometric models. The basic insight is simple, however. The fact that program rules restrict participation to households owning a half acre of land or less suggests a source of variation to exploit for identification. A natural first cut at evaluation would be a straightforward comparison of outcomes of households clustered just below the cut-off line to those just above, a standard application of regression discontinuity design (Donald Campbell 1969).

Pitt, Khandker, and their associates skip that step, however, and take two steps ahead. First, rather than using just the simple eligibility rule for identification, their instruments are effectively a series of household characteristics interacted with an indicator variable for whether each household both lives in a program village and is deemed eligible to borrow. Identification thus comes from differences in the way that age, education, etc. affect outcomes for the sample as a whole versus their effects for the eligible subsample with program access. Any differences are assigned to program participation. Identification thus rests with the assumption that there are not important non-linearities in the ways that age, education, and the other variables influence outcomes of interest.<sup>28</sup>

Pitt and Khandker (1998a) take one additional step, exploring the impact by gender and by each of the three

<sup>28</sup> Pitt and Khandker (1998a) explain outcomes using a linear functional form for the right hand side variables, with the exception of land holdings and program credit which are in logs. The left hand side consumption and labor supply variables are in logs. Pitt and Khandker demonstrate that their results are robust to allowing flexibility in the specification for the land holdings variable but do not show results with flexible treatments of other variables.

programs. Concern with gender is motivated by the observation that women tend to be more reliable borrowers than men (section 3.3 above) and that women may allocate resources differently from their spouses (Geoffrey Wood and Iffath Sharif 1997; Goetz and Sen Gupta 1995). The question is important both for improving program impact and for helping better understand household behavior more generally.

A more complicated selection problem emerges now since participation in the program entails not just a choice about whether a member of the household should participate but also specifically *who* in the household should participate. Pitt and Khandker exploit the fact that credit groups are never mixed by gender (by regulation), and not all villages have groups of both genders. Thus, men in villages with no male groups will not be eligible to borrow; likewise for women. In the 87 villages surveyed, 10 have no female groups and 22 have no male groups (and 40 have both, leaving 15 villages with no groups). Identification now comes from comparing how the roles of age, education, etc. for men with access to male groups compare to their roles for men without access; likewise for the characteristics of women with and without access.

Of course, the fact that a man is in a village with no male groups may say something about the unobserved qualities of the men and the strength of their peer networks in that village. If, for example, the men are poor credit risks, the evaluation will overstate the pure impact on men who do participate. Similarly, if having a strong peer group increases impacts directly, the estimates will reflect the role of peer groups in addition to the role of the program.

Pitt and Khandker partly address the problem by estimating with village-level

fixed effects, thus sweeping out any unobserved village-level heterogeneity (estimating with fixed effects without soaking up most of the program impact is made possible by the fact that a fraction of residents in each village is ineligible to borrow from the programs—and by the assumption that spillovers are small). However, the fixed effects do not control for features of peer networks—or other relevant characteristics—that are specific just to *target* households in program villages. The village-level fixed effects will only control for those unobservables that affect all households in a village identically (and linearly). Non-random program placement thus remains an issue if, as is plausible, the functionally landless are noticeably different from their wealthier neighbors (noticeable to bank staff but not the econometrician), and if the programs take this into account when deciding where to locate.

The final structural detail stems from the use of a first stage Tobit to explain credit demand. The Tobit requires that second stage impacts must be assumed to be homogeneous across borrowers, a common assumption in the evaluation literature, but one that researchers are keen to relax (Joshua Angrist, Guido Imbens, and Donald Rubin 1996). It also implies, for example, that marginal and average impacts are equated. The assumption poses difficulties if the distribution of returns is anything like that for BancoSol borrowers, where staff predict that in any given cohort roughly 25 percent show spectacular gains to borrowing, 60–65 percent stay about the same, and 10–15 percent go bankrupt (Mosley 1996).

Entertaining these assumptions, however, offers the chance to estimate important quantities like gender-specific marginal impacts that would otherwise be impossible. The structure cleverly

exploits the eligibility rules that bar lending to households owning over half an acre of land. Coupled with the oft-cited observation that land markets are very thin in South Asia, there is the basis for an instrument that is plausibly exogenous and that is associated with a sharp discontinuity in treatments, providing a substantial advantage over previous studies.

