Microfinance and Social Investment

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Keywords

Abstract

This review puts a corporate finance lens on microfinance.
Microfinance aims to democratize global financial markets
through new contracts, organizations, and technology. We explain
the roles that government agencies and socially minded investors
play in supporting the entry and expansion of private intermedi-
aries in the sector, and we disentangle debates about competing
social and commercial firm goals. We frame the analysis with the-
ory that explains why microfinance institutions serving lower-
income communities charge high interest rates, face high costs,
monitor customers relatively intensively, and have limited ability
to lever assets. The analysis blurs traditional dividing lines between
nonprofits and for-profits and places focus on the relationship
between target market, ownership rights, and access to external
capital.

3.1

1. INTRODUCTION

On December 30, 2010, an Indian financial institution, Grameen Financial Services Private Limited (GFSPL), completed its third securitization; 25,768 loans were pooled and issued as debt securities. The senior tranche was purchased by a large Indian mutual fund, and the subordinated piece was subscribed by the investment bank that arranged the transaction. Earlier that same year, GFSPL received $2.2 million in loan financing from a Dutch private fund and issued more than $4 million in secured redeemable nonconvertible debentures to a U.S.-based private equity firm (IFMR 2010).

What is remarkable about this story is not the structures of these financial dealings but the identity and nature of the firms involved. GFSPL is the for-profit firm behind Grameen Koota, a microfinance service provider that almost exclusively serves poor female entre-preneurs and day laborers with incomes as low as $0.50 to $1 a day. GFSPL's Web site describes their aim to bring "life-changing microfinance services to India's working poor" (GFSPL 2011). Launched as a nonprofit in 1999 with only $35,000 in seed capital, Grameen Koota transformed into a for-profit nonbank financial institution (NBFI) in 2007. By late 2010, it claimed 450,000 clients and plans to reach 2 million by 2012.

The investors and arrangers are notable as well. The private equity fund Microvest I is a $60 million fund founded in 2003, chaired by W. Bowman Cutter, a former managing director of the $25 billion venture capital firm Warburg Pincus. The three founding inves-tors in Microvest, however, are nonprofits: Mennonite Economic Development Associates, the humanitarian organization CARE, and a fund set up by the French Committee against Hunger and for Development. Such social investors seek to create positive social impacts alongside financial returns. (GFSPL's reported return on equity was a modest 1.2% in 2008 and 2.6% in 2009 according to **http://www.mixmarket.org**.)

What may be more remarkable, in fact, is how unremarkable this kind of mixing of social and financial goals has become. By the end of 2009, more than $6.2 billion of foreign capital was invested in microfinance through 91 specialized microfinance invest-ment vehicles, estimated to account for approximately half of foreign investment in the sector (CGAP 2010). Although limited financial access has long been cited as a fundamen-tal constraint to economic development (e.g., Galor & Zeira 1993), the rise of institutions such as GFSPL is rapidly democratizing access and connecting local microlenders to inter-national capital markets.

The challenge for microlenders is to create banking models that work for the unbanked and underserved. The potential demand is vast. Chaia et al. (2009) compile global data to count 2.5 billion adults without formal financial accounts (provided by regulated banks) or semiformal financial services (provided by microfinance institutions and similar institu-tions regulated separately from banks). Most (nearly 2.2 billion of these unbanked adults) live in developing regions. There is no up-to-date count of the reach of microfinance (and much depends on definitions), but all credible estimates are between 100 and 200 million customers globally, falling far short of the total unbanked population. The broad question is: How can the gap be filled? By banks going down-market? By nongovernmental organi-zations (NGOs) supported by donors? By state banks? By newly created commercial microfinance institutions?

The answer thus far has been all of the above, with different approaches offering different tensions and opportunities. The idea of mixing social and financial goals is not new, nor is the attempt to democratize access to credit. But today's supply-side expansion is

unprecedented, and microfinance has become the leading example of a broader push for social investment in the health, education, and energy sectors (Bishop & Green 2008, J.P. Morgan 2010).

Still, maintaining a balance of social and financial goals is tricky. By the start of 2011, the Indian microfinance sector was in a full-blown crisis, with politicians accusing microlenders of aggressive loan collection practices, over-lending to indebted customers, and exploitative interest rates (Rhyne 2010, Yunus 2011). State-level politicians responded with a tough microfinance ordinance in October 2010. In January 2011, the India's Central Bank stepped in with a broader set of rules, whose effect (if not their intention) threatened the ability of many microlenders to serve the poorest customers (M-CRIL 2011).

This tension between social and commercial goals has run through the history of microfinance. Morduch (2000) characterizes a long-standing schism among leading microfinance proponents, centered on whether commercial transformation is the best strategy to expand financial services to poor families. The debate is often framed as involving for-profit versus nonprofit strategies, but that is too simple and clouds the issues. Muhammad Yunus (2011, p. A3), for example, asserts that it is "possible to harness investment in microcredit — and even make a profit — without working through either charities or global financial markets." Yunus is right that neither a strictly philanthropic path nor a fully commercial path has delivered institutions that serve most of the people most of the time. But neither theory nor evidence supports his assertion that charities and global financial markets should be sidelined. To the contrary, experience suggests that the future of microfinance rests with the ability to combine forces. Finding the right path requires a more rigorous corporate finance of microfinance.

So far, corporate finance has had relatively little to say about businesses that pursue social goals, and many economists are swayed by Milton Friedman's (1970) argument that the primary social responsibility of business is a fiduciary responsibility to shareholders. Business and philanthropy should therefore not be mixed. But Friedman's argument is most compelling when markets are complete. When market imperfections are rife—which is the fundamental premise of microfinance—the theoretical case emerges that mixing philanthropy and business may sometimes be necessary to build markets and increase economic efficiency (and not just reduce inequality). Understanding that possibility and its limits requires getting a handle on microfinance institutions' internal incentives, financial structure, ownership, governance, and market context.

The economics of microfinance has generated a steady flow of strong studies, but the ideas here are relatively unexplored in the academic literature. Our aim is to draw theoretical links and illustrate key ideas with new evidence. Section 2 details the landscape of microfinance and current debates. Global data reveal a world that mixes socially driven institutions and more narrowly commercial for-profit players. The evidence suggests that the institutions coexist but are not always substitutes: Their typical target populations and financial structures often differ markedly. The evidence sets up the question: How can financial intermediation frontiers be pushed out?

Section 3 begins the work of describing a corporate finance approach to microfinance. We draw on the workhorse corporate finance model of Tirole (2006) and the model of financial intermediation of Holmstrom & Tirole (1997), which highlights two elements important for understanding the structure and limits of microfinance: costly delegated monitoring and scarce intermediary capital. The setup helps to explain why financial markets tend to fragment into clusters served by formal and informal financial institutions.

Borrowers with ample pledgeable income or collateral can gain access to traditional bank loans and other formal financial services. Borrowers with little or no collateral have difficulty gaining access to these formal services but may have access to relationship-intensive finance from informal sector providers and microfinance, or they may remain entirely excluded. In this context, we explain the rationale of group lending contracts that encourage peer monitoring among microfinance borrowers.

Much of the literature on microfinance incentive mechanisms focuses on new relationship-intensive products (which depend on the buildup of trust and information flows between customers and lenders) and dynamic repayment incentives. But it goes no further. We show that these products are costly because they rely so heavily on relationship building to create and maintain their value. The products also create constraints that shape the capital structures and the ownership of the microfinance institutions. Section 4 explores these issues and turns to the role of social investors and structured funds. We argue that the rapid expansion of microfinance would not have been possible without the support of philanthropic seed capital and policy entrepreneurs with prosocial motivations, even though—once they are established—many of these institutions can be run as profit-making institutions. We also clarify the fundamental trade-offs faced by social investors, involving choices between who is served and how many are served. The section frames that choice, and explains why—counter to a strong push for commercialized microfinance—some profitable institutions may nonetheless want to continue as nonprofits. In Section 5, implications for regulation and governance are described, and the ideas are applied to the Indian microfinance crisis of 2010.

2. THE STATE OF PLAY IN MICROFINANCE

The idea of microfinance is evolving beyond lending microcredit (small—often unsecured—loans) to include microsaving (entry-level saving accounts) and basic forms of insurance and transfer mechanisms. But providing credit remains an essential part of business models, driving revenues that justify deposit collection and other services.

