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**MICROFINANCE AND THE MECHANICS OF SOLIDARITY LENDING:
Improving Access to Credit through Innovations in Contract Structure**

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ABSTRACT

One of the most intractable economic problems for poor countries has been the high price or outright unavailability of credit in rural communities. One of the few concepts that have succeeded in expanding the availability of credit has been “microfinance,” a practice that involves the provision of small loans (generally of a few hundred dollars or so) to borrowers without conventional collateral. The success of microlending has been especially striking because its benefits have accrued primarily to groups ignored by traditional development assistance — the poorest segments of poor countries’ populations, and to women in particular.

This paper explains how a large part of microfinance institutions’ success can be traced to their practice of bundling loans together through a system known as “solidarity lending.” Under this system, would-be borrowers form groups (usually of between three and six), within which each member agrees to guarantee the loans of the others in the group. If any one individual member defaults on his or her loan, the other members of the group are required to cover the shortfall. This paper reviews insights of the informational economics literature that explain the link between information asymmetries and credit market failure, and then shows why solidarity lending dramatically decreases the costs of information, particularly where institutional infrastructure is weak and borrowers’ projects are small. Microfinance has revolutionized the way in which credit is provided to the rural poor; this paper explains why it has succeeded.

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One of the most intractable economic problems for poor countries has been the high price or outright unavailability of credit in rural communities. Primarily because of weak institutional infrastructure in rural areas, formal sector banks, including both private and government institutions, have faced seemingly insuperable information asymmetries and consequently have experienced persistently high costs and default rates. Screening potential borrowers, monitoring borrower behavior after loans are granted, and enforcing credit agreements are all extraordinarily costly where documented credit histories do not exist, businesses are very small, and legal systems are undeveloped, unreliable, or inaccessible. To these difficulties, formal sector lenders have often responded by engaging in “credit rationing,” leaving a large number of would-be borrowers without access to institutional credit. Although local moneylenders have sometimes been willing to fill the gap left by formal sector banks, rates charged in the informal sector are extremely high, sometimes monopolistically so. Consequently, very poor rural communities are typically left either without credit at all, or with credit available only at exorbitant interest rates.

One of the few concepts that have succeeded in expanding the availability of credit in poor, rural communities has been “microfinance,” a practice that involves the provision of small loans (generally of a few hundred dollars or so) to borrowers without conventional collateral. The term of the loans is short (usually less than two years), and the microfinance institution (MFI) normally requires that the loan proceeds be used for investment in productive capital —

for example, in agriculture, trading, crafts, or processing industries — rather than consumption.¹

Interest rates are usually somewhat higher than those charged by formal sector banks, but are substantially lower than those charged by local moneylenders.

Microfinance appears to have defied the conventional wisdom about rural credit markets.² Although most MFIs are financed, at least initially, through grants or low-interest loans from aid organizations or donor governments, very many have achieved operational self-sufficiency (consistently positive cashflow), and a significant number have achieved financial self-sufficiency (consistently positive cashflow, adjusting for subsidies received and write-offs for non-recoverable loans).³ PRIDE Africa (PRIDE), which has extended more than 60,000 loans of between \$50 and \$1000 in East Africa, reports repayment rates of 99% in Tanzania and 100% in Uganda.⁴ The Kenya Rural Enterprise Program (KREP), which had lent to over 12,000 borrowers by the end of 1996, consistently reports repayment rates of higher than 95%.⁵ ACCION International (based in Cambridge, Massachusetts, but operating in Latin America) reports similar

¹ Some MFIs have experimented successfully with consumption loans. See DAVID BORNSTEIN, *THE PRICE OF A DREAM: THE STORY OF THE GRAMEEN BANK* 154 (1996). Though consumption loans of course do not yield income directly, consumption loans that allow the borrower to afford housing and minimal nutrition may be critical to maintaining the borrower's "income base." See Manfred Zeller, *Determinants of Credit Rationing: A Study of Informal Lenders and Formal Credit Groups in Madagascar*, 22 *WORLD DEV.* 1895, 1898 (1994). In addition, credit may be the most cost-efficient means of intertemporal consumption smoothing. *Id.* The Grameen Bank has recently found that the line between consumption loans and production loans is sometimes difficult to pin down. See *From Christopher Thomas in Bangladesh*, *THE TIMES*, April 11, 1998 (describing Grameen's new practice of lending money for the purchase of cellular phones. Borrowers use the phones as productive assets, charging others for air time).

² Microfinance is hailed as a success by both sides of the political spectrum. See *Trickle-up Economics*, *JOURNAL OF COMMERCE*, Feb. 6, 1997, at 6A.

³ See *Highlights*, *MICROBANKING BULLETIN* (Economics Institute, Boulder, CO), July, 1998, at 18. Of 72 MFIs included in the MicroBanking Bulletin's survey, 34 were found to be financially self-sufficient. See *id.* Criticism of MFIs has often focused on their reliance on outside funds for support. See, e.g., Lawrence Solomon, *Micro-Credit's Dark Underside; problems of Bangladesh's Grameen Bank*, *WORLD PRESS REVIEW*, August, 1998. *But see* John Auteurs, *Micro-lenders to world's poor look to Wall Street for capital*, *FINANCIAL TIMES*, June 27, 1998, at 3 (noting that the credit quality of Grameen's loan portfolio is "considerably stronger than that of U.S. credit cards").

⁴ PRIDE Africa: Facts and Figures (last modified Sept, 1998) <<http://www.africaonline.co.ke/prideafrica/page3.html>>.

⁵ Stephanie Charitoneko, *Case Studies in Microfinance: Kenya Rural Enterprise Program* (last modified August,

figures.⁶ The Union Regional de Apoyo Campesino (operating in Mexico), which requires that borrowers maintain a savings account balance equal to at least 20% of their outstanding loan, reports repayment rates of 95%.⁷ The Grameen Bank in Bangladesh, which has extended more than \$750 million dollars in loans over the past two years, reports repayment rates of 97% and has not only expanded into mortgages but has now financed over a quarter of a million homes, each costing approximately 12,000 takas (\$300) and based on a flood-resistant design (a critical innovation in cyclone-prone Bangladesh) that won the Aga Khan Award for Architecture in 1989.⁸ The United Nations Development Programme estimates the worldwide market for loans of between \$50 and \$1000 at more than 500 million households, and estimates that thus far less than five percent of this demand has been satisfied.⁹

The success of microlending has been especially striking because its benefits have accrued primarily to groups ignored by traditional development assistance — the poorest segments of poor countries' populations, and to women in particular.¹⁰ In more than 20 countries, female literacy rates are below 25%, in more than 50 countries females attend school less than half as long

1998) <<http://www-esd.worldbank.org/html/esd/agr/sbp/98abst/krep.htm>>.

⁶ 1997 Statistics: ACCION International Network (visited Jan. 30, 1999) <<http://www.accion.org/about/impact.asp>>.

⁷ See SUSAN JOHNSON AND BEN ROGALY, MICROFINANCE AND POVERTY REDUCTION 87-88 (Oxfam 1997).

⁸ See BORNSTEIN, *supra* note 1, at 154-55 (1996).

⁹ See UNITED NATIONS DEVELOPMENT PROGRAMME, UNDP 1996/1997 ANNUAL REPORT: ENDING POVERTY AND BUILDING PEACE THROUGH SUSTAINABLE HUMAN DEVELOPMENT 7 (1997). Not all comment on microfinance has been so laudatory. See, e.g., *U.N. credit plan would aid world's poor; Small loans to finance entrepreneurial activity called unrealistic by others*, THE DALLAS MORNING NEWS, January 26, 1997, at 15A (noting some commentators' criticisms that funding for microfinance may reduce funding for critical social programs); Simon Kuper, *A leap in the dark with microloans: Small-scale credit could help half the world's poor*, Financial Times, January 31, 1997, at 4 (noting criticism that "microfinance 'hype' could divert funds from less fashionable anti-poverty causes, such as famine relief").