These identifying assumptions do not hold up in the data, however. Most critically, leakages are evident when looking more closely at what the programs do, rather than just at what they say. Hassan Zaman (1997), for example, finds that 28 percent of borrowers from BRAC are above the half acre cut-off, and I find a similar number for Grameen (30 percent) using the data collected by Pitt and Khandker (Morduch 1998). The discrepancies are not minor: average land holdings are 1.5 acres for those households that borrow from Grameen but are over the half acre line and some borrowers hold over five acres. Consequently, nonparametric regression yields no obvious discontinuity in the probability of borrowing for households across the relevant range of landholdings. Contrary to the evidence for India, the data also show considerable activity in the land market, with nearly one eighth of borrowers making purchases during their tenure with the programs.<sup>29</sup>

The results, putting aside the questions about identification, are striking. Pitt and Khandker (1998a) estimate that

<sup>29</sup> In choosing control groups, the survey strictly follows the half-acre cut-off rule. But the Grameen Bank's eligibility requirement is in fact half an acre of land or total net assets under the value of one acre of single cropped, non-irrigated land (Hatch and Frederick 1998). Some households with over half an acre may still qualify under the second criterion, but mistargeting is so extensive that considerable leakage remains even under the expanded definition.

household consumption increases by 18 taka for every 100 taka lent to a woman. The increase is just 11 taka for every 100 taka lent to a man. Lending to women has little effect on labor supply, but men take more leisure—explaining part of the shortfall in consumption increases. Conversely, non-land assets increase substantially when borrowing is by women, but not by men. Results on schooling are mixed. Schooling of boys is increased whether men or women borrow. When women borrow from Grameen, schooling of girls also increases, but it does not do so when women borrow from the other programs. This may suggest that girls are called upon to help take care of work that their mothers had done prior to borrowing.

Pitt and Khandker (1998a) interpret their finding that loans to women have higher marginal impacts than loans to men as an indication of a lack of fungibility of capital and income within the household. But since loans to males are larger on average, in principle the patterns of impacts on consumption can also be explained by the standard theory of declining marginal returns to capital.<sup>30</sup>

Using a similar methodology, Pitt et al. (1999) find that Grameen participation by women had no effect on contraceptive use and a slight *positive* effect on fertility. Participation by men, however, reduced fertility and moderately increased contraceptive use. The mixed findings should perhaps not be surprising, given the treatment-control set-up. Bangladesh underwent a broad fertility decline in the 1970s and 1980s, so control villages were also in the process of

<sup>30</sup> When calculated conditional on borrowing positive amounts, males borrow slightly more on average from Grameen (15,797 taka versus 14,128 taka). For BRAC, males cumulatively borrowed 5,842 taka versus 4,711 taka for women, and for BRDB, males borrowed 6020 taka versus 4118 taka for women (Morduch 1998).

reducing family size (Monica Das Gupta and D. Narayana 1996). Hashemi, Schuler, and Riley (1997) find positive effects of program participation on contraceptive use in a sample of 1300 women, but they do not control for nonrandom program placement.

Pitt and Khandker (1998b) extend the framework to consider impacts on seasonality, taking advantage of data on labor supply and consumption following the three main rice seasons. Microfinance borrowing is shown to improve the ability to smooth consumption across seasons, and entry into the programs is partly driven by insurance concerns.

McKernan (1996) builds on the Pitt and Khandker research to investigate non-credit impacts of the microfinance programs in Bangladesh. The question is important since the programs put considerable energy into vocational training and education about health and social issues. Beyond these direct “social development programs,” participation can also provide borrowers with discipline, a sense of empowerment, and shared information. Focusing just on credit misses these potentially important program aspects.

McKernan investigates these aspects by estimating the determinants of self-employment profits while controlling for capital, other inputs, and a dummy variable for microfinance participation. The dummy variable indicates that participation in Grameen Bank is associated with a 126 percent increase in self-employment profits beyond the direct impact of the capital. Thus, on average households more than double their self-employment earnings (bearing in mind, though, that self-employment activities start at a low base and are for most households a minor share of total income). McKernan also finds that non-credit impacts alone raise profits by 50–

80 percent. Taking the two results together, she argues that the provision of credit alone explains roughly half of the average increases in self-employment profits brought by Grameen.