From the perspective of households, the benefits and costs of access to credit vary. Muhammad Yunus overstates on both counts when he asserts that most microcredit fuels growing businesses and steadily lifts households from poverty. In practice, loans are demanded for reasons beyond business investment. Data from a large sample of households in Indonesia, for example, show that 29%–42% of household loans were used for nonbusiness purposes (Johnston & Morduch 2008). In a smaller sample from Bangladesh, roughly half of Grameen Bank loans went to nonbusiness purposes (Collins et al. 2009). Alternative purposes include paying for healthcare and education, and maintaining consumption levels against the ups and downs of income. Surely not all loans are used wisely, but wise uses are surely not restricted to business investment (Armendáriz & Morduch 2010). The mounting evidence on borrowing for consumption, however, reinforces the need to be vigilant against over-indebting customers and to institute strong consumer protection measures.

New evidence also documents that not all businesses grow steadily. Randomized controlled studies show high average returns to capital for the small-scale businesses of men in Sri Lanka, estimated at approximately 60% per year (De Mel et al. 2008). But the results hold for men, not for women. Randomized studies in India and the Philippines are even more muted in their findings, and bold results from Bangladesh turn out to be neither

robust nor replicable (Armendáriz and Morduch 2010). Access to microcredit can help undercapitalized small businesses, but such access fixes neither discrimination nor deficiencies in marketing, skills, and ambition.

All the same, rethinking microfinance does not mean rejecting it. Collins et al. (2009) draw on year-long financial diaries of poor households to argue that microcredit remains important for delivering reliable, rule-bound financial services, with the promise of large sums when needed. By this view, the chief benefits rest with helping households cope in difficult economic contexts, more than with freeing them from those contexts.

2.1. The Microfinance Schism, Rekindled

In the same week in December 2010 that the GFSPL securitization was announced, *Bloomberg* ran a story titled "Suicides in India Revealing How Men Made a Mess of Microcredit" (Lee & David 2010). The article cited a government report that claimed excessive debt, coupled with aggressive loan collection practices, had driven more than 70 people to kill themselves in the southern state of Andhra Pradesh between March and November 2010.[1] The suicides spurred the state government to come down hard on microlenders, and an ordinance in October 2010 restricted the ability to meet with customers and approve loans. Within weeks, loan collection levels plummeted from 98% to less than 20%.

The *Bloomberg* story highlighted India's first microfinance public stock offering, completed in August 2010. SKS Microfinance, with 7.8 million customers by September 2010, rose to become the largest microfinance institution in India and one of the largest globally. Unlike other microfinance institutions, SKS attracted capital from investors known for motivations that are more financial than social, including Sequoia Capital and George Soros's Quantum Hedge Fund. This capital helped fuel an astonishing expansion from 603,000 borrowers in fiscal year 2007 to 6.8 million in fiscal year 2010 (**http://www.sksindia.com/financial_info.php**). On the eve of its public stock offering, SKS was by most measures a great success and when SKS went public, its share issue price of Rs. 985 rupees valued the institution at $738 million. The *New York Times* reported in a front-page article that a California-based venture capitalist had earned 37 times his initial investment (Bajaj 2010). The share price eventually reached Rs. 1,490.

Not everyone celebrated. Muhammad Yunus (2011), Grameen Bank founder and Nobel Peace Prize winner, lashed out in the *New York Times* that lenders such as SKS had become moneylenders more interested in profit than social change. He argued that "[c]ommercialization has been a terrible wrong turn for microfinance, and it indicates a worrying 'mission drift' in the motivation of those lending to the poor" (Yunus 2011, p. A23). His criticism piled on to other criticisms of SKS, claiming aggressive collection practices and hasty loan originations. Parallels to the U.S. subprime mortgage crisis of 2007–2008 were made (Kiviat & Morduch 2010). Vikram Akula, the SKS founder, defiantly responded that not pursuing profit would have been unethical because otherwise SKS would not have been able to raise the volume of funds that enabled it to reach millions of

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[1]The Bloomberg article puts the debt-related suicide data into perspective (Lee & David 2010): "Andhra Pradesh, where three-quarters of the 76 million people live in rural areas, suffered a total of 14,364 suicide cases in the first nine months of 2010, according to state police." The article continues, "SKS [the largest microlender] says 17 of its clients have committed suicide, none because of loans being in arrears or harassment."

Indian villagers. Akula failed to convince the state government, and the stock was slammed by bad press and the government ordinance of October. By the end of 2010, the SKS share price had fallen to Rs. 653; Citi downgraded the stock to sell (Kiviat & Morduch 2010, Moneycontrol.com 2010).

Although Yunus asserts the profitability of Grameen Bank, the bank's financial history shows it to have grown with the help of substantial subsidies (Morduch 1999). Yunus bridles understandably at the notion of being labeled a nonprofit; nonprofit organizations are sometimes dismissed as do-gooders, usually remain small in scale (with more than 8 million customers, Grameen is exceptional), and lack market discipline. But nonprofit advocates argue that the commercializers lose sight of the original aim to empower the poor. Yunus (2011, p. A23) writes that when NGOs transform into for-profits, "the kind of empathy that had once been shown toward borrowers when the lenders were nonprofits disappeared. The people whom microcredit was supposed to help were being harmed." The procommercial side stresses that unbanked markets are too huge to be served with donor-funded operations. It is argued that leverage (usually achieved by borrowing to expand operations) is essential, and gaining leverage requires becoming profitable enough to attract private investors.

The debate has been overly polarized and lacks a clear frame. In practice, the landscape is populated by hybrids: for-profits with social missions, nonprofits with financial missions, and institutions at points in between. Few are against profit in microfinance, and, in principle, empathy can be compatible with profitability. The questions are ultimately about issues usually addressed in corporate finance: outside ownership, governance, and organizational incentives.

The predominance of hybrids should be unsurprising: The early markets for consumer savings, credit, and insurance products in nineteenth-century America, Britain, and Germany were all heavily dominated by mutual savings banks, savings and loans, insurance mutuals, and other types of commercial nonprofits that limited commercial investor ownership as part of a strategy to commit to offer quality services and not engage in opportunistic behavior. Hansmann (1996) has argued that firms strategically adopted ownership forms with profit non-distribution constraints as a way to credibly commit to a form of client protection in markets where other forms of consumer protection and government regulation had not yet been adopted (see also Rasmusen 1988). As a result, these firms relied on capital contributions from philanthropic donors and clients. Investor-led firms began to make serious inroads into these markets only later in the twentieth century as bank regulation and legal protection mechanisms emerged to provide alternative solutions to incentive and governance problems. We draw parallels to modern microfinance in Section 4.3, drawing on this earlier literature.

2.2. Global Financial Data

We start with the current landscape. The highest-quality compendium on the finances of microfinance institutions is the Microfinance Information Exchange (MIX 2011), and we present a subset of data from their *MicroBanking Bulletin*. The *Bulletin* data are adjusted for comparability, with some attempt to account separately for capital received at concessional prices (for more, see Cull et al. 2009). **Table 1** provides 2009 data covering 87 million active microfinance borrowers worldwide in 1,019 institutions with a combined $58 billion in assets. Although the *Bulletin* sample has expanded greatly over the past

Table 1   Distribution of microfinance assets and borrowers across institutions[a]

	Percent of global				Median portfolio at risk > 30 days
	Institutions	Assets	Borrowers	Female borrowers	
Charter type:					
Bank	8	46	26	23	5.9
NBFI	36	30	40	39	4.5
NGO	37	13	30	36	4.1
Credit union	14	10	3	2	5.2
Rural bank	6	1	1	1	9.7
Methodology:					
Individual	37	60	35	28	5.7
Individual/ Solidarity	44	34	49	51	4.7
Solidarity	10	2	9	13	0.9
Village banking	9	3	6	8	2.9
Profit status					
Profit	41	69	57	54	4.7
Not for profit	59	31	43	46	4.5
Region:					
Sub-Saharan Africa	15	12	7	6	5.8
Asia	27	22	70	75	2.2
Eastern Europe & Central Asia	19	19	3	2	4.2
Latin America & Caribbean	34	44	17	14	5.4
Middle East and Northern Africa	5	3	3	3	2.8

[a]The first four columns are the authors' calculations from the *MicroBanking Bulletin* 2009 Benchmark data set (MIX 2011). The sample includes 1,019 microfinance institutions with a total of 87 million active borrowers, 57 million female borrowers, and cumulative assets of $58 billion. Abbreviations: NBFI, nonbank financial institution; NGO, nongovernmental organization.

decade, it remains skewed toward the most commercially minded microfinance institutions. Another compendium, the Microcredit Summit Database, largely overlaps with this set, but encompasses more than 150 million customers and includes more institutions focused squarely on social change (Bauchet & Morduch 2010). The data we provide here thus highlight institutions that keep an especially close eye on finances.