¹⁰ See Jane S. Jaquette, *Women in Power: From tokenism to critical mass; increased political participation of women*, FOREIGN POL'Y, Sept. 22, 1997, at 23 (situating the Grameen Bank in a larger movement to increase women's participation in economic and political processes); Robin Wright, *Women as Fire Engines out of Poverty*, LOS ANGELES TIMES, May 27, 1997, at A1 (same); Ashraf Abdullah, *PM: Overcome Women's Poverty*, NEW STRAITS TIMES (Malaysia), Oct. 14, 1997, at 1 (noting the Malaysian Prime Minister's praise for microfinance's

as do males, and in 35 countries the average duration of schooling for females is less than one year.¹¹ In Africa, women account for more than 60% of the rural labor force but receive less than 10% of the credit provided to farmers.¹² Yet 69% of PRIDE's borrowers are women,¹³ and 46% of KREP's borrowers are women.¹⁴ On average, 64% of MFIs' clients are women.¹⁵

Many different explanations have been advanced for MFIs' startling success. One theory is that successful MFIs have relied heavily on "peer pressure" and pre-existing social norms, relying on culture, religion, and "social collateral" to provide the incentives that would conventionally be provided by physical collateral.¹⁶ Another theory that has been advanced is that MFIs' insistence on a "credit-conducive culture" (through, for example, the required attendance at weekly meetings and the required contributions to savings and insurance accounts) is responsible for MFIs' success.¹⁷ Still another theory is that the mainstream banking sector simply miscalculated the economics of microlending, overestimating the associated transaction costs and underestimating the productive capacity of poor people.¹⁸ One legal scholar points to three factors in explaining the success of the Grameen Bank in particular: that it specifically targets the very poor; that it is suitable for use by the very poor, who are often uneducated and illiterate; and

success in helping to alleviate poverty of women in rural areas).

¹¹ See SARAH J. TISCH & MICHAEL B. WALLACE, *DILEMMAS OF DEVELOPMENT ASSISTANCE: THE WHAT, WHY, AND WHO OF FOREIGN AID* 29 (1994).

¹² See *MICRO-FACTS: Data Snapshot on Microfinance* <<http://www.soc.titech.ac.jp/icm/data/d-snapshot.html>>.

¹³ See *PRIDE Africa: Facts and Figures* (last modified Sept., 1998) <<http://www.africaonline.co.ke/prideafrica/page3.html>>.

¹⁴ Stephanie Charitoneko, *Case Studies in Microfinance: Kenya Rural Enterprise Program* (last modified August, 1998) <<http://www-esd.worldbank.org/html/esd/agr/sbp/98abst/krep.htm>>.

¹⁵ *Statistical Appendix*, MICROBANKING BULLETIN, *supra* note 3, at 28.

¹⁶ See JOHNSON & ROGALY, *supra* note 7, at 7; *PRIDE Africa: The PRIDE Story* (last modified Sept., 1998) <<http://www.africaonline.co.ke/prideafrica/page2.html>>.

¹⁷ See Pankaj S. Jain, *Managing Credit for the Rural Poor: Lessons from the Grameen Bank*, 24 *WORLD DEV.* 79, 80 (1996).

¹⁸ *Pride Africa: The PRIDE Story* (last modified Sept., 1998) <<http://www.africaonline.co.ke/prideafrica/page2.html>>.

that the Grameen Bank's rigid rules prevent the organization from being coopted by local elite.¹⁹

There is likely merit in each of these explanations.

This paper focuses, however, on one of the most innovative practices introduced by MFIs: namely, the practice of bundling loans together through "solidarity lending." Under this system, would-be borrowers form groups (usually of between three and six), within which each member agrees to guarantee the loans of the others in the group. If any one individual member defaults on his or her loan, the other members of the group are required to cover the shortfall. Although not all MFIs operate on the basis of solidarity lending,²⁰ a large number — including the Grameen Bank in Bangladesh, which is one of the largest and most successful MFIs — use this system. This paper explains why the practice of solidarity lending is likely to have been substantially responsible for MFIs success in rural credit markets that have historically been avoided by commercial banks and perhaps exploited by local money lenders. Although other of MFIs' policies have certainly also contributed to MFIs' results, this paper attempts to show that solidarity lending alone can explain a large part of the success that MFIs have experienced in increasing the rural poor's access to affordable credit.

I. The Economics of Rural Credit Markets in Poor Countries

Rural credit markets in poor countries are different from credit markets in developed countries not only because of the relative poverty of the borrowers, but also because of the rela-

¹⁹ See Philip M. Nichols, *Swapping Debt for Development: A Theoretical Application of SWAPS to the Creation of Microenterprise Lending Institutions in Sub-Saharan Africa*, 27 N.Y.U. J. Int'l L. & Pol. 43, 74–78 (1994).

²⁰ In Indonesia, for example, government-sponsored MFIs have successfully relied on character references and local lending agents instead of solidarity lending. See JOHNSON & ROGALY, *supra* note 7, at 7-8.

tive poverty in institutional infrastructure. Property rights are ill-defined, credit histories are undocumented, and legal systems are unreliable and costly. Complementary markets, such as those for insurance, are likely to be undeveloped or non-existent. The interlinked network of labor, capital, and credit markets is likely to be a web of market failures, with idiosyncrasies in one market causing imperfections in others. The nature of poor, rural credit markets leads to market fragmentation, with formal sector banks serving one narrow segment of the population, and informal moneylenders serving another narrow segment. The two markets, one for formal credit and one for informal, are different in almost every significant aspect. Many borrowers fall between the cracks, unable to obtain credit at all from formal lenders, and able to obtain credit only at exorbitant rates from informal lenders.

A. Formal Sector Lenders

Formal sector banks are often hesitant or unwilling to lend to the rural poor. The poor are in general seen as unreliable borrowers, because a subsistence life and the unavailability of insurance means that there is no margin for natural calamity, illness, or mistake. Further, in many cases, commercial interest rates are set by the government and therefore commercial credit must be explicitly rationed; in these cases, commercial banks may win political patronage by lending to larger borrowers.²¹ Most importantly, the institutional procedures of commercial banks are simply incompatible with the realities of rural credit markets.

²¹ See K.P. PADMANABHAN, RURAL CREDIT: LESSONS FOR RURAL BANKERS AND POLICY MAKERS 23 (1988); PARTHA DASGUPTA, AN INQUIRY INTO WELL-BEING AND DESTITUTION 242 (1993).

A commercial bank screens loan applicants formally: The applicant fills out one or several questionnaires, each of which asks questions about the prospective borrower as well as the proposed project, and then participates in one or several interviews in which a credit officer of the bank asks follow-up questions and endeavors to verify the information provided by the applicant. Because of the large number of loans issued and administered by commercial banks, the process is necessarily highly standardized. The commercial bank does not have “inside” information about its borrowers — loan officers are unlikely to know the prospective borrower beforehand, and each borrower is therefore faceless, known to the bank only by the information gathered during the screening process. Where credit histories are documented and available, the standardized process works relatively well. Where credit histories are undocumented, however, the standardized process leaves much up to the forthrightness of the applicant. To a large extent, the borrower can choose which information to disclose and, as a result, even after the formal screening process there is often a substantial gap between borrowers’ knowledge and lenders’ knowledge.

