Spanning the Chasm: Uniting Theory and Empirics in Microfinance Research*

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1 Introduction

Microfinance continues to play an ever increasing role in approaches to poverty alleviation around the world. Yet despite the attention paid to microfinance, the design of credit contracts for small uncollateralized loans remains a bit of a mystery. From its inception, microfinance generated a great deal of interest from economic theorists. Influential papers from Besley and Coate (1995), Stiglitz (1990) and Varian (1990),[1] to name just a few, sought to explain the economic foundations of this novel lending mechanism. Yet empirical research testing these theories was for a long time la rgely absent. Recently, the area has seen a surge of empirical work, chiefly in the form of randomized field experiments.[2] This work has tended to focus on evaluating programs in their operational form — testing the broad impact

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[1]See Ghatak and Guinnane (1999) for a review of the theoretical literature.

[2]See, for example, Karlan & Giné (2009) and Banerjee *et al.* (2009).

of a particular microfinance institution or the effect of a specific program design feature — and has remained, by and large, distinct from the existing body of theory.

While the need to have a closer interaction between theory and empirical work seems self-evident, in the context of microfinance, the two strands of research have developed relatively independently. This paper argues that with the development and increasing use of randomized experiments in development research, we now have a unique opportunity to bridge the gap between these two strands of research, we need to use existing theories to make sense of the experimental evidence, and in turn, to use experimental evidence to refine existing theories and suggest new ones. This discussion is essential to what we believe is the next step in the research agenda: using theory (existing or new) explicitly to design future experiments and using the results from these experiments to refine and extend our theoretical understanding.

Much of the early theoretical work on microfinance focused on joint liability — a small group of borrowers being held jointly liable for one another's repayments — as the key to high loan recovery rates. But while joint liability remains a feature in the majority of microfinance loan contracts, it is no longer the sole focus. Several factors have contributed to this change. A number of large micro-lenders have expanded into or converted their portfolios to individual liability loans, although the evidence on the effects of these changes remains inconclusive. There has also been a growing recognition of the potential costs of joint liability (Banerjee, Besley and Guinnane, 1994; Besley and Coate, 1995; Fischer 2009). At the same time, other features of microfinance contracts such as frequent repayment, sequential lending and dynamic incentives have risen to the fore. In this paper, we review some of the recent theoretical developments in the field focusing on these alternative features and discuss their potential interactions.

Next we turn to some of the recent empirical advances in the field. The sheer volume of empirical work necessitates that this review is incomplete and idiosyncratic, but our summary highlights a common theme. Through the creativity of empirical researchers and the willingness of microfinance practitioners to experiment and innovate, we have begun to develop a set of stylized facts that move beyond our theoretical underpinnings. Recent work on repayment frequency (Field and Pande, 2008; Fischer and Ghatak, 2009) and joint versus individual liability lending (Karlan and Giné, 2008) serve as illustrations. We also discuss issues such as group formation where important, long-standing theories still call for empirical support.

This brings us to the issue of how to bridge the chasm between theoretical and empirical research in microfinance. We argue that largely disjointed theoretical and empirical research in the area of microfinance has pushed our understanding to a level where the next great steps require unifying these two strands and the input of practitioners. What is true throughout economics is accentuated by the pace of innovation in microfinance. We need to use theory to make sense of the experimental evidence and generalize results beyond their immediate context. In turn, we need to subject our theories to empirical testing and refine them where warranted. This discussion is essential to what we believe is the next step in the research agenda: using existing or new theory explicitly to design future experiments and as the *ex ante* framework for more empirical work. We focus on the case of repayment frequency as representative of the many areas where this approach may yield great rewards.