The first three columns and first three rows show a clear pattern: Although microfinance has NGO roots, there are a variety of players. There are far fewer institutions constituted as banks (8%) relative to NGOs (37%) and NBFIs (36%), but the banks account for 46% of total assets and 26% of all borrowers. The banks are thus bigger on average and they make relatively large loans, suggesting that they focus on less-poor

populations. In contrast, the NGOs hold just 13% of total assets but reach 30% of customers. Their outreach is particularly focused on the poor, offering smaller loans to more people. Column 4 shows that the NGOs disproportionately serve women, the original focus of the microcredit movement and part of a vision that still holds in the popular imagination. Banks and NBFIs disproportionately serve men. NGOs, NBFIs, and banks are thus not substitutes, serving similar populations in similar ways but under different charters. Instead, the differences in charters correlate with differences in the populations served (Cull et al. 2009 make a similar point with data from 2002–2004).

The next block of data, organized by lending methodology, also shows a departure from popular notions of microcredit. Microcredit is usually associated with group lending using joint-liability contracts (Armendáriz & Morduch 2010), but the data show that pure group lending (as exemplified by the solidarity group lenders and village banks) does not dominate. Most borrowers are served by institutions offering traditional bilateral contracts (i.e., individual lending) or a mix of group and individual contracts.

The data on profit status refer to the formal status of institutions: Nonprofits are unable to distribute profits to outside investors. Most institutions remain nonprofits, but, as we show in **Table 2** below, most of those nonprofits in fact earn profits according to these data. These data reinforce our argument that the traditionally sharp divides between charity and business can no longer be assumed. There are many variants in between,

Table 2   Characteristics of microfinance institutions by charter type[a]

	NGO		NBFI		Bank	
	Median	25th–75th percentile	Median	25th–75th percentile	Median	25th–75th percentile
Average loan size	$272	$135–$704	$603	$247–$1,550	$2,363	$884–$4,234
Average loan size/GNI	16	9–31	32	14–69	111	45–211
Fraction of customers that are women	80	59–98	60	40–88	50	36–65
Active members	10,121	3,431–35,697	12,136	2,600–41,115	44,981	12,568–102,640
Gross loan portfolio (million $)	3.6	1.3–11.0	7.9	2.1–31.8	114.8	31.7–301.0
Deposits / Loans	0	0–23	0	0–25	72	35–106
Cost per borrower	84	33–151	173	79–322	362	169–576
Operating expense/loan portfolio	21	13–36	20	13–38	14	11–23
Portfolio yield (real)	23%	16%–36%	27%	17%–38%	16%	13%–24%
Financial self-sufficiency ratio	106	87–122	109	95–122	107	97–116
ROE	9	−1–16	5	−5–20	5	−14–14
Debt-equity ratio	1.9	0.7–4.8	2.9	1.0–5.0	6.2	3.3–10.0

[a]Source: *MicroBanking Bulletin* data set (MIX 2011). Profitability is defined by a financial sustainability ratio above 100. Portfolio yield = adjusted financial revenue from loan portfolio / adjusted average gross loan portfolio. Financial self-sufficiency ratio = adjusted financial revenue / (adjusted financial expense + impairment losses on loans + operating expense). Abbreviations: GNI, gross national income; NBFI, nonbank financial institution; NGO, nongovernmental organization; ROE, return on equity (adjusted net income divided by total equity).

including client-owned firms such as credit cooperatives and privately held for-profit firms controlled by social investors.

The final rows of **Table 1** show that microfinance customers remain heavily concentrated in Asia (the numbers are driven by India and Bangladesh). A second concentration is in Latin America, with both regions accounting together for 89% of global borrowers. But the two regions account for just 66% of assets, and Eastern Europe and Sub-Saharan Africa account for a larger share of assets than their customer numbers would suggest.

The fifth column gives data on credit risk. Portfolio at risk is the outstanding balance of loans for which installments are more than 30 days overdue, stated as a percentage of the total value of loans outstanding. It is a warning sign of repayment problems. The single most notable finding is that the two lending methods focused on the poorest borrowers with the fewest assets (solidarity group lending and village banking) have the lowest measure of credit risk in these data. Ironically, the customers behind these numbers are those most likely to be excluded from formal sector credit markets for fear that they cannot reliably repay loans. This achievement, which counters early prejudices, is an important foundation. A question is whether those rates can be sustained as microfinance expands.

Table 2 provides data for the median NGO, NBFI, and microfinance bank. The key elements of the story reinforce the findings in **Table 1**: The three types of organizations look very different. Taking loan size as a fraction of gross national income per capita as a normalized approximation of the income level of customers, the figure for NGOs (16%) is half of that for NBFIs (32%) and one-seventh that for microfinance banks (111%). Banks attract deposits, making them operationally distinct, and they have much larger loan portfolios. But bank customers are also more expensive (an average of $362 for the median bank versus $84 for NGOs). That cost is compensated, however, by the scale of lending. For the median institution, operating expenses per $100 lent are $21 for NGOs, $20 for NBFIs, and $14 for banks. Those differences permit banks to charge lower interest rates: Most often, the poor pay substantially more for capital than better-off families, even within the realm of microfinance. The median interest rate (as proxied by the real portfolio yield) is 23% per year for NGOs but just 16% for banks.

As context for the analysis below, **Table 2** shows that although NGOs are nonprofits, they are nevertheless most often profitable (financial self-sufficiency ratio > 100 as defined by the *MicroBanking Bulletin*). The ratio is 106 for NGOs and 107 for banks. But, as we describe further in Section 4, the leverage of NGOs as captured in the debt-to-equity ratio is far lower than that of microfinance banks (a median debt-to-equity ratio of 1.9 versus 6.2). That failure to multiply funds is explained by the theory below.

3. CORPORATE FINANCE OF MICROFINANCE: A BENCHMARK MODEL

The fundamental problem that motivates microcredit is given by difficulties of enforcing contracts together with the low asset holdings of customers; the two factors limit the assets and future cash flows that families can credibly pledge to lenders. In shorthand, families lack collateral. This limits the ability to borrow, which, in turn, reinforces the families' inability to earn income, smooth consumption, and make long-range investments. The essential innovation has been figuring out how to lend money at a large scale while requiring little or no collateral.

Theoretical models of microfinance parallel insights from the modern theory of financial contracting, but they use specialized models and focus on features unique to the microfinance context (for surveys, see Ghatak & Guinnane 1999, Conning & Udry 2007, Armendáriz & Morduch 2010, and Banerjee & Duflo 2010).[2] Applying lessons from corporate finance to microfinance requires building shared structures. We reframe key insights on microfinance using a well-studied model of moral hazard with limited liability, the workhorse model of Tirole's (2006) *The Theory of Corporate Finance*. This puts the focus on ex-ante moral hazard with verifiable project outcomes, a context taken in the early microfinance studies of Varian (1990), Stiglitz (1990) and Banerjee et al. (1994). Other issues, such as the problems of strategic default and adverse selection, share common properties and require similar solutions to those explored here.

We begin with a population of risk-neutral entrepreneurs identical to each other in every respect except for their holdings of assets that can be pledged as collateral.[3] Although microlenders often lend without demanding explicit collateral, loan officers are trained to pay attention to household cash flows and asset holdings, and they form judgments about the value of the resources that the household can tap to help meet contract payments. It is this value that we refer to as collateral.

Each entrepreneur has access to a risky production project; if they undertake it, they need to invest a nonrecoverable lump-sum I. If funded, the project generates a second period return x_1 when it succeeds and $x_0 < x_1$ when it fails. Outcomes are verifiable, but the entrepreneur's effort is not. The probability of success is affected by the entrepreneur's choice of effort: If she is diligent, say by working hard and using high-quality inputs, she succeeds with probability p and fails with probability $(1 - p)$. The probability of success falls to $q < p$ if instead she diverts effort to other uses and lacks diligence. But, in this case, she captures a nonobservable private benefit B. Only high-effort projects have positive net present value, implying that a lender will only agree to loan contracts that offer credible assurance that the entrepreneur will be diligent.

We assume that the entrepreneur needs to borrow the entire amount I to finance the project because in the first period pledgeable assets are tied up in other uses. These assets can be made liquid and can be credibly pledged as collateral for use in the second period with value A.[4]

The loan market is competitive, so borrowers will be offered their most preferred feasible loan contract. An optimal loan contract for an entrepreneur with assets A allocates

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[2]This literature builds on a long development economics tradition of studying contracting arrangements in developing countries with factor market imperfections, and informal finance in particular. Two of the earliest and best-known contributions to information economics by Akerlof (1970) and Stiglitz (1974) were motivated, respectively, by rural money lending in India and agricultural sharecropping (equity finance) in Kenya. Bardhan (1989) and Hoff et al. (1993) provide useful guides to these literatures.