Some information about a project’s quality is of course easy to come by. General information about the rural area’s geography, climate, demography, and economy is always relevant to an assessment of project quality, and this kind of knowledge comes with even the most superficial familiarity with a rural area. More precise information may be available for free or for a nominal cost from government sources. More specific information about project quality is somewhat more difficult to come by, and is therefore more costly. If a prospective borrower proposes using loan proceeds to purchase perishable goods for resale, information on who might buy the goods, how much they would pay, when they would pay, whether there is a suitable building in which the goods could be stored, and what the storage would cost, this information might be more costly. The prospective lender might need to ask around, or even go to the borrower’s village.

Information about the prospective borrower himself is probably even more difficult to obtain. A lender likes to know whether the applicant has repaid his debts in the past, and whether he has a reputation for being reliable more generally. A lender likes to know whether the prospective borrower can be trusted with the money, whether the borrower owes money to anyone else, and perhaps even whether the borrower is in good health. This kind of information is likely to be very costly. Though one might know this kind of information about a small circle of friends and family, a formal sector lender is not likely to know this kind of information about the particular loan applicant before him. In order to obtain this information, therefore, the lender must usually question other people who know the borrower. Even then, the loyalties of the people questioned are often to the prospective borrower, and the lender cannot always rely on information he has obtained from individuals who know the borrower well. Obtaining reliable, accurate information about the quality of the borrower himself is therefore extremely costly, often requiring (at least for formal sector lenders, whose offices tend to be in distant, urban areas) long journeys to far-away villages and multiple interviews with sources of dubious reliability.

In developed credit markets, collateral can often compensate for some of the gap in information between lender and borrower, providing a way to both increase the borrower's stake in the success of the project and reduce losses to the bank in the event of a default.²² Consider first a \$90 unsecured loan that the borrower must repay in full, together with \$10 interest, at the end of one year. After the loan has been issued, the borrower may be faced with a choice between (A) a course of action that has a 100% probability of a \$100 gross project yield (before repayment of the loan); and (B) a course of action that has a 50% probability of a \$60 project yield and

²² See STEFANIA COSCI, CREDIT RATIONING AND ASYMMETRIC INFORMATION 25 (1993).

a 50% probability of a \$120 project yield. To the borrower (who must of course pay the first \$100 of any project yield to the lender), the expected value of (A) is zero [$100\% \times \max(0, \$100 - \$100)$], and the expected value of (B) is \$10 [$50\% \times \max(0, \$60 - \$100) + 50\% \times \max(0, \$120 - \$100)$]. The borrower will therefore choose (B) — even though the expected value of the gross project yield is greater under (A). If the same loan were secured with collateral worth \$30, the borrower's expected value of (A) would again be zero [$100\% \times \max(-\$30, \$100 - \$100)$], but the expected value of (B) would be -\$5 [$50\% \times \max(-\$30, \$60 - \$100) + 50\% \times \max(-\$30, \$120 - \$100)$]. In this case, the borrower would choose (A), consistent with the lender's interests.

Unfortunately, in poor, rural credit markets, collateral is scarce. Most would-be borrowers have very little capital, and even the capital that they have is not easily secured, because property rights are not always well-defined or formalized, and legal recourse is typically unreliable and costly.²³ Moreover, increasing collateral requirements can, in contexts of information asymmetry between borrower and lender, have exactly the wrong effect. For example, if smaller projects have a higher probability of failure (not an unrealistic assumption, given that many rural projects have high fixed costs), and all potential borrowers have the same amount of equity (approximately the case in many rural areas), then increasing collateral requirements will necessarily mean financing smaller, and so less profitable, projects.²⁴

²³ One indigenously-generated solution to the unreliability of formal legal recourse is the “usufruct loan,” in which the lender occupies and uses the borrower's land during the term of the loan. “As the saying goes,” note Hoff and Stiglitz, “possession is nine tenths of the law.” Karla Hoff & Joseph E. Stiglitz, *Introduction: Imperfect Information and Rural Credit Markets — Puzzles and Policy Perspectives*, 4 WORLD BANK ECON. REV. 235, 243 (1990).

²⁴ See Joseph Stiglitz & Andrew Weiss, *Credit Rationing in Markets with Imperfect Information*, 71 AM. ECON. REV. 393, 394 (1981); COSCI, *supra* note 22, at 39–44. Increasing collateral requirements may also reduce the bank's profitability by increasing the average risk aversion of the pool of prospective borrowers. See Stiglitz & Weiss, *supra* at 394.

The rural poor are often as hesitant to borrow from formal sector banks as those banks are to lend to the poor, principally because there is a wide cultural gap that often makes commercial banks seem inaccessible to rural poor.²⁵ Commercial banks are formal and bureaucratic, and used to a relatively technical financial vocabulary. Moreover, commercial banks are often geographically inaccessible, located in urban centers far away. One study of a bank in India found that a loan application required the applicant to complete eight or more documents, each requiring costly official notarization.²⁶ The average application required between 10 and 12 visits to bank, which were as many as 55 kilometers away.²⁷ The process generally took between 6 and 16 months.²⁸ In addition to official costs, many applicants incurred costs for bribes to middlemen.²⁹ A similar study in Bolivia found borrowers' transaction costs (including time costs) to be more than thirty times higher in the formal sector than in the informal sector.³⁰

Although these other factors contribute to the scarcity of formal sector credit, institutional poverty and resultant information asymmetries between lenders and borrowers are certainly the central obstacle to more widely available institutional credit. Information asymmetries between lender and borrower can lead not only to high default rates, but also to “credit rationing” — the denial of loans to would-be borrowers who are observationally indistinguishable from successful loan applicants.³¹ The high cost of obtaining information about loan applicants prevents formal sector lenders from assessing definitively the quality of proposed projects and allows potential borrowers to misrepresent their projects to prospective lenders. Because of this information gap,

²⁵ See PADMANABHAN, *supra* note 21, at 23.

²⁶ See *id.* at 49.

²⁷ See *id.*

²⁸ See *id.*

²⁹ See *id.*

³⁰ See *id.* at 94.

a bank may use its interest rate as a screening mechanism — a means of sorting good applications from bad. The underlying theory is that, after a certain point, higher interest rates lead to “adverse selection” in the pool of prospective borrowers: as interest rates increase beyond a certain point, prospective borrowers are willing to pay higher rates not because they think that their projects will be extraordinarily successful, but rather because they think the probability of their having to repay the loan is small.

The concept is best illustrated by example. Consider two borrowers, A and B, both of whom would like to borrow \$100, repayable at the end of the year. Borrower A has a “good” project, with a 100% chance of yielding \$120 (before repayment of the loan). Borrower B has a “bad” project, with a 10% chance of yielding \$150 (again, before repayment of the loan) but a 90% chance of yielding zero. A is willing to pay an interest rate of (say) 19%; he expects his project to yield enough to cover the principal, the interest, and still leave a residual of \$1. B, on the other hand, may be willing to pay a 49% interest rate. Though it is unlikely his project will be successful (indeed, its gross expected value is only \$15), B cares only about the outcomes in which the project yields more than the loan amount, because if the project yields less than that amount the loss falls entirely on the lender’s shoulders (assuming the loan is unsecured), not his own. B is therefore willing to pay a 49% interest rate, which will leave him a residual of \$1 if his project succeeds. The good borrower is willing to pay only a relatively low interest rate, but he is certain to be able to repay. The bad borrower is willing to promise a relatively high interest rate, but he is almost certain to default. The critical point here is that a commercial bank is likely to be unable to distinguish, *ex ante*, between the two very different projects. The bank does

³¹ See Stiglitz & Weiss, *supra* note 24, at 393; COSCI, *supra* note 22, at 39–44.

know, however, that raising the interest rate will, at a certain point, become counterproductive: On one hand, raising the interest rate increases the return from successful projects. On the other hand, raising the interest rates makes any prospective project less likely to be successful, because the pool of observationally indistinguishable projects from which the bank chooses becomes increasingly comprised of bad projects. As the bank increases the interest rate, the second effect will at some point begin to outweigh the first, and the bank's portfolio will become less profitable. The bank therefore caps its interest rate at some level below the market-clearing level. In other words, the bank will engage in "credit rationing" — it will not raise interest rates even though some of those denied loans would be willing to pay more than the prevailing rate.³²

The effect of credit rationing is thus a gap in the market for credit: prospective borrowers are willing to pay more for credit than is demanded by formal sector lenders, but formal sector lenders are nonetheless unwilling to extend them credit.