A more effective dialogue between theoretical and field researchers can do more than just extend the frontier of academic knowledge. It can also facilitate translating research into action. Not unlike any other field in economics, this calls for a three-way interaction between theoretical researchers, empirical researchers and practitioners. Untested theories, however insightful, are unlikely to be considered by microfinance institutions and donors, let alone influence their operations. Similarly, field experiments conducted without sound theoretical foundations have little to say about the underlying mechanisms through which a policy or program operates. Without such foundations, experiments can be limited to informing about only a particular policy in a particular location, and out-of-sample predictions can be little more than guesswork. Unifying theory and field experiment can help practitioners make sense of and utilize academic results to contribute to poverty reduction and other institutional aims.

As with most economic activity (e.g., starting a business), microfinance is a practitioner-led activity. And while a practitioner might not have a specific theoretical model or a regression result in mind when trying something new, he or she still has some implicit view of how the world works. That view can be described as a theory, however incompletely specified it might be, in the sense of having a set of causal relationships among various objects, actions and phenomena. The experience that the practitioner will have in implementing his or her ideas might not constitute formal empirical research, but it will generate facts that are of use to other practitioners. Academic research can find the common threads between these experiences and then try to develop a framework on which other practitioners can build. Of course,

new research discoveries and experiences at the field level make this a process of continuous evolution and development.

The experience of Muhammad Yunus (Yunus, 2003) is a good case in point. He expressed frustration that what he saw during his trips to rural areas of Bangladesh to understand the causes of poverty was very different from what textbooks at the time suggested. In the accepted theory of the time, markets cleared and no one was unemployed or credit-constrained in equilibrium. His own experience and that of other practitioners, suggested that this was far from true. For example, people who were willing to start a small business were not able to get a loan because formal lenders did not find them creditworthy and informal lenders charged extortionate rates. According to textbook economics, this could not happen since the forces of arbitrage and competition would equalize interest rates, which would only reflect, in equilibrium, the scarcity of capital for the economy as a whole. Yunus stepped outside the conventional mode of thinking and his innovations with respect to lending to the poor eventually revolutionized how we think about credit markets in relation to the poor. At the same time, Joseph Stiglitz, George Akerlof and many other academic economists were also frustrated with the standard model of the credit market and were developing tools that would eventually lead to rewriting the textbooks. They emphasized asymmetric information and transactions costs and showed that the poor might be credit-constrained even if they have good projects due to these problems. Classroom discussions of development economics now start off by talking about credit-constraints and unemployment and policies that can mitigate them.

The plan of the paper is as follows. In Section 2, we review the current state of theoretical literature in the field, capturing some of the exciting developments over the last decade. We conclude this section with a discussion of potential interactions among the various mechanisms of microfinance lending contracts. In Section 3, we review some of the recent empirical advances in the field. In Section 4, in keeping with the title of this essay, we discuss our views on how to span the chasm. In Section 5, we offer some concluding observations.

2 Theory

The first wave of theoretical work on microfinance focused exclusively on joint liability. The term joint liability can be interpreted in several ways, which can be lumped under two categories. First, under explicit

joint liability, when one borrower cannot repay her loan, group members are contractually required to repay in her stead. Such repayments can be enforced through the threat of common punishment, typically the denial of future credit to all members of the defaulting group, or by drawing on a group savings fund that serves as collateral. Second, the perception of joint liability can be implicit. That is, borrowers believe that if a group member defaults, the whole group will become ineligible for future loans even if the lending contract does not specify this punishment. One form in which this can happen is if the microfinance organization itself chooses to fold its operations when faced with delinquency.

Ghatak and Guinnane (1999) review the key mechanisms proposed by various theories through which joint liability could improve repayment rates and the welfare of credit-constrained borrowers. These all have, in common, the idea that joint liability can help alleviate the major problems facing lenders — screening, monitoring, auditing, and enforcement — by utilizing the local information and social capital that exist among borrowers. In particular, joint liability can do better than conventional banks for two reasons. First, members of a close-knit community may have more information about one another (that is, each other's types, actions, and states) than outsiders. Second, a bank has limited scope for financial sanctions against poor people who default on a loan, since, by definition, they are poor. However, their neighbors may be able to impose powerful non-financial sanctions at low cost. An institution that gives poor people the proper incentives to utilize information about their neighbors and to apply non-financial sanctions to delinquent borrowers can do better than a conventional bank.