[3]Not all microcredit is used for productive purposes, but the logic behind the analysis applies broadly even when borrowing primarily supports pure consumption smoothing or consumption transformation, where the household borrows to make a lumpy purchase as a strategy to bind itself to a repayment schedule to set aside monies on a level that the household may not have been able to achieve on its own through saving. In these cases there may be a gain in expected utility as well as a return to investment. The assumption of risk-neutral borrowers is an obvious unrealistic assumption but one that sharply focuses attention on the mechanisms at work in microfinance contract innovations such as group lending. Boucher et al. (2008) and Banerjee (2004) discuss how risk aversion might modify results in models of this sort.

[4]Tirole (2006) models the situation slightly differently, interpreting A as the borrower's equity participation, leading the entrepreneur to borrow the difference I-A. The results that follow are virtually identical but the present interpretation is more appealing for a stylized representation of microfinance contexts.

project claims x_i in the success $(i = 1)$ and failure $(i = 0)$ states. In the contract, the entrepreneur keeps returns s_i, and the lender collects repayments $x_i - s_i = R_i$. The lender maximizes the entrepreneur's expected returns to ensure high effort by borrowers:

$$\max_{s_i} \; E[s_i \,|\, p] \quad s.t.$$

$$E[x_i - s_i \,|\, p] \geq \gamma I, \tag{1}$$

$$E[s_i \,|\, p] \geq E[s_i \,|\, q] + B, \text{ and} \tag{2}$$

$$x_i - s_i \leq x_i + A \quad \text{for } i = 0, 1, \tag{3}$$

where the expected return when the entrepreneur works hard is $E[s_i \,|\, p] = ps_1 + (1 - p)s_0$. The first constraint (Expression 1) is the lender's participation constraint: Expected repayments must cover the opportunity cost of funds γ. The second constraint (Expression 2) is the borrower's incentive compatibility constraint: They must prefer high effort to low effort. And the third set of constraints (Expression 3) capture limited liability: The feasible repayment in each state cannot exceed available project returns plus collateral A.

The entrepreneur's incentive compatibility constraint can be rewritten as

$$s_1 \geq s_0 + \frac{B}{(p - q)}. \tag{4}$$

The bottom line is that the borrower's take-home return when the project succeeds (s_1) must be large relative to the return when it fails (s_0). The difference must generate sufficient incentive for the borrower to want to raise the probability of success by working hard.

If limited liability constraints did not bind, though, a first best solution could be found by making the entrepreneur a full-residual claimant; in that case, a fixed debt contract would demand constant payment γI whatever the project outcome. But here limited liability restricts the bank from collecting more than the project return plus collateral, $R_0 = x_0 + A$, when the project fails; demanding more would trigger a partial default. Given that collections in this default state are capped by limited liability, the lender compensates by collecting more in the success state. But this strategy may be limited as well: Because limited liability restricts the entrepreneurs' loss or punishment to not exceed $s_0 = -A$, the maximum repayment that can be pledged following success has to leave the entrepreneur with at least $s_1 = -A + B/(p - q)$ to maintain incentives for diligence.

The lender is caught between these constraints. Taken together, they imply that when limited liability binds, a borrower with assets A must earn a minimum expected return of

$$E[s_i \,|\, p] = \frac{pB}{p - q} - A \tag{5}$$

to remain diligent. Tirole (2006) calls the first term on the right an agency rent [Laffont & Martimort (2002) label it a limited liability rent]. It is a rent, determined by the size of the entrepreneur's assets A, that cannot be competed away without destroying incentives. The existence of this rent effectively undermines entrepreneurs with insufficient collateral. The problem is that the rent puts a lower bound on the borrower's expected return $E[s_i \,|\, p]$, which in turn places an upper bound on how much the entrepreneur can credibly pledge to repay their lender: $E[R_i \,|\, p] = E[x_i \,|\, p] - E[s_i \,|\, p]$. If, after covering the borrower's expected agency rent, expected project returns $E[x_i \,|\, p]$ are insufficient to cover the lender's cost of

funds, the lender will rationally refuse to participate, and the entrepreneur is excluded from the loan market. Productive opportunities are foregone.

3.1. Strategies to Expand Financial Frontiers

The analysis explains the fracturing of financial markets. Substituting Expression 5 into the lender's binding participation constraint $E[R_i \,|\, p] = E[x_i \,|\, p] - E[s_i \,|\, p] = \gamma I$ allows us to calculate the minimum collateral requirement that a lender will require in order to willingly lend:

$$\underline{A} = \frac{pB}{p - q} - (E[x \,|\, p] - \gamma I). \tag{6}$$

Borrowers with collateral A larger than or equal to $\underline{A}$ can obtain competitively priced loans of size I and earn the full project surplus $E(x \,|\, p) - \gamma I$. But otherwise identical entrepreneurs with assets below $\underline{A}$ will be denied loans. The minimum collateral requirement defines the financial frontier in this simple economy. If households lived in neighborhoods segregated by asset ownership A, no profit-maximizing lender would serve a neighborhood with collateral below the $\underline{A}$ threshold.[5] These neighborhoods are home to many of the 2.5 billion unbanked adults counted by Chaia et al. (2009).

Efforts to push out the financial frontier to reach poorer neighborhoods effectively require the search for collateral substitutes to lower the minimum collateral requirement $\underline{A}$. The contracting literature suggests that one response for lenders is active monitoring, for instance hiring an intermediary to take actions that might limit the borrower's ability to divert effort and resources from the financed project, which we interpret here as lowering B (the private return that can be captured from diverting resources to other projects).

Another type of monitoring involves activities that help increase the probability of success, raising p relative to q (e.g., Banerjee et al. 1994). For example, some microlenders accompany their loans with technical assistance or training that could be interpreted as raising the probability of success p and/or project returns x, which both expand access. Karlan & Valdivia (2010) use a field experiment in Peru to show, for example, that providing business training to microfinance customers increased their profits, especially in bad months. More important for the present case, client retention improved markedly, as did the lender's profits, even without shifting costs to clients.

The most fundamental problem remains the misalignment of capital, information, and enforcement capacity. Banks and investors have the capital, but the best information and enforcement capacity is often in the hands of the customers' neighbors. Microlenders thus put substantial resources into acquiring better information and improving their ability to enforce contracts. Building strong relationships between banks and borrowers is, arguably, the defining characteristic of microfinance. Unlike conventional bank lending, where loan officers might spend most of their day behind a desk verifying legal documents, microfinance loan officers typically get out into the community to complete transactions and gather information about clients, and they do not hesitate to present themselves, sometimes unexpectedly, at a borrower's residence or place of business. Most microlenders

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[5]The result hinges on the assumption of a lump-sum investment size. If investment could instead take variable sizes, the lender might participate but will reduce the size of the offered loan and may impose other efficiency-reducing covenants and restrictions.

insist on a weekly loan repayment schedule that commences almost immediately upon receipt of the loan, and the slightest delay or hint of a problem can trigger an intervention by a loan officer.

The trust and information flows gained through microfinance relationships make the borrower's incentive constraint easier to satisfy, which reduces the borrower's agency rent in ways that, all else equal, expand pledgeable income. But building and maintaining relationships with customers is costly for lenders, and the costs must be taken from any surpluses generated by the borrower's project. The question is how the benefits line up with the costs. To see the tension formally, we extend the analysis above. Now, the microlender can put resources into relationship building, m, using a technology $B(m)$. In the absence of a strong relationship ($m = 0$), the entrepreneur's opportunity cost of diligence is as before $B = B(0)$, but at expense $m > 0$ to the lender, the entrepreneur's private gain to diverting resources can be reduced to $B(m) < B$. Intuitively, the bank's relationship-building efforts can make such hidden actions carry the heavier stigma of a social breach of trust, and make detection more likely.