B. Informal Sector Lenders

The credit gap left by formal sector lenders is partially filled by local moneylenders. Local moneylenders do not face adverse selection problems to the same extent as commercial banks, because generally local moneylenders have much more information about the quality of proposed projects. In many cases, the local moneylender lives in the same village as the prospective borrower, has known the borrower and his or her family for many years, has an intimate

³² Traditional economic theory acknowledged the possibility of credit rationing, but saw the phenomenon as a temporary disequilibrium. See Stiglitz & Weiss, *supra* note 24, at 393. Under neoclassical assumptions, the price (here the interest rate) should adjust so that supply equals demand and the market clears. Even in a monopolistic market, we would not normally expect there to be a disconnect between supply and demand; we would expect de-

knowledge of the borrower's financial situation and astuteness, and can easily and relatively inexpensively monitor the borrower's actions after the loan is granted.³³ Moreover, the local moneylender may have access to enforcement mechanisms (social, cultural, or religious) to which the commercial banks do not have access. Access to what is known as "social collateral" may in part explain moneylenders' propensity not to demand physical collateral — one study of credit markets in Madagascar found that 36% of formal sector loans required collateral, whereas the informal sector lenders rarely demanded it.³⁴ Some studies have suggested that the moneylender also benefits from his ability to "tie" credit contracts to contracts in labor and land.³⁵

Though local moneylenders perhaps do not face severe informational problems, interest rates charged by local moneylenders are notoriously high. In India in the early 1980s, for example, the average nominal interest rate in the formal sector was 10%; in the informal sector it was 22%.³⁶ One study of credit markets in Bolivia found the nominal interest rate in the formal sector to be 13%; in the informal sector it was 48%.³⁷ The high rates may be the result of several factors. First, local moneylenders cannot achieve the same economies of scale as can commercial banks.³⁸ The local moneylender's advantage comes primarily from his intimate knowledge of a relatively small number of households in a relatively small geographic area. Screening in

mand to simply contract in order to reflect the higher price charged by the monopolist.

³³ See DASGUPTA, *supra* note 21, at 243; SAGRARIO L. FLORO & PAN A. YOTOPOULOS, INFORMAL CREDIT MARKETS AND THE NEW INSTITUTIONAL ECONOMICS: THE CASE OF PHILIPPINE AGRICULTURE 44-49 (1991); Gareth Austin & Kaoru Sugihara, Local Suppliers of Credit in the Third World, 1750 – 1960, *Introduction*, in LOCAL SUPPLIERS OF CREDIT IN THE THIRD WORLD 1, 14 – 15 (Gareth Austin & Kaoru Sugihara, eds., 1993).

³⁴ See Zeller, *supra* note 1, at 1898.

³⁵ For a brief survey of this literature, see Avishay Braverman and J. Luis Guasch, *Rural Credit Markets and Institutions in Developing Countries: Lessons for Policy Analysis from Practice and Modern Theory*, 14 WORLD DEV. 1257 (1986).

³⁶ See DASGUPTA, *supra* note 21, at 242.

³⁷ See PADMANABHAN, *supra* note 21, at 94; see also Hoff & Stiglitz, *supra* note 23, at 235 ("Interest rates charged by moneylenders may exceed 75 percent per year, and in some periods credit is unavailable at any price").

³⁸ See DASGUPTA, *supra* note 21, at 225 ("The cost of acquiring information about people and their circumstances

this market is centered not around the particular project loan or associated collateral, but around a pre-existing personal relationship between the lender and borrower. The two parties to the loan contract have usually had some previous dealings in other markets (the sale of crops, or the purchase of farm inputs); the lender is usually well-acquainted with the borrower's family, friends, and reputation; and large loans are not usually granted to borrowers who do not have a good credit history with the lender.³⁹ As a result, there are severe diseconomies to scale (since the lender can hope to know only a small number of villagers well enough to lend to), and because the lender's screening process depends so heavily on his personal relationships in the village, informal credit markets therefore tend to be geographically fragmented.⁴⁰

Second, the moneylender's costs may be very high. This may be true not only with regard to screening,⁴¹ but also with regard to enforcement. The costs of invoking the legal system are likely to far outweigh the benefits of repayment to the moneylender, and in any case the informality of agreements between poor, rural borrowers and local moneylenders makes formal legal enforcement difficult. Although high costs in themselves provide an explanation for the high price of informal credit, interest rates may be further inflated because high fixed costs of entering the market (investment of time and money in personal relationships) can lead to monopoly con-

in even neighboring villages, let alone distant ones, can be huge").

³⁹ See Irfan Aleem, *Imperfect Information, Screening, and the Costs of Informal Lending: A Study of a Rural Credit Market in Pakistan*, 4 WORLD BANK ECON. REV. 329, 335 (1990). The screening process usually involves the lender's assessment of the prospective borrower through non-credit transactions over a number of seasons, asking for references or personal sureties, asking questions of other people from the lender's village, and visiting the applicant's farm or business. See *id.* at 334. Aleem's study found that moneylenders rejected up to 90% of loan applications. See *id.* at 335.

⁴⁰ That the capital built up between moneylender and borrower in the screening process is "relationship-specific," see Hoff & Stiglitz, *supra* note 23, at 244, is perhaps one reason that moneylenders may be able to benefit from monopoly pricing, see Aleem, *supra* note 39, at 347.

⁴¹ One study of local moneylenders in Pakistan estimated the screening costs alone to approximate 6.5% of the total loan amounts. See Aleem, *supra* note 39, at 339.

ditions.⁴² At least one study has found evidence of monopoly pricing in informal credit markets.⁴³

Finally, the high interest rates demanded by the moneylender may reflect that the inevitable riskiness of his portfolio. Because all of the moneylender's loans are concentrated in a small geographic area, defaults are likely to be highly correlated.⁴⁴ Where most of the moneylender's clients are engaged in agricultural activities, one borrower's default (often caused by climactic conditions) usually means that other borrowers will default as well. Even where the moneylender's clients are engaged in many different, non-agricultural activities, geographical proximity usually entails some degree of interdependence, and defaults are very likely to occur all at once. The moneylender's high rates might be partly explained, therefore, by the need to compensate for the high risk of the portfolio.

II. Microfinance's Answer to the Problems of Rural Credit Markets

A. Historical Context

Whatever the roots of the credit problem, the unavailability of formal sector credit and the high cost of informal sector credit has been seen for the past fifty years as the major constraint on the productivity of the rural poor, preventing them from purchasing farm equipment, craftsman's

⁴² See *supra* note 40.

⁴³ See *id.* Whatever the reasons for the high interest rates charged by local moneylenders, it may be somewhat misleading to look only to the interest rate in assessing the total cost of borrowing. See FLORO & YOTOPOULOS, *supra* note 33, at 80. The fact that rural poor continue to prefer informal credit to formal credit may indicate that the difference in transaction costs between the informal and formal sectors may outweigh the difference in interest rates.