Identification here is complicated by the fact that both microfinance participation and capital use are endogenous. The quasi-experiment is used to identify program participation, and the instruments for capital are the numbers of land-owning relatives of potential borrowers. The latter instruments are motivated by the suggestion that having more land-owning relatives is likely associated with having greater access to interhousehold transfers, a common credit substitute. However, the instruments prove invalid if, as is likely, profits are affected directly by the business connections, implicit insurance, and family responsibilities associated with the size and characteristics of one’s extended family.<sup>31</sup>

As a result of questions raised about the identifying assumptions, I take another look at the data, focusing instead on simple comparisons across treatment and control villages, controlling as well for household- and village-level characteristics and not making distinctions by gender (Morduch 1998). The results differ considerably from the Pitt–Khandker studies. After limiting samples just to comparable households, I find no increase in consumption or education (and a slight increase in labor supply) when using the data to measure the impact of program access. For example, households with access to Grameen have per capita consumption levels that

<sup>31</sup> Under the maintained assumptions, Madajewicz (1997) finds that when disaggregating capital types, the “non-credit impact” loses statistical significance, suggesting that the impact could reflect roles of specific types of capital use (in this case, greater use of working capital by program participants), rather than factors like education or “empowerment.”

are 7 percent below those of comparable control groups, a finding that is robust to controlling for village-level unobservables (although the latter result is not significantly different from zero). The weak findings are consistent with the presence of a rich variety of alternative institutions available to non-participants: the programs may make important absolute differences in the lives of participants, even if they have made negligible relative differences.

But like Pitt and Khandker (1998b), I find some signs of consumption smoothing across seasons, a result that can be traced to increased smoothing of labor across seasons. Taken together, the evidence is decidedly mixed. Pitt and Khandker have set out an important research agenda and have demonstrated the sensitivity of results to methodological assumptions. But my results show that the quasi-experiment turns out to be much less clean than it appeared at first, and that using village-level fixed effects is not a panacea for addressing bias due to non-random program placement. Substantively, the results suggest that benefits from risk reduction may be as important (or more important) than direct impacts on average levels of consumption. More generally, the mixed results show that much more work is required to establish the case for strong microfinance benefits in this context.

### 7. *Savings*

One additional means for promoting household welfare is the development of facilities for safe but liquid savings deposits. Early microfinance programs were not effective in mobilizing savings and showed little interest in doing so. Partly, it was thought that poor households were too poor to save. But recent microfinance experience shows that

even poor households are eager to save if given appealing interest rates, a conveniently located facility, and flexible accounts—with bankers in Indonesia and South Asia finding that convenience generally trumps interest rates.

A recent study of the expansion of rural banking in Mexico shows this possibility clearly. Fernando Aportela (1998) measures the impact on savings rates of the expansion of Pahnal, a Mexican savings institute targeted to low-income clients. Pahnal expanded rapidly in the end of 1993, setting up branches in post offices, a model that follows the postal savings programs of Japan and Germany. Pahnal also introduced simpler savings instruments with much lower minimum balances and lower fees than were offered by earlier programs. Exploiting the fact that Pahnal's expansion was not uniform across regions, Aportela uses a differences-in-differences framework to estimate impacts, finding that expansion of program availability pushed up savings rates by almost five percentage points—and by almost seven percentage points for some of the poorest households.

But how much is new savings and how much is reallocations from other assets (and from under mattresses)? If portfolio reallocations are substantial, net benefits to depositors may be smaller than it appears at first. Aportela (1998) finds little evidence for crowding out of other savings instruments, however, suggesting that much of the increase is due to new saving.

From an institutional viewpoint, incorporating savings mobilization in microfinance programs makes sense for a variety of reasons (Robinson 1995). First, it can provide a relatively inexpensive source of capital for re-lending. Second, today's depositors may be tomorrow's borrowers, so a savings program creates a natural client pool.

Third, building up savings may offer important advantages to low-income households directly: households can build up assets to use as collateral, they can build up a reserve to reduce consumption volatility over time, and they may be able to self-finance investments rather than always turning to creditors. On the other hand, handling lots of small deposit accounts can be prohibitively expensive.<sup>32</sup>

Grameen and BancoSol are just starting to mobilize savings more aggressively, but BRI has made it a major part of their program in Indonesia. A turning point in Indonesia was introduction of the SIMPEDES saving program in 1986. Before SIMPEDES, households had to save in accounts run by Bank Indonesia that limited withdrawals to twice a month but which offered reasonable interest rates—households received 15 percent on deposits and paid 12 percent on loans! SIMPEDES offers unlimited withdrawals, and this has turned out to be a boon to risk-averse depositors. The bank has also successfully implemented a lottery, such that chances for prizes increase with the amount on deposit (Mexico's Pahnal has also had success with a savings-based lottery, a system that echoes Britain's long-running lottery-based premium bonds). These two features have made the SIMPEDES program very popular, even if interest rates are zero for small deposits, 0.75 percent monthly for medium deposits, and 1.125 percent monthly for larger deposits (over about \$100) with inflation knocking out much of the interest for poorer households (Patten and Rosengard 1991, p. 71).