Under reasonable assumptions, lenders now gain the assurance required to reduce the collateral demanded. The minimum collateral requirement can now be pushed down once trust is built and information improves:

$$\underline{A}(m) = \frac{pB(m)}{p - q} - (E[x \mid p] - \gamma I) + \Gamma(m) \tag{7}$$

The first term on the right-hand side is the borrower's agency rent (which falls as relationships intensify). The final term $\Gamma(m)$ captures the cost of relationship building, which increases with m. In the best case, these costs will be just $\Gamma(m) = m$, the direct expense of relationship building. More generally the costs associated with providing a delegated intermediary with appropriate incentives to build and maintain relationships will rise faster than the direct costs, limiting the usefulness of building strategies. Moreover, because it is the borrower that ultimately bears the cost of relationship building in a competitive market, increasing the costs may eventually exhaust remaining gains to trade. For either of these reasons, there typically will be a maximum feasible level of relationship building $\underline{m}$ and a new, lower collateral threshold $\underline{\underline{A}} = \underline{A}(\underline{m})$.

The good news is that, thanks to the trust- and information-building efforts, some previously excluded asset-poor groups are now offered loans; these are entrepreneurs with assets in the range $\underline{\underline{A}} \leq A < \underline{A}$. The bad news is that asset-poor borrowers face higher borrowing costs because their loans require more costly engagement. This gives one reason that the poor usually pay higher interest rates than less-poor households (Cull et al. 2009). Small loan sizes coupled with fixed loan-processing costs also explain this evidence.

The analysis suggests a fundamental problem when microlenders seek outside finance. Just as the entrepreneur needs enough collateral to commit to working hard, a microlender would typically need to place some of its own capital at risk (i.e., to have skin in the game) to signal to outside investors that they will build and maintain relationships and enforce contracts on the investors' behalf. In terms of the model, the microlender needs to put I^m dollars at risk for every I dollar lent; this is the microlender's equity. The need for skin in the game would be especially true of microlenders serving the poorest customers, where relationships matter most because loans are unsecured. Because of that, microlenders serving poorer neighborhoods will have lower leverage as measured by debt-to-equity

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ratios $(I - I^m)/I^m$ compared to counterpart institutions in more affluent areas (even when both earn similar rates of profit).[6] This is what the bottom row of **Table 2** suggests. In line with agency theory, the measure of leverage (the median debt-to-equity ratio) is relatively low in all types of microfinance institutions (1.9 for NGOs, 2.9 for nonbank finance institutions, and 6.2 for microfinance banks). The pattern between groups of institutions also follows the prediction: Taking average loan size as a proxy for the wealth levels of customers, the median debt-to-equity ratio is lowest for NGOs (whose median loan size is $272), slightly larger for NBFIs (median loan size of $603), and considerably higher for microfinance banks (median loan size of $2,363).

Poor neighborhoods are doubly disadvantaged: Borrowers in poorer neighborhoods face higher costs of borrowing both because (*a*) they are viewed as requiring more intensive engagement and because (*b*) the incentives that sustain the building and maintaining of banking relationships require that local financial intermediaries place more capital at risk. When, in the language of Holmstrom & Tirole (1997), the amount of intermediary capital in the economy is scarce, investors will gravitate to neighborhoods serving richer customers where they can set up financial intermediary firms to extract the highest market-determined return on equity β. Both the market rate of return on uninformed capital γ and intermediary capital β are determined in equilibrium along with a lower collateral threshold $\underline{A}(\gamma, \beta)$. No commercial lender will find it sufficiently profitable to enter below this threshold.

3.2. Monitoring Agents with Other Agents

An implication of the last section is that microlenders working with the poorest populations can expand access by reducing the costs of relationship building. One strategy is to hire the right loan officers. A key innovation has been the recruitment of nontraditional staff members. Rather than hire loan officers on the basis of, say, college education credentials, many microlenders recruit cheaper local talent who can easily gain trust in the communities they serve.

Banks have sometimes also expanded into microfinance by contracting through existing informal financial intermediaries. Barclays Bank of Ghana, for example, established financial agreements with the Ghana Cooperative of Susu Collectors (**http://www.ghanasusu.com**). Informal susu collectors are a long-time fixture in Ghana's bustling town and city marketplaces, where they make rounds collecting small daily savings deposits from market traders and neighborhood residents for safekeeping. Each collector may serve 200–850 clients a day (Osei 2008). The bank setup interest-bearing accounts for susu collectors to hold funds, and also offered loans that the collectors lent onward as microloans to customers. The susu collectors act as delegated monitors, building on their advantage in observing client characteristics and/or monitoring clients, allowing Barclays' loans to reach customers that they would consider far too risky to contract with directly.

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[6]We follow Holmstrom & Tirole (1997) but our interpretations differ slightly. For instance, where they assume each financial institution serves borrowers of all levels of *A*, we ask how capital structures might vary across financial intermediaries when they are restricted to work in one neighborhood at a time. We also adopt their simplifying assumption that borrowers' projects are perfectly correlated so as to leave to one side the types of diversification strategies (Diamond 1984) that reduce the amount of capital a delegated monitor needs to put at risk. There are also many reasons to believe risks in typical microfinance portfolios are fairly highly correlated, hence that any such diversification effects modify but do not eliminate the general pattern of relationships predicted.

Informal agents such as these are common around the world, and they find success intermediating funds on small local scales. But it is rare to find examples where informal agents harness the existing closeness among locals to increase leverage of outside funds on a large scale. One explanation is that although these local agents and firms have information on their asset-poor neighbors, they have little intermediary capital of their own to place at risk to signal their diligence to outside investors. When they do have adequate capital, they likely find it more profitable to operate in more affluent areas. In Section 4 below, we discuss some of the strategies social investors use to help relax the constraint on such local intermediary capital.

The discussion helps explain the limits to group lending mechanisms, the best-known microfinance innovation. Group lending also attempts to get around the dual problem of missing collateral and the lack of intermediary capital. In a typical arrangement, a microlender asks borrowers to form into small groups (usually three to seven members) and makes loans to individuals on condition that they share a degree of liability in each other's loans. The aim is to create incentives for borrowers to become monitors, or peer monitors of each other's loans. In some contexts, members are jointly responsible for repaying the loans of all in the group. In other cases even if members are not held directly liable, they may be denied future loans or forced to accept worse terms, should any of their group default.[7]

A large literature explains the pros and cons of joint-liability loans compared to other forms of lending, exploring varying assumptions about information asymmetries.[8] The fundamental question that runs through the literature is how to design a contract between a principal and some agents in a community, while taking into account the possibility of side contracting among them. The side contracting can be analyzed as either a cooperative or noncooperative game (see Arnott & Stiglitz (1991), Varian (1990), Holmstrom & Milgrom 1990, and Itoh 1993.

Stiglitz (1990) offered an early exploration. Adapting his setup to our framework, consider N risk-neutral borrowers who, separately, do not have sufficient collateral to obtain a standard loan with individual liability. Borrowers' projects outcomes are assumed independent.[9] Stiglitz assumes what Tirole (1992) labels the full side-contract assumption, that group members can costlessly monitor each other by entering into binding action-contingent side contracts. Under this assumption, the efficiently side-contracting group acts as if it were a single-minded coalition or syndicate managing N independent loan production tasks. An optimal multitask contract involves the cross-pledging of returns

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[7]Spandana, one of India's largest microfinance providers, has posted training videos for joint-liability lending. As the video reveals, peer-monitoring works alongside considerable monitoring by the loan officers (**http://www.youtube.com/watch?v=sdTNfd0Nois**).

[8]The ex-ante moral hazard case has been discussed, among others by Arnott & Stiglitz (1991), Stiglitz (1990), Varian (1990), Banerjee et al.(1994), Conning (1999), Madajewicz (2001), Laffont & Rey (2001), Aniket (2007), Tirole (2006), and others. The case for group loans to ameliorate the costs of ex-post moral hazard or strategic default has been explored by Besley & Coate (1995), Che (2002), Bond (2004), Rai & Sjostrom (2004), Bhole & Ogden (2010), and others. The adverse selection case has been explored by Ghatak (2000), Gangopadhyay et al. (2005), Sadoulet (1999), van Tassel (1999), Wydick (1999), Armendariz de Aghion & Gollier (1996), Laffont & N'Guessan (2000), Becchetti et al. (2006), and others. Ghatak & Guinnane (1999) offer an early survey.

[9]In a joint-liability contract, one agent receives higher rewards for higher measured outcomes on other agents' projects. When projects are correlated, it may instead be optimal to employ relative performance evaluation contracts which, in effect, do the opposite: One agent receives lower rewards for higher outcomes on other agents' projects (Holmstrom 1979). Che & Yoo (1996) study a model with both possibilities.

across loan tasks, which here implies a joint-liability structure in the group (Laux 2001). The entire group is handsomely rewarded (for the outcome with the highest likelihood ratio) when all projects succeed. Otherwise, the group is punished by requiring that they hand over all project returns plus pledged collateral. This contract requires much less collateral per borrower compared to separate individual liability contracts and thus expands loan access.[10] This cross-pledging is the same type of diversification effect that, in a slightly different context, Diamond (1984) recognized as a cornerstone element in the modern theory of financial intermediation.