⁴⁴ See Joseph E. Stiglitz, *Peer Monitoring and Credit Markets*, 3 WORLD BANK ECON. REV. 351, 351 (1990);

tools, draft animals, and other critical, immediately productive capital goods.⁴⁵ Making inexpensive credit available to the rural poor has been understood to be the key to breaking a “vicious circle of low capital, low productivity, low savings, and consequent low capital.”⁴⁶ In the 1950s, aid organizations began to fund rural credit programs, primarily through large loans to poor countries’ central banks and, through agricultural banks, credit began to trickle down into rural communities. These agricultural banks, however, were for the most part written off as failures by the 1960s, both because much of the funding extended to the agricultural banks had failed to reach the rural poor and because those funds that did reach the poor were not recovered.⁴⁷ There was a growing acknowledgment of the complexities of the problem — the interrelationships between credit markets and markets for land, insurance, and capital goods; the differing roles of institutional credit and informal credit; and the link between unavailability of institutional credit and poverty in institutional infrastructure.⁴⁸ In spite of the growing understanding of the roots of the problem, however, practically no inroads had been made by the early 1970s. In 1973, Robert McNamara wrote: “For the smallholder operating with virtually no capital, access to credit is crucial. No matter how knowledgeable or well motivated he may be, without such credit he cannot buy improved seed, apply the necessary fertilizer and pesticide, rent equipment, or develop his water resources. Small farmers generally spend less than 20 percent of what is required on such inputs because they simply do not have the resources.”⁴⁹

DASGUPTA, *supra* note 21, at 250.

⁴⁵ See Avishay Braverman & J. Luis Guasch, *Rural Credit Markets and Institutions in Developing Countries: Lessons for Policy Analysis from Practice and Modern Theory*, 14 *WORLD DEV.* 1253, at 1254.

⁴⁶ See PADMANABHAN, *supra* note 21, at 10.

⁴⁷ See *id.* at 11.

⁴⁸ See *id.* at 11-15.

⁴⁹ Robert S. McNamara, *Address to the Board of Governors of the World Bank Group, IBRD* (Washington DC, September 1973) (quoted in PADMANABHAN, *supra* note 21, at 18).

One of the most common policy responses to the unavailability of formal credit to rural poor was subsidized credit.⁵⁰ By the late 1980s, however, government-dictated interest rate ceilings had mainly been written off as failures.⁵¹ Ceilings had created disincentives for savings (by reducing the returns on deposits) and had distorted the real price of credit, encouraging the financing of many projects of dubious quality. To the extent that subsidies had helped expand access to credit, they had ended up helping larger borrowers disproportionately, first because the size of the subsidy was of course proportional to the size of the loan, and second because ceilings necessitated credit rationing that, because of practical reasons (such as the availability of collateral) and political patronage, disproportionately disadvantaged poorer borrowers. Moreover, in spite of the low interest rates, default rates were extremely high, both because screening mechanisms were inadequate and because lending institutions were plagued by corruption.⁵²

Rural communities in poor countries have themselves dealt with insufficient availability of credit in several ways. One of the most common creations is a “rotating savings and credit association” (ROSCA) in which members deposit a fixed sum each month.⁵³ Each month, the aggregate savings are allocated by lottery to one member, whose name is then withdrawn from future lotteries. This solution avoids the inefficient situation in which each individual or household saves individually, over a long period of time, for a capital good that the collective could purchase immediately. Very poor communities, however, have a much larger appetite for credit than

⁵⁰ See JOHNSON & ROGALY, *supra* note 7, at 5.

⁵¹ See Braverman & Guasch, *supra* note 51, at 1254–55; Jain, *supra* note 17, at 88; Hoff & Stiglitz, *supra* note 23, at 236.

⁵² See Braverman & Guasch, *supra* note 51, at 1256 (noting that default rates ranged, “with a few exceptions, from 40% to 95% for credit programs in Africa, the Middle East, and Latin America”).

⁵³ See DASGUPTA, *supra* note 21, at 148-49; Hoff & Stiglitz, *supra* note 23, at 243.

is satiable endogenously and, in spite of innovations like ROSCAs, credit remains one of the most significant constraints on the productivity of the rural poor.

B. The Mechanics of Microfinance

The Grameen Bank was founded in the 1970s, and is one of the best-known and most successful MFIs in operation.⁵⁴ Based in Dhaka, it now has more than a thousand branch offices and well over two million borrowers. It has lent more than \$700mm in the past two years, and each month it extends loans of more than \$30 million.⁵⁵ The bank works in the following way: individuals from the same geographic area (covering an area of 15 to 22 villages) form groups of five. Each member must be willing to vouch for the creditworthiness of the other members, and as a result the groups tend to be made up of individuals who know one another well — though Grameen does not permit group members to be relations. Membership in the group is limited to those with assets worth less than half an acre of land. Each member is required to save one taka (approximately five cents) per week (a requirement that remains in place throughout the member's association with the bank). Each member is also required to purchase a share in the bank for 100 takas. Loans are made to two members at a time and must be repaid in equal installments over 50 weeks. Only if the first two members have met their payment obligations over a six week period do the next two members become eligible for loans. The group chairperson, elected by the five members of the group, is the last to become eligible for a loan. If any individual member defaults, the remaining group members are responsible for the shortfall. Loan

⁵⁴ This outline of the Grameen Bank model is drawn from the Grameen Bank's web site, *Grameen Bank* <www.grameen.com/bank/cds.html>, and from JOHNSON & ROGALY, *supra* note 7, at 7.

proceeds are used to purchase, for example, mechanics' tools, cows (whose milk will be sold), rice (which will be husked and then sold), or cloth (which will be made into clothing and then sold). The interest rate on all loans is 16%.

Most MFIs are much smaller than the Grameen Bank.⁵⁶ Many of these smaller MFIs, however, are based on the Grameen model. PRIDE Africa, which has a portfolio of less than \$10 million, is one example:⁵⁷ A PRIDE credit officer hosts a community meeting at which "enterprise groups" of five individuals each select a chairman and secretary. When there are ten Enterprise Groups, the ten form a "Market Enterprise Committee." The chairmen and secretaries of the Enterprise Groups form the executive committee, which liaises with PRIDE's credit officer. As in the Grameen Bank, members are required to deposit a weekly sum (here \$2) into a savings account (somewhat misleadingly called a "Loan Insurance Fund"). Two members of an Enterprise Group become eligible for the initial loan (usually \$100) after eight weeks, two more members after four additional weeks, and the last member (the Chairman) after a total of sixteen weeks. The term of the initial loan is 25 weeks. If the group satisfactorily pays off its initial loans, its members become eligible for increasingly large loans, with increasingly long terms. The largest amount that one can borrow from PRIDE is \$1000.

Another MFI that has followed the Grameen model is the Kenya Rural Enterprise Program (KREP), which initiated a group lending program (the "Juhudi" program) in 1989 and by 1995

⁵⁵ See BORNSTEIN, *supra* note 1, at 19.

⁵⁶ One survey found the average loan portfolio of 72 MFIs worldwide to be approximately \$3.1 million. *Highlights*, MICROBANKING BULLETIN, *supra* note 3, at 17. An MFI has on average 9 branch offices and 72 staff. *See id.* at 26. Bank Rakyat Indonesia's Desa system is credited as being "the world's largest system of fully sustainable microfinance," having almost a billion dollars in outstanding loans at the end of 1997. Marguerite S. Robinson, *Sugianto: 1939-1998*, MICROBANKING BULLETIN, *supra* note 3, at 13.