<sup>32</sup> In the U.S., however, banks find that servicing a \$500 deposit balance can cost as much as \$7 per month. Costs, though, may be lowered substantially through encouraging emerging technologies like electronic "smart cards" that are used in automatic teller machines (that might possibly be trucked from site to site).

By 1988, over four million poor households were saving through the program, and by December 1996, over sixteen million had deposits. Deposit sizes are small, with average balances in 1996 of \$184, suggesting that the average depositor is considerably less well off than the average borrower (with an average loan balance over \$1000). This represents over \$3 billion in savings and gives BRI a relatively cheap source of funds for relending while providing households with means to build up assets and better smooth consumption. As above, the question is open, though, as to how much is new savings. (Of course, even if the increased savings rates were due only to simple portfolio reallocations, there could still be substantial efficiency benefits from promoting the scale of intermediation and enhancing flexibility for depositors.)

Like many programs, Grameen did not focus on mobilizing voluntary savings until recently. The bank now provides opportunities for voluntary savings, but total deposits remain small. In contrast, SafeSave, an innovative new program in Bangladesh, has made voluntary saving the core of its program. Staff solicit savings from members on a daily basis with the aim to help households convert their ability to save in regular but small amounts into a useful lump of money, much as is achieved (less flexibly) through participation in informal rotating savings and credit associations (Rutherford 1998). In fact, the program was founded in part by Rabeya Islam, a housewife in Dhaka who had long experience running ROSCAs. By the end of 1998, SafeSave had over 2000 clients, and it appears to have good prospects for becoming financially sustainable, although it remains small and subsidized for now (SafeSave 1998).

Part of the reason that subsidized programs have not been more aggressive in

mobilizing savings rests with interest rate spreads. Part of the trap that many early programs fell into involved banks charging interest rates  $r$  on loans and paying depositors a rate  $d$ , which was less than  $r$  to avoid further losses. Since  $r$  was kept artificially low in the name of welfare maximization,  $d$  was often kept even lower, and incentives for saving were diminished. The spread  $(r - d)$  has thus been the focus of those interested in savings mobilization. Increasing lending rates is clearly helpful here.

But this is not the appropriate spread to maximize if capital is subsidized and the objective is to enhance welfare in a cost-effective manner. A more appropriate spread to watch is  $m - (d + a)$ , where  $m$  is the rate at which donors obtain funds and  $a$  reflects the per unit administrative costs of managing and mobilizing savings deposits. Thus,  $m$  gives the donor's opportunity cost of raising funds and  $(d + a)$  gives the program's opportunity costs. For example, in the mid-1990's the Grameen Bank obtained funds from the Bangladesh Bank at just 5–6 percent while alternative sources of funds would have cost 12–15 percent. If Grameen could have mobilized savings at a cost below the Bangladesh Bank's opportunity cost of funds, the social cost of subsidization could have been reduced.

Savings mobilization at deposit rates above lending rates can reduce the costs of programs, rather than add to them—if donors reward microfinance programs for generating funds at costs lower than they face. One way to do this is to split the difference between donors and programs of  $(m - c) - (d + a)$  per dollar of savings mobilized and relent (where  $c$  is the concessional interest rate that subsidized microfinance programs pay for capital)—and to reduce concessional lending by donors by one dollar for each dollar of lending

thus generated. Under earlier subsidized credit schemes, everyone lost out through savings mobilization. By implementing the proposed scheme, however, clients, microfinance programs, and donors can share benefits from savings mobilization.

Promoting saving will not always benefit clients, however. Most important, rapid inflation can quickly erode the holdings of poor households (while benefiting those holding debt). However, even if individual households find it impossible to adequately protect themselves, the bank can invest in appropriate foreign currencies and assets to create a hedge. While I know of no microfinance institution that has yet done so, there is no reason not to in principle.

There may also be practical constraints. Only tightly-regulated institutions should be entrusted to hold savings, but this would exclude most microfinance programs (except, for example, for BRI, BancoSol, and Grameen, which are chartered banks). Large, traditional commercial banks may also have cost advantages in handling deposits. One answer is that fully-chartered savings banks could operate independently but alongside NGOs engaged in lending. The savings banks should have fully independent accounts and funds, and the savings that are collected should in no way be tied to lending operations. However, a contractual link to exploit the rebate opportunity above could still be used to reduce costs of subsidization on the lending side.