Stiglitz's solution relies on the implicit assumption that sufficiently severe but cost-lessly enforced social sanctions always exist to deter any member from deviating from what is best for the group. Most of literature on joint-liability lending looks at more challenging but realistic situations where members interact nonstrategically rather than cooperatively, and where monitoring, screening, or sanctioning are costly. [Che (2002) studies the same benchmark model but investigates outcomes when the sanctions necessary to sustain side contracting must be made self-enforcing through repeated interaction, which ties his model to Besley & Coate's (1995) well-cited paper on peer sanctions and strategic default.]

Individual liability lending dominates in many settings but joint liability emerges as part of a strategy to help group members credibly sustain peer sanctions in an indefinitely repeated setting. Tirole (2006, chapter 4) uses the same benchmark model in a once-repeated setting but under the assumption that agents have altruistic concerns about other borrowers. Under a joint-liability structure, the warm glow that one borrower gets from knowing that the other borrower's project succeeds allows the lender to economize on pecuniary incentives in ways that lower the collateral threshold.

Conning (1999, 2006) takes the costly delegated monitoring framework studied above and compares these individual liability loans to a joint-liability alternative. As long as project outcomes are not too correlated, a joint-liability peer-monitored contract may offer lower-cost access relative to an individual liability contract, even when the outside delegated monitor has the same monitoring technology $B(m)$ and delegation costs are at a minimum. Joint liability in effect has each borrower partly divest themselves from their own projects in exchange for an equity stake in the projects of others, creating incentives to monitor. This places each borrower in a multitask setting of their own, where a form of cross-pledging can again help reduce the total cost of contracting. The window for exploiting such an effect may be narrow, however, as it only works when additional monitoring frees up collateral fast enough to meet the rising minimum equity stake that the monitor must retain in the other borrower's project to have the incentive to monitor. The contract must also guard against the possibility of free riding (or costly collusion), further limiting the situations where joint liability might be employed. [Aniket (2007) shows that improvements can be found by lending to group members sequentially rather than simultaneously.]

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[10]It is easy to demonstrate that for an N-member group the collateral requirement per borrower falls to

$$\underline{A}_N = \frac{p^N B}{p^N - q^N} - [E(x \mid p) - \gamma I].$$

The agency rent falls quickly toward zero, which means the credit rationing problem disappears—an embarrassment of riches as it implies the optimal group size should be as large as possible (Conning 2006).

3.3. Limits to Joint Liability

The early pitch for joint-liability lending suggested that the contract could effectively reduce default while not requiring loan officers to do much except perhaps organize groups and collect group repayments. Yet in practice, loan officers are often also heavily involved in one-on-one interactions and troubleshooting and in several contexts, joint liability has proven problematic. In a notable about-face, two of the great pioneers of group lending, BancoSol of Bolivia and Grameen Bank of Bangladesh, have now turned to individual lending contracts, removing explicit joint-liability clauses from contracts. The switches were prompted in part by client complaints that group lending created tension and excessive peer pressure within groups; it also imposed transactions costs and functioned poorly in heterogeneous groups where only some members wanted to aggressively borrow.

Table 1 suggests that the modal microfinance institution in the MIX Market data offers both individual- and group-loan products. A plausible interpretation is that group lending is more often used in poorer target market segments and when institutions are expanding. Group lending provides relatively easy ways to recruit new borrowers, and it reduces fixed transaction costs. As group lending progresses, loan officers tend to become better acquainted with household characteristics and repayment histories, and they therefore become better monitors. Differentiation is also likely to emerge among borrowers over time. The more successful, who are ready and able to move on to larger and possibly less costly loans, may not want to be held back by others in the group. Bhole & Ogden (2010) argue that in theory one can design arrangements that better tailor the degree of joint or individual liability in a group to address some of this heterogeneity and that Grameen's new practices embody this mixed approach.

Most models of group lending recognize the possibility of multiple equilibria, including collusive or free-riding outcomes. The strategic default framework of Besley & Coate (1995), for example, highlights the possibility that under a joint-liability structure there are situations where an entire group might default even when some members would have repaid under individual liability. Optimal contracts should, in theory, be designed to incorporate this concern, but it might be hard for a microlender to get the balance right in practice.

The recent literature has sought to distinguish between theories through regression-based approaches (Ahlin & Townsend 2007) and lab experiments in the field. Giné et al. (2010b) in Peru and Fischer (2008) in India ran experiments that suggested, consistent with theory, that borrowers took greater business risks when under a group liability than when under individual-liability loans. Free riding gets worse as groups get bigger, suggesting a trade-off between the favorable impacts of diversification and the negative impacts of free riding.

Giné & Karlan (2010) study a bank in the Philippines that randomly converted some branches from using joint-liability contracts to using individual contracts, while keeping all else the same (including weekly group meetings). Three years later, the loan repayment rate in areas converted to individual liability was similar to that in areas still under group contracts, and client retention improved, which highlights the discomfort that some borrowers feel. Carpena et al. (2010), however, provide more optimistic results, exploiting the timing of a policy switch from individual contracts to group contracts at an Indian microlender. In contrast to Giné & Karlan (2010), loan repayment rates improve under group contract: Customers were 6% less likely to miss monthly loan installments, and they

also saved more steadily. The bottom line is that group contracts continue as an important part of microfinance, but joint liability does not solve all problems and creates some of its own. Although in the 1980s and 1990s microfinance was closely tied to joint liability, today that is no longer so.

3.4. Competition and Over-Lending

The simplest microfinance strategy may be its most powerful: the threat that defaulters will be denied loans in the future. When borrowers know that they will want loans in the future too, the constraints today are relaxed. [Tedeschi (2006) presents a simple indefinitely repeated interactions model that synthesizes several key ideas. Related concerns shape the volume of lending and the terms of bank loans even in advanced countries (Petersen & Rajan 1994).]

Typical microcredit lenders insist on small initial loan sizes, and credit limits are then sized up (or sized down) in response to the client's record of repayment and asset accumulation. The big question is whether the threat to deny loans has teeth. The best case, from this narrow angle, occurs when lenders are monopolists. But as markets thicken and borrowers have more options, the threat of loan denial carries less weight; there is always another lender to try in environments where there are no credit bureaus or enforceable liens (McIntosh et al. 2005, Navajas et al. 2003, Wydick & Mcintosh 2004). Concerns about excessive competition and over-borrowing through multiple loans have been blamed for microfinance crises in Bolivia, Uganda, Bangladesh, Nicaragua, Bosnia, and India.

Many of the creative efforts of microfinance described above work by harnessing useful side contracting among agents to crowd in new finance. Here the problem is the reverse: an inability to regulate harmful side contracting that crowds out finance by undermining the incentives to maintain repayment that borrowers might have otherwise faced (Arnott & Stiglitz 1991, Bulow & Rogoff 1989).

In a nice illustration of the application of new technologies in microfinance, Giné et al. (2010a) provide evidence on the power of effective credit bureaus. In Malawi, credit bureaus were ineffective because it was difficult to assign customers a unique identifier. The researchers investigate what happens when the bureaus integrate fingerprint technology, allowing them to keep better tabs on borrowers and implement dynamic incentives. The fingerprinting intervention was randomized, and it led to much higher repayment rates for borrowers with the greatest ex ante probability of defaulting; other borrowers were not affected. Improving dynamic incentives reduced moral hazard by limiting the diversion of fertilizer away from cash crops.

4. SOCIAL INVESTMENT

Financial innovations have helped make microlending possible. The new lending mechanisms raise loan repayment rates to levels that permit business models to work (column 5 of **Table 1**). Yet high repayment rates alone do not imply high profit rates. Moreover, merely being profitable does not imply that lenders can readily tap commercial capital markets to expand. The theoretical discussion in Section 3 explains why—in a purely commercial setting—microlenders serving poorer neighborhoods would have to place substantial amounts of their own intermediary capital at risk to attract outside debt finance. In a purely commercial market, scarce intermediary capital will move only to

those neighborhoods where it can earn the market return on equity, which effectively establishes a financial frontier that walls out poorer neighborhoods.