⁵⁷ This outline of the PRIDE model is drawn from PRIDE's web site, *PRIDE Africa* <<http://www.africaonline.co.ke/prideafrica>>, and from an interview with Mr. Elias Ntambe, Regional Coördinator, PRIDE Tanzania, in Dar es Salaam (Jan. 7, 1998).

had an outstanding loan portfolio of about \$5 million.⁵⁸ Prospective borrowers form groups (“watanos”) of five to seven members. Four to seven watanos together comprise a “kiwa,” analogous to PRIDE’s Market Enterprise Group. In any watano, one member becomes eligible for a loan after four weeks of satisfactory fulfillment of savings and attendance requirements. Thereafter, two more members become eligible after each of four, eight, and (if necessary) twelve weeks. Borrowers who satisfactorily repay one loan become eligible for a larger loan, as long as the borrower has accumulated savings amounting to at least 20% of the loan value. The first loan is of approximately \$180, and the subsequent loans are \$450 (for the second loan) and \$1800 (for the third). Each borrower guarantees the loans of the other members in his watano, and each kiwa guarantees the loans of its constituent watanos. Loans carry an interest rate of 35% (barely exceeding the inflation rate in 1994 but, because of a sharp decline in the inflation rate in 1995, amounting to a 28% real interest rate in 1996).⁵⁹ Loans have a term of 12 months (for the first loan) or 18 to 24 months (for subsequent loans).

Some MFIs that have not used Grameen’s solidarity lending model have been very successful. These MFIs have often relied on peer pressure (without formal guarantees between members of borrowing groups) or individual “social collateral” in order to create incentives for repayment.⁶⁰ However, the Grameen model has been extraordinarily successful, and consequently often imitated. There are MFIs based on the Grameen model in over a hundred countries around the world, and more than one hundred microcredit programs in the United States alone

⁵⁸ This outline of the KREP model is drawn from the World Bank’s web site, *Kenya Rural Enterprise Program* <<http://www-esd.worldbank.org/html/esd/agr/sbp/98abst/krep.htm>>.

⁵⁹ In 1995, these rates were about 8% higher than those charged by the commercial banks. *See id.*

⁶⁰ *See Grameen Bank Credit Delivery System* (last modified Jan. 1, 1999) <<http://www.grameen.com/mcredit/cmodel.html>>.

(primarily in inner city areas) are modeled on the Grameen Bank.⁶¹ Though some early analyses of the Grameen Bank suggested that the model would not succeed in other cultures or under different leadership, the success of Grameen replications in all areas of the world suggests that it is the solidarity lending model itself — and not local culture, religion, or leadership — to which the Grameen Bank’s success should be attributed.

Solidarity lending serves more than one positive function for MFIs. One function of the group structure is to create financial incentives for borrowers to monitor one another. A borrower who may otherwise have defaulted on his loan may be induced to pay by pressure from his co-members, who would be held responsible for any shortfall.⁶² Another function of the group structure is to harness social, cultural, religious, and moral norms that may not be as well (or at all) harnessed by conventional, individual loan structures. Independent of any direct pressures imposed by co-members, a borrower who might otherwise have defaulted on his loan might feel a particular (social, cultural, religious, or moral) obligation to repay if defaulting means that his co-members will have to pay. Still another function of the group structure is that it provides a mechanism by which MFIs can disseminate health and other information that is of particular

⁶¹ See BORNSTEIN, *supra* note 1, at 334; see also *American Survey: Community Development Finance — Banking On the Poor*, THE ECONOMIST, June 27, 1998, at 28 (describing the explosion of community development financial institutions (CDFIs) in the United States); Editorial, *Microcredit for Seattle’s Low-Income Businesses*, THE SEATTLE TIMES, October 3, 1996 (lauding an initiative of the Washington Community Alliance for Self-Help to bring micro-credit to capital-constrained small businesses in Seattle); Editorial, *Micro-loans in Massachusetts*, THE BOSTON GLOBE, Feb. 11, 1997, at A14 (encouraging the state legislature to extend funding to an MFI program in Massachusetts).

⁶² See JOHNSON & ROGALY, *supra* note 7, at 39. One study has suggested that, in the Grameen Bank at least, the threat that group members will be held accountable for the defaults of their co-members is mere rhetoric, and not enforced in practice. See Jain, *supra* note 24, at 79. One possible explanation for the undiminished credibility of the threat is that defaults are so rare that borrowers seldom come into contact with individuals who can vouch for the toothlessness of the threat. In any case, one official from PRIDE, an MFI modeled on Grameen, assures me that his organization routinely holds groups accountable for members’ defaults. Interview with Mr. Elias Ntambe, Regional Coördinator, PRIDE Tanzania, in Dar es Salaam (Jan. 7, 1998).

relevance to the very poor.⁶³ The Grameen Bank, for example, has distributed to its borrowers information on immunization and family planning. As a result of the latter, Grameen Bank borrowers are 50% more likely to use birth control than are non-borrowers.⁶⁴ Perhaps the most important function of the solidarity lending model, however, is its providing a mechanism for efficiently screening of prospective borrowers. As discussed above, the screening processes employed by the formal banking sector are not well-suited to the conditions that prevail in poor, rural areas, and banks are consequently unable to adequately distinguish between good and bad projects. Though the methods employed by informal moneylenders are more reliable, they are also very costly, and there are severe diseconomies of scale. Solidarity lending, by contrast, provides a screening method that is reliable, inexpensive, and that suffers no diseconomies of scale.⁶⁵

The solidarity lending model bears some similarity to a conventional third-party guarantee.⁶⁶ Although a third-party guarantee often offers other benefits (such as shifting risk to a party more interested in bearing it), one benefit is often that the lender can focus its screening efforts on the guarantor rather than the borrower. Depending on, among other things, the legal strength of the guarantee and the financial strength of the guarantor, the lender may still have to engage in some screening of the borrower; however, the lender can to a large extent rely on the guarantor,

⁶³ See *Role of Microcredit in the Eradication of Poverty: Report of the Secretary General 5* (United Nations, 1998) [hereinafter *Report of the Secretary General*], at 6-7. Many MFIs use their institutional infrastructure to supply not only credit but also information about health issues, legal rights, and (especially important in Bangladesh, where floods are frequently severe) weather conditions.

⁶⁴ See BORNSTEIN, *supra* note 1, at 106.

⁶⁵ Theoretically, there should be a group size that optimizes the benefits of the solidarity lending model. On one hand, the group should not be so small that the peer monitoring aspect of the model can't do its work. The MFI wants to ensure that, when some subset of the group has projects that are failing, the remaining subset is large enough to be able to, for example, issue credible sanction threats. On the other hand, the group should not be so large that borrowers do not know one another well enough to effectively screen for group membership.

⁶⁶ Moneylenders often use personal sureties, or third-party guarantees, as collateral substitutes. See Zeller, *supra*

because it is the guarantor who will be most directly injured if the borrower defaults. The shift of the screening task to the guarantor is of particular benefit if the guarantor has special access to information about the project or the borrower. In this case, the guarantor will charge less for the guarantee than the lender would have had to pay to obtain the necessary information. The guarantee may therefore make certain projects worthwhile that may otherwise have been prohibitively costly.⁶⁷

As in the third-party guarantor model, the screening function in the solidarity lending model is shifted from lenders to guarantors, who in the latter model are other borrowers. These other borrowers have a clear advantage over the lender (the MFI) in access to relevant information. Members of the group likely come from the same village, have known one another all their lives, and are intimately familiar with one another's financial situation.⁶⁸ They are also likely to be familiar with the particular idiosyncrasies of the local economy, and so well-informed about the prospects for the borrower's project. Moreover, unlike the moneylender, individual group members need to screen only a handful of other individuals. As a result, solidarity lending groups are not confronted with the steeply upward-sloped marginal cost curve faced by the moneylender. Indeed, their costs are minimal: most of the information is theirs already, and any information that they need to know but don't know already is easily accessed through pre-existing social relations.⁶⁹

note 1, at 1895.