Both the rebate proposal and the savings bank/microcredit partnership idea need further thought before implementation. But both ideas appear sound in principle and suggest that there may be creative ways around roadblocks.

The evidence on savings raises an important question for economists. Poor



households often appear to be constrained in their ability to borrow (Morduch 1995). This is puzzling, though—as long as households are not too impatient, they should be able to save their way out of borrowing constraints (Angus Deaton 1992, section 6.2). The new institutions can provide a way to do so.

### 8. *Conclusions*

The microfinance movement has made inroads around the world. In the process, poor households are being given hope and the possibility to improve their lives through their own labor. But the “win-win” rhetoric promising poverty alleviation with profits has moved far ahead of the evidence, and even the most fundamental claims remain unsubstantiated.

Even if the current enthusiasms ebb, the movement has demonstrated the importance of thinking creatively about mechanism design, and it is forcing economists to rethink much received wisdom about the nature of poverty, markets, and institutional innovation. In the end, this may prove to be the most important legacy of the movement.

In particular, the movement has shown that, despite high transactions costs and no collateral, in some cases it is possible to lend profitably to low-income households. The experiences have shown as well that many relatively poor households can save in quantity when given attractive saving vehicles; this suggests that one way to address the borrowing constraints faced by poor households may be to address saving constraints instead of addressing just the credit side. But the experiences have also confirmed how difficult it is to create new institutions, even those that are ultimately profitable. In Bolivia, Bangladesh, and Indonesia it took

strong leadership and special legal accommodations. Elsewhere, it has taken persistent prodding by donors and microfinance advocates. Demonstration effects and subsidized experimentation have also been integral.

The microfinance movement has also lifted the profile of NGOs. While government failures become increasingly evident, NGOs have had the energy, dedication, and financial resources to pursue required legislative changes and institutional experimentation. Increasingly, NGOs can be expected to take over social tasks once the exclusive domain of state ministries, and international organizations like the World Bank are adapting accordingly.

This is all new, but some received wisdom holds. Most important, all else the same it remains far more costly to lend small amounts of money to many people than to lend large amounts to a few. As a result, the programs are highly cost-sensitive, and most rely on subsidies. Initiating a serious discussion about next steps necessitates first facing up to the exaggerated claims for financial performance that have characterized some leaders in the movement.

If the movement plans not to abandon the promise of substantial poverty alleviation through finance, it must make hard choices. One avenue is to take another hard look at management structures and mechanism design in order to lower costs while maintaining outreach. Doing so will be far from simple, and it is hard to imagine substantial progress without a second major wave of innovation. Donors can contribute by encouraging further experimentation and evaluation, rather than just replication and adherence to a narrow set of “best practices” based on existing programs.

The other path is to reopen the conversation on ways that ongoing

subsidies can benefit both clients and institutions. The movement has shown some successes in coupling efficient operations with subsidized resources, and these lessons can be expanded. Some observers speculate that if subsidies are pulled and costs cannot be reduced, as many as 95 percent of current programs will eventually have to close shop. The remaining 5 percent will be drawn from among the larger programs, and they will help fill gaps in financial markets. But, extrapolating from current experience, the typical clients of these financially sustainable programs will be less poor than those in the typical program focused sharply on poverty alleviation.

No one argues seriously that finance-based programs will be the answer for truly destitute households, but the promise remains that microfinance may be an important aid for households that are not destitute but still remain considerably below poverty lines. The tension is that the scale of lending to this group is not likely to permit the scale economies available to programs focused on households just above poverty lines. Subsidizing may yield greater social benefits than costs here, and Section 5 outlines a framework for integrating competing arguments.

This prospect is exciting, especially given the dearth of appealing alternatives, but the promise of microfinance should be kept in context. Even in the best of circumstances, credit from microfinance programs helps fund self-employment activities that most often supplement income for borrowers rather than drive fundamental shifts in employment patterns. It rarely generates new jobs for others, and success has been especially limited in regions with highly seasonal income patterns and low population densities. The best evidence to date suggests that making a real dent in poverty rates will require

increasing overall levels of economic growth and employment generation. Microfinance may be able to help some households take advantage of those processes, but nothing so far suggests that it will ever drive them.

Still, by forging ahead in the face of skepticism, microfinance programs now provide promise for millions of households. Even critics have been inspired by this success. The time is right for assessing next steps with candor—and better evidence.

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