How can social investment help? The starting point is that, though investment opportunities are blocked, allocations are constrained Pareto efficient in this purely commercial setting. Would-be borrowers may have projects that generate expected returns well in excess of market borrowing rates, but they remain unable to borrow. A randomized experiment in Sri Lanka gives an example of the size of returns left on the table. Small-scale urban microenterprise owners were found to be able to generate average returns to capital of roughly 60% per year, whereas local banks charged 16%–24% for loans (De Mel et al. 2008). Yet borrowers such as these often cannot attract lending because their limited collateral and incentive concerns means that they cannot credibly commit to repaying loans at those rates.

When this is true, well-placed subsidies (or subsidized investment) can help crowd in resources and commercial capital to serve excluded borrowers. This can lead to new lending and outcomes that are both productivity enhancing (Bardhan et al. 2000) and (because the philanthropist transfers resources voluntarily) Pareto improving. Here, a well-placed $1 subsidy to help expand intermediary capital (or simply lower the cost of funds) can create private wealth of more than $1. As a result, projects with positive net present value now get financed.[11]

Section 4.1 describes the basic problem and solution. We ask how voluntary social investments are expanding and reshaping the financial frontier. We focus first on optimal contract designs, noting that badly designed interventions can exacerbate moral hazard (as shown by Fannie Mae's role in the U.S. subprime mortgage crisis).

4.1. Social Investment Vehicles

Social investors are a varied group. The list includes large international financial institutions such as the World Bank's private equity arm International Finance Corporation (**http://www.ifc.org**) and Germany's development bank KfW (**http://www.kfw.de**), as well as private funds such as the Omidyar Network established by eBay founder Pierre Omidyar. Netherlands-based Oikocredit (2011) is "one of the world's largest sources of private funding to the microfinance sector," with a cumulative $1 billion investments in microfinance, and is organized as a cooperative society to mobilize social investments from individuals and churches who expect small positive financial returns alongside social impacts.

The strategy begins with the premise that purely commercial equity investors cannot be drawn to support microlending in poor neighborhoods because the rate of return on intermediary capital cannot match that from serving more affluent neighborhoods. Similarly, the do-gooders who might be inspired to start microfinance institutions rarely start with much money, so they will not have intermediary capital either. (Their best strategy

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[11]As Holmstrom & Tirole (1997, pp. 686–87) point out "an extra dollar of informed capital will expand investment by more than an extra dollar of firm [borrower] capital." They have in mind a general expansion of intermediary capital in the economy that brings down the equilibrium cost of intermediary capital, leading to higher leverage and an expansion of the financial frontier. We have in mind more narrowly targeted interventions by social investors to lower the cost and expand the availability of intermediary capital to firms focused on serving the poor. Technically, from Expression 7, it can be seen that any subsidy to the cost of informed equity or uninformed debt $[(\beta - \gamma)I^m + \gamma I]$ will free up cash that can then be credibly pledged to meet incentives, allowing for previously limited transactions to now expand.

may thus be to signal dedication by trumpeting their social concern for particular under-served communities and by building a reputation for being invested in the long-term success of their enterprise.) Thus, social investors enter. Specialized intermediaries such as ACCION International, Women's World Banking, and the Grameen Trust have been instrumental in funneling and structuring initial donor support.

It is too simple to say that social investors solve a basic incentive problem by throwing money at it. True, social investors provide subsidized funds that enable microlenders to reach populations that would otherwise be unreachable. Subsidies have been justified for covering fixed start-up costs, paying for research and development, and supporting exper-imentation from which others can learn. These are all important contributions, but they are just as well supported with grants, rather than subsidized investments.

Understanding the logic of subsidized investment requires returning to the agency problem of Sections 2 and 3. We begin with the observation that social investment, in practice, usually entails more than giving money. Large-scale social investors typically collaborate with specialized intermediaries to deliver both cash grants and specialized technical assistance. They also act as equity and quasi-equity investors to help microlenders establish reputations for competence. The social investors take seats on the microlenders' boards, help shape governance, and transfer banking knowledge. It is the combination of capital and active engagement that has done most to encourage additional private com-mercial funding and effectively expand the reach of markets. Social investors subsidize the cost of funds to microlenders, which can relax the incentive constraints defined in Section 3, helping lenders expand available intermediary capital and reach new market segments. They also, in effect, become intermediaries for other uninformed donors and social investors who lack information and enforcement capacity.

Many of the large investments are structured with multiple tranches offering different combinations of risk and return. Microfinance structured debt products share features with the collateralized debt obligations that fueled mortgage lending in the United States over the past decade. Most microfinance investments, however, are backed by relationships between lenders and borrowers rather than by assets (such as the underlying value of housing). (In practice, of course, it turns out that the mortgage-backed collateralized debt obligations were far riskier than investors imagined.) Microfinance investment funds such as the relatively small Microvest mentioned in the introduction or the much larger European Fund for Southeast Europe (a public-private partnership with €760 million in committed funds) offer structured finance products with greater involvement in guiding, monitoring, and/or managing the microfinance institutions. Structured finance plays an important role: In essence, they give a way for social investors to create leverage and diversification outside the confines of a particular microfinance institution (Glaubitt et al. 2008, Matthäus-Maier & Von Pischke 2007).

In microfinance investment, the most committed social investors typically take the most subordinated tranche within funding structures, agreeing to bear the first dollars of risk should default occur. In making equity investments, they also may take board positions with the microlender and thus serve as monitors of the monitors. The structure of these deals is exemplified by a well-known $40 million international debt issue, Blue Orchard MF Securities I, structured in 2004 by a Swiss microfinance investment consultancy and a socially oriented investment bank (Rhyne & Reddy 2006). Ninety investors pooled money that supported nine microlenders. The deal involved five tranches, with varying returns and risk. In the most subordinated position was an equity tranche. Above that were three

3.20   *Conning • Morduch*

subordinated tranches priced at the return on U.S. Treasury plus 2.5 percentage points. These tiers were taken by social investors, foundations, and nonprofits, many with a strong international presence. In more privileged positions were senior notes earning U.S. Treasury plus 1.5% with a 75% guarantee from the Overseas Private Investment Corporation, a U.S. government agency. Here the investors ranged from individuals to pension funds. The deal allowed institutions in Cambodia, Russia, Peru, Bolivia, Nicaragua, Ecuador, and Colombia to reach more underserved communities—and allowed a large group of socially minded investors to avoid taking much risk.

The discussion conflates the two roles in social investment: providing relatively cheap capital and providing monitoring services. In principle, it might appear that the roles could be separated. Uninformed social investors could provide cheap capital, and a commercially minded venture capitalist could provide monitoring services. If a credible contract can be written to ensure that the microlender stays true to its mission of targeting the social investor's funds, the arrangement could work. But writing such a contract requires finding a way to spell out the terms of mission drift, and the venture capitalist would be positioned to capture surpluses, possibly undermining the social intent of the enterprise. Alternatively, the social investor could monitor, and capital could be provided by commercially minded investors. In practice, however, the social investors that monitor also tend to subsidize capital.

4.2. The Social Investor's Dilemma

The Blue Orchard deal described above launched successfully. Still, at just $40 million, the size is small relative to the size of the underserved markets. That recognition requires social investors to make trade-offs between helping the poorest communities and helping microlenders reach wide scale.

Suppose that one goal is to reduce extreme poverty by reaching the poorest neighborhoods possible (conditional on the requirement that borrowers are creditworthy). The net impacts on customers in the neighborhoods may be high here too, because returns to capital can be large for cash-starved entrepreneurs (the evidence on that is mixed, though; see Armendáriz & Morduch 2010, and Banerjee & Duflo 2010). The problem, as described above, is that the social investors' money can create only limited leverage by focusing on the poorest.

A second goal might be to help serve as many underserved people as possible. When serving poor communities, loan sizes tend to be small, so a given-sized loan portfolio can be divided between many borrowers. That effect is offset by the leverage effect, however, which pushes investments toward richer communities where funds for intermediary capital can more easily be multiplied via the power of leverage. Thus, although the microlender's pro-poor agenda suggests that they should move down-market, financial considerations tilt them away from the poorest.

The analytical framework forces us to take seriously the trade-off between reaching the most underserved populations versus serving the most people. Evidence of the sort in **Table 2** suggests much microfinance investment lands in places that neither permit reaching the very poor nor permit substantial leverage.

4.3. Should the Goal Be Commercial Microfinance?

Since the early 1990s, there has been a strong drive by some microfinance activists to transform many of the more successful microfinance NGOs into for-profit investor-owned

firms (Morduch 2000). The justifications include claims that commercialization would expand microfinance's ability to tap into commercial capital markets, reduce dependence on donor capital and subsidies, and serve to bring market discipline and business efficiency to drive down costs. In a few countries, regulatory considerations also matter. For instance, in many countries institutions need to be shareholder corporations to become regulated financial institutions authorized to mobilize deposits.