⁶⁷ Similar benefits may accrue after the loan is granted, because certain covenants may be difficult for the lender to monitor, but relatively easy for the guarantor to enforce.

⁶⁸ PRIDE allows group members to be engaged in different businesses, but requires them to be from the same general geographic location (all members must live within 5 kilometers of the branch office) and to know each other "very well" (a requirement that is monitored during the initial period in which no group member is eligible for a loan). Interview with Mr. Elias Ntambe, Regional Coördinator, PRIDE Tanzania, in Dar es Salaam (Jan. 7, 1998).

⁶⁹ An empirical study of a credit market in Costa Rica confirmed that borrowers in solidarity lending structures were less likely to be delinquent or to default than those in conventional individual loan arrangements. See Mark D.

The solidarity lending model also bears some similarities to joint and several liability. With joint and several liability, if the borrowers default the lender can seek the full amount due (or any smaller amount) from any combination of one or more group members. Each member of the borrowing group therefore has an incentive to screen and monitor his co-borrowers, because other borrowing group members' failures to pay will end up being his responsibility. As in the third-party guarantee model, the lender can depend to some extent on the borrowing group to monitor itself. And, again, this is particularly beneficial where the members of the borrowing group are likely to have better access to information about their co-borrowers than is the lender. Unlike with joint and several liability, however, each member of a solidarity lending group gets a discrete loan, over which he or she has exclusive control. The relationship between members of a borrowing group under joint and several liability is often complicated, but generally speaking no one member has exclusive control over the loan proceeds.

Solidarity lending provides an incentive for someone besides the lender to minimize losses when the project is failing. In a conventional loan agreement, a borrower whose project is failing may have insufficient or skewed incentives, because marginal returns accrue solely to the lender. Consider a borrower who has a \$100 outstanding loan (including interest) due at the end of the year. Assume that the borrower's project is failing, promising a gross project yield (before loan repayment) of only \$70. If the borrower is presented with an opportunity to increase the project yield by \$20 at a personal cost of \$5 (perhaps improving the project's yield requires a significant investment of time), the borrower will decline the opportunity, because the entire benefit of the increased yield would accrue to the lender whereas the entire cost would be borne by the bor-

Wenner, *Group Credit: A Means to Improve Information Transfer and Loan Repayment Performance*, 32 J. OF DEV'T STUD. 263, 278 (1995).

rower. By contrast, if the borrower expected the project to be profitable (promising a gross project yield of, say, \$150), the borrower would have accepted the opportunity to improve the project's yield because, although he would still incur a \$5 cost, the \$20 benefit would accrue entirely to the borrower.

The disconnect between borrower's interests and lender's interests is especially severe where the loan is completely unsecured. Where the loan is secured, the borrower has an incentive to minimize losses as long as there is a prospect that the project will ultimately yield a sum in excess of the difference between the total amount due the lender (including interest) and the value of the collateral. By contrast, where the loan is completely unsecured, the borrower's return is zero whenever the project fails to recover the entire loan amount. If the borrower in the two above examples had committed collateral of \$40, he would have made the \$5 investment in either case — whether he expected his project to yield \$70 or \$150. In either case, the entire value of the improvement would accrue to him (in the case of the failing project, the improvement would simply decrease his net losses by \$20, or \$15 after deducting the cost of the time investment). Even with collateral, however, there remains an inevitable disconnect between the interests of the borrower and the interests of the lender — assuming that the project is less than 100% secured.⁷⁰ This residual moral hazard disconnect is significantly mitigated in the solidarity

⁷⁰ A more general model is easily constructed. Let L be the principal and interest due on the loan at the end of the period ($L > 0$), C be the value of the collateral ($0 \leq C \leq L$), and X be the gross expected value of the project (before loan repayment) assuming that the borrower undertakes no further time or monetary investment during the term of the loan. Let I be the cost of a proposed improvement in the project ($I \leq 0$) and Y be the expected value of the project (gross of the loan repayment and the cost of the investment) assuming that the proposed improvement is made. Then the borrower's undertaking the improvement is socially efficient if $Y > X + I$. Let X' be the net expected value of the project to the borrower (after repayment of the loan) assuming the improvement is not made, and Y' be the net expected value of the project to the borrower (after repayment of the loan and cost of investment) if the improvement is made. To the borrower, the expected value of the project without the improvement (X') is $\max(-C, X-L)$. The expected value of the project to the borrower with the improvement (Y') is $\max(-C-I, Y-L-I)$. The borrower will undertake the improvement only if Y' exceeds X' ; that is, only if $\max(-C-I, Y-L-I) > \max(-C, X-L)$.

lending model because, though the individual borrower has little or no incentive to minimize losses on his own project,⁷¹ the other members of the group have an incentive to pressure the individual in question to minimize losses, as long as the profits from their own projects are expected to exceed the losses from their co-members' projects.

The tradeoff is that a borrower whose project is succeeding may not have complete incentives to increase the return of her project, if losses on other group members' projects are expected to outweigh any possible returns on her own project. Consider again the microfinance borrower who promised to repay \$100 at the end of the year and who expected her project to yield \$150 even if she were to make no further investment in its success. With a traditional loan structure, this borrower would jump at the chance to increase the yield on her project by \$20 for a personal investment of only \$5. In a solidarity lending arrangement, however, the borrower's willingness to invest in project improvements will depend entirely on the condition of her co-members' projects. If the other borrowers' projects are failing — say they are expected to yield \$70 less than the amount of the loans outstanding on those projects — the borrower may not invest \$5 for the \$20 improvement, because with or without the improvement, the borrower's net

L). Because C and I are both positive ex hypothesi, this means that that the borrower will undertake the improvement only if (1) $Y > X + I$ and (2) $Y > L + I + C$. The former is of course the efficiency condition; the latter parameter creates an inefficient constraint. (Thus the efficiency condition is a necessary but not sufficient condition for the borrower's undertaking the investment). The result is best illustrated graphically:

[see appendix for graph]

(1) and (2) intersect at $X = C + L$. Above both (1) and (2), the borrowers incentives are efficient. When Y is above (1) but below (2), the borrower will not invest, even though it would be socially efficient for him to do so.

⁷¹ The prospect of future loans could provide some incentive for minimizing losses. Where the lender makes the availability (or magnitude) of future loans contingent on past performance, it may be in the borrower's interest to minimize losses even if doing so will cost her money in the short run. The borrower who refused to make the \$5 investment for a \$20 investment that would accrue entirely to the lender might decide differently if she thought that the \$5 investment would increase the chances of her securing loans in the future, or increase the size of the loans that she would be able to secure in the future. The graduated system employed by PRIDE and by Grameen (under which the borrower can graduate to larger, longer-term loans in the future) exploits this incentive.

return will be zero; the borrower's profits on her own projects will be spent paying for the other members' losses.⁷²

There are other reasons that the solidarity lending model does not allow the lender to dispense with screening altogether. Perhaps most importantly, a borrower can be trusted to screen the other members of her borrowing group for capacity and willingness to repay only if the borrower expects to repay her own loan. To the extent that she expects not to repay her own loan, she will not care whether or not her group members' projects are successful.⁷³ Second, although borrowers often have exceptional access to relevant information about project quality, borrowers are often unqualified to analyze the information adequately. A lender with expertise but without information may sometimes be a better assessor of project quality than a borrower with information but without expertise.