Our analysis suggests that there are compelling economic reasons that the sector remains populated with different kinds of lenders, some for-profit and some nonprofit. The analysis also helps to show how microfinance blurs those distinctions, with most institutions lying between the poles of pure charity and pure commerce.

The trajectory of the Bolivian NGO PRODEM provides a sense of the blurring definitions. The story is one in which a nonprofit partly transformed into a for-profit, but one whose key shareholders were nonprofits. Meanwhile, the nonprofit turned to investing in other for-profits. PRODEM was created in 1986, operating as a microlender with donations from local business leaders and ACCION International, a U.S.-based NGO and social investor. The organization expanded rapidly, and five years later had a loan portfolio of $4.5 million. In early 1992, a group of Bolivian investors, including members of PRODEM's leadership, joined social investors ACCION International and the Canadian Calmeadow Foundation to set up a new for-profit shareholder-owned regulated deposit-taking bank named BancoSol. PRODEM, the nonprofit NGO, became the largest shareholder in the new for-profit bank. PRODEM sold approximately half its loan portfolio to BancoSol in exchange for 44% of the new bank's stock. PRODEM continued to operate as an NGO microlender in other markets but, over time, sold its shares in BancoSol and would go on to invest in other private for-profit companies. As of 2010, BancoSol operated more than 100 branches in eight big cities and had disbursed more than $2 billion in more than 1.5 million projects. In 2009, it reported a debt-to-equity ratio of 12 and a return on equity of 34%.

Some have suggested that bringing new commercial investors on board has contributed to mission drift. Average loan sizes at BancoSol have increased over time, to an average loan balance of U.S. $2,700. That is roughly 160% of Bolivia's income per capita, so BancoSol clearly does not lend to the poorest of the poor, or even many of the poor. However, others, including the bank's social investor ACCION, challenge the claim of mission drift, arguing that loan sizes have increased with the growing demands of ACCION's customers. [Information is from BancoSol (**http://www.bancosol.com.bo/en/historia.html**). Financial data are from the MixMarket (**http://www.mixmarket.org/mfi/bancosol/compare?print=1**). The Web sites were accessed in January 2011.]

Questions of mission drift became especially heated after the public offering of Mexico's Compartamos, another ACCION affiliate (Cull et al. 2009). As one microfinance expert stated at the time (Rosenberg 2007), the question is: Do these transformations alter the microlender's governance in ways that make it "harder for the company to balance social and commercial objectives, especially when there are choices to be made about whether money goes into shareholders' pockets or clients' pockets?" Outside commercial shareholders who buy at high stock valuations are expecting high future profits. Will this mean higher interest rates charged to poor borrowers? (Compartamos has in fact reduced their fees.) Will the organization put profits ahead of the welfare of clients?

These issues lead to questions about the push for commercialization. Our analysis of leverage and social investment showed that in some contexts, little or no leverage from

commercial capital markets can be achieved, especially when working in the poorest communities. When that is the case, it is less clear that commercialization adds value.

Retaining a nonprofit charter can also be a powerful way to signal commitments to not divert donated resources for personal gain (Bilodeau & Steinberg 2006, Hansmann 1996). As a nonprofit, investors are more readily assured that the microlender's leadership will not simply line its own pockets or take excessive risks. Hansmann (1996) explains the existence of commercial nonprofits, describing the role of philanthropic capital in the historical development of consumer savings, credit, and insurance markets in nineteenth-century United States. He argues that before bank regulations and consumer protection laws, savings, insurance, and credit organizations organized as nonprofits, cooperatives and client-owned mutuals arose to dominate these markets. These corporate forms held a competitive advantage compared to investor-led firms, particularly in attracting savings depositors and insurance policyholders, as the nondistribution constraint limited incentives to take excessive risks or act opportunistically. Later, as regulations and consumer protections emerged, that dominance ebbed.

With savings, the goal was to assure depositors that their funds would be safe. Having a nondistribution constraint helped. The concern might seem less pressing with loans, in which it is the lender that bears the risk. But that traditional view is turned upside down by events such as the Indian microfinance crisis described in Section 2. The case is one in which borrowers claim harassment, overly aggressive loan origination, and collection practices turn debt into a burden rather than a useful tool for households. And, as we saw, it took little time for fingers to point to unbridled profiteering and the entry of outside commercial investors. In this context, remaining a nonprofit, or a firm governed by social investors or clients, might also confer a competitive advantage (as well as a measure of political protection). For reasons stressed by the literature on rational nonprofit entrepreneurship, adopting an ownership form with a binding nondistribution constraint may be the optimal way to attract outside capital donations and signal a commitment to protecting clients' interests and pursuing social investors' objectives (Bilodeau & Steinberg 2006).

Retaining nonprofit status or governance structures where social investors and/or clients are heavily represented can help commit the firm to a social mission in ways that may also help attract socially minded staff members, drawn by the chance to help create social change and willing to work for lower wages—but who may feel less charitable if there is a risk that their labor sacrifice will enlarge the profits of outside investors rather than the income of poor families (Akerlof & Kranton 2010, Besley & Ghatak 2005, Francois 2003, Grout & Yong 2003).

5. REGULATORS AND INVESTORS

The story so far is this: Low-income entrepreneurs have ideas and ambition but often lack access to credit, savings and insurance services to unlock their potential. The microfinance sector aims to solve that financial constraint, but the sector itself suffers from a parallel problem. Those who create microfinance organizations also have ideas and ambition, but usually little capital. Outside investors have been necessary because prudential regulations restrict most microfinance organizations from accepting deposits. (And in an unregulated setting, commercial nonprofits would likely emerge for reasons stated above, creating demand for social investors capital anyway.) Social investors have

been especially important for their willingness to absorb risks and accept submarket financial returns, allowing microfinance to move into new markets and raise additional capital.

Social investors make a particular difference for institutions serving the poorest customers. There, the institutions face the highest per-unit costs, must be most diligent about monitoring customers, tend to charge the highest interest rates, and achieve the least leverage of their assets. Social investors, often channeling funds through structured financial vehicles, in effect supplement the institution's assets by providing capital, oversight, and guarantees to other investors. In doing so, social investors have allowed institutions to grow at a moderate pace.

Contrast this with Elisabeth Rhyne's (2010) analysis of the late 2010 microfinance crisis in India:

> The blame for this unfortunate situation falls most squarely on the [microlenders] that failed to restrain aggressive growth even as the market became increasingly saturated. Investors must also swallow a big spoonful of blame. Because they paid dearly for shares in the [microlenders], they need fast growth to make their investments pay off.

Rhyne (2010) contrasts the Indian context with that in Latin America:

> In many countries, leading microfinance organizations like Mibanco [in Peru] and Bancosol (Bolivia) were commercialized with a mix of owners including the original non-governmental organization (NGO), international social investors (including development banks), and some local shareholders. The NGOs kept the focus on the mission, while the international social investors contributed a commercial orientation, also tempered by social mission. In Indian microfinance, NGOs are prohibited from becoming shareholders. Instead, authorities accepted a romantic notion that client ownership would create grassroots accountability, but this actually created a governance void. SKS, for example, established a client trust that gave clients a monetary stake in the company but left the voting rights to the founder/managers. At the same time, foreign investment rules have made it hard for international social investors to participate in ownership and governance. The results: founder domination, a pattern that affects each of the big three [microlenders] in the state of Andhra Pradesh and leads to a lack of checks on decisions by managers, and the entrance of pure commercial players like Sequoia Capital India with their over-emphasis on fast growth.

The corporate finance perspective shows the inadequacy of the response of Indian regulators to the microfinance crisis of late 2010. If, as Rhyne suggests, the main problem was with commercial imperatives overriding careful expansion, the recommendations of Indian regulators [as articulated by the Malegam Committee, charged by the Reserve Bank of India to report on the microfinance sector (M-CRIL 2011)] miss the mark. The recommendations favor large incumbents over smaller, locally responsive institutions and favor direct regulation of contract terms over private governance solutions (Dewatripont & Tirole 1994). The regulators' response (capping interest rates charged to borrowers and requiring high levels of capital to launch a microfinance institution) risks undermining the institutions most focused on the poorest.

Microfinance was designed to give low-income families new opportunities. That goal still remains worthy. Achieving it requires understanding the real needs of poor families—and understanding the incentives and opportunities of the financial institutions that serve them.

DISCLOSURE STATEMENT

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