Another weakness of the solidarity lending model is its transfer of risk from the lender to the borrowing group. In the solidarity lending model, each borrower is forced to assume part of the risk associated with the projects of other borrowers in the group. This risk would be better borne by the lender. First, the borrowers are not diversified, whereas the lender is likely to have a broad portfolio of loans that is diverse in many ways (e.g. geographic location of borrower, na-

⁷² See Zeller, *supra* note 1, at 599. The discussion here is of incentives during the term of the loan. Another study explores a "repayment game" that models the possibility of ex post strategic defaults (i.e. defaults by borrowers whose projects have yielded sufficient funds to repay the lender). See Timothy Besley & Stephen Coate, *Group Lending, Repayment Incentives, and Social Collateral*, 46 J. OF DEV'T ECON. 1 (1995).

⁷³ Of course, a borrower who does not expect to repay her own loan is not likely to be accepted into a group with borrowers who do expect to repay their loans. Borrowers will tend to self-select by quality, with good credits gravitating to other good credits, and bad credits gravitating to other bad credits. See Stiglitz, *supra* note 44, at 354 n. 5 (discussing "assortative mating"); Wenner, *supra* note 69, at 265. Imperfections in screening and monitoring under the solidarity lending model are mitigated to some extent by other aspects of MFIs' institutional structure. For example, the graduated loan system, which requires that a borrower must first repay a relatively small loan before becoming eligible for a larger loans, both limits the initial liability of the MFI and provides an additional incentive (namely, the prospect of more, bigger loans) for borrowers to repay.

ture of project).⁷⁴ Second, poor, rural borrowers often operate on or around the subsistence level. Their capacity to compensate for a failure in one time period with a success in the next, therefore, is minimal.⁷⁵ To many of the rural poor, failure in one period means that there is simply no next period at all. As a result, most borrowers will be extremely risk adverse. Unfortunately, it is the risk transfer that creates the incentive for peer monitoring, which is the critical innovation of the solidarity lending model. In any case, the price in increased risk is, at least under some conditions, a price worth paying.⁷⁶

Conclusions

The solidarity lending model was assembled “on the ground,” so to speak, rather than by legal or economic theorists, created by trial and error rather than by instantiation of abstraction. Nonetheless, the model is a remarkably apt answer to the insights of the “informational economics” literature, which first advanced the connections between institutional poverty and asymmetric information, between asymmetric information and credit rationing in the formal sector, and between credit rationing in the formal sector and the existence of an insular informal sector. By exploiting the differential between lenders’ and borrowers’ access to information, the model has revolutionized the way in which credit is provided to the very poor, and has allowed MFIs to vastly expand the proportion of poor countries’ populations with access to affordable credit.

⁷⁴ For a discussion of risk, diversification, and rural credit markets, see DASGUPTA, *supra* note 21, at 237–238.

⁷⁵ See BORNSTEIN, *supra* note 1, at 139 (“In Bangladesh, approximately 80 percent of the population falls below the poverty line of 2,122 calories per day, and about half fall below the extreme poverty line of 1,805 calories. (The daily caloric intake in the United States is approximately 3,700 calories . . .”).

⁷⁶ See Stiglitz, *supra* note 44, at 360.

The externalities of MFIs' success have perhaps been even more significant than the direct effects. The denial of credit has often meant the denial of access to the economic system altogether; MFIs' success has therefore meant not only increased income and wealth for the poorest of the poor, but also has meant access to insurance markets, commodities markets, physical capital markets, and even basic derivative markets. Increased economic participation has led in turn to increased political participation, perhaps because those with an economic stake — however small — in society are that much more likely to take an interest in (and have the luxury of influencing) the course of political events.⁷⁷

Although it may be true that microlending has little potential to make a direct, substantial impact on aggregate economic indicators,⁷⁸ this fact is perhaps more a testament to the limits of such aggregate indicators than a strike against microlending. The human effect of increasing a poor Tanzanian tradesman's yearly income by \$20 (Tanzania's *average* GNP per capita is approximately \$600) is surely self-evident, notwithstanding the negligible effect on aggregate indicators.⁷⁹ A better measure of MFIs' success might be the change, over time, of the lowest quin-

⁷⁷ A 1997 resolution of the United Nations' General Assembly recognized that "in many countries microcredit programs have proved to be an effective tool in freeing people from poverty and have helped to increase their participation in the economic and political processes of society." *Report of the Secretary General, supra* note 63, at 2. See also Skip Kaltenheuser, *Fitting Microcredit Into a Macro Picture*, THE CHRISTIAN SCIENCE MONITOR, Feb. 5, 1997, at 19 (quoting a Citibank official's comment: "By creating jobs at the margin, microcredit is an economic stabilization program."); Linda Feldmann et. al, *Around the World, Women Find Very Different Roads to Wider Rights*, THE CHRISTIAN SCIENCE MONITOR, July 22, 1998, at 1 (noting the link between increased economic power and increased political power).

⁷⁸ See *Report of the Secretary General, supra* note 63 ("[I]t is not clear if the extent to which microbanking has spread, or can potentially spread, can make a dent in global poverty. . . . A certain sense of proportion regarding microcredit would seem to be in order."). But see Craig Turner, *U.N. Report Slams Loan Plans for Poor*; LOS ANGELES TIMES, Sept. 2, 1998, at A4 (discussing critical reaction to the Secretary General's report).

⁷⁹ Cf. BORNSTEIN, *supra* note 1, at 242 ("People talk about per-capita electricity consumption as an index of development. . . . But the bottom 50 percent don't even consume any electricity. . . . If you want an index of development, I would take per-capita sets of clothing or food intake for the bottom 50 percent. If a person has one piece of clothing [and] you let her acquire another piece of clothing to change into, I'd say that is a tremendous development. If one who can afford one meal a day moves to two meals a day, that is development of the highest order.") (quoting Muhammad Yunus, the founder of the Grameen Bank).

tile's real income, or of the income of MFIs' borrowers. Through such lenses, MFIs have had extraordinary results: The income of Grameen Bank borrowers increased by one-third over the control population of Bangladeshi poor, and by 15% over non-borrowers residing in the same village.⁸⁰ More than forty percent of Grameen borrowers are able to satisfy their daily caloric requirements, compared to only 27% of poor non-members.⁸¹ One study found that 58% of Grameen borrowers had crossed over the extreme poverty line since becoming Grameen members, compared to 18% of non-borrowers.⁸²

Although this paper has focused on MFIs' use of solidarity lending models, the model might profitably be used in many other contexts. Whenever prospective borrowers are likely to have more information (or less costly access to information) about other would-be borrowers than are lenders, the solidarity lending model offers a mechanism by which the screening task can be shifted to the least cost avoider. The model might be adapted to insurance contexts, where insured may have better access to information about one another than has the lender. The model might also be adapted to regulatory contexts, where the regulator is less able to monitor the actions of the entities in its province than the regulated entities are able to monitor one another. (This adaptation might not be straightforward: amongst other things, the regulator would have to institute some kind of incentive system under which the regulated entities were penalized by the transgressions of other members of the regulated group). As yet, no theorist has advanced a generalized model of solidarity lending; a model adaptable to more diverse contexts is still one step further away.

⁸⁰ See Nichols, *supra* note 19, at 71.

⁸¹ See *id.*

⁸² See BORNSTEIN, *supra* note 1, at 299.

Appendix

[graph for footnote 70]