An exhaustive literature review is beyond the scope of this paper. However, broadly speaking, subsequent theoretical work on microfinance has gone off in four directions. The literature that we will focus on has looked at mechanisms other than joint liability, such as frequent repayment, sequential lending and dynamic incentives (e.g., Jain and Mansuri, 2003; Roy Chowdhury, 2005; Tedeschi, 2006; and Fischer and Ghatak, 2009). Another strand has focused on exploring further contractual issues that arise with respect to joint liability, such as collusion (Laffont, 2003; Rai and Sjöström, 2004) and group composition and matching (Guttman, 2008; Bond and Rai, 2008). Yet another strand has stepped out of the standard partial equilibrium contracting framework where there is a single lender and a group of borrowers and has begun to explore market and general equilibrium issues (Ahlin and Jiang, 2008; McIntosh and Wydick, 2005). The key issues are competition among MFIs and how microfinance affects the overall

development process through wages and mobility. Finally, a set of papers has started exploring incentive issues that arise on the part of the lenders which are typically NGOs (e.g., Aubert, de Janvry and Sadoulet, 2009; Roy and Roy Chowdhury, 2008).

As mentioned, we will focus on the literature concerning contractual mechanisms other than joint liability. For example, microfinance organizations often use high frequency repayments. Borrowers are typically required to repay their loans in regular installments, beginning soon after the loan is given out. This aspect of the repayment schedule is usually explained as inducing 'fiscal discipline' among borrowers. Jain and Mansuri (2003) argue that an alternative rationale for this loan repayment structure lies in the difficulty of monitoring borrowers' actions. The potential for moral hazard leads MFIs to use innovative mechanisms, such as regularly scheduled repayments, which indirectly co-opt the better-informed informal lenders. Conversely, this installment repayment structure allows informal lenders to survive. Further, they show that this linkage can not only expand the volume of informal lending, but may also raise the interest rate in the informal sector.

Fischer and Ghatak (2009) propose an alternative theory based on present-biased, quasi-hyperbolic preferences in order to capture the belief of many microfinance practitioners that clients benefit from the fiscal discipline required by a frequent repayment schedule. Their work is motivated by a pervasive sense among practitioners that frequent repayment is critical to achieving high repayment rates. This belief is captured well in the following observation by Muhammad Yunus:

> "[I]t is hard to take a huge wad of bills out of one's pocket and pay the lender. There is enormous temptation from one's family to use that money to meet immediate consumption needs... Borrowers find this incremental process easier than having to accumulate money to pay a lump sum because their lives are always under strain, always difficult".[3]

The model that captures this is stark in order to highlight one particular effect: if borrowers are present-biased, frequent repayment can increase the maximum loan size for which repayment is incentive-compatible. Intuitively, when borrowers are present-biased, the immediate gain to defaulting on any large repayment is subject to significant temptation. When these payments are spread out, the instantaneous repayment burden at any time is smaller

[3]Yunus (2003: 114).

and thus less subject to temptation. Frequent repayment also means that at the time of the first payment, the rewards (typically access to future credit) are further away from the repayment decision and thus more heavily discounted. On the other hand, so, too, is some of the repayment burden. On balance, frequent repayment relaxes the incentive compatibility constraint for present-biased borrowers. But these benefits do not come without costs. Frequent repayment imposes an opportunity cost of meeting attendance on borrowers and direct costs on the lender. It might also distort the investment incentives of borrowers toward projects that generate consistent, if meager, returns. The optimal frequency balances these costs against the positive incentive effects.

The behavioral factors motivating frequent repayment for loans can also create demand for commitment savings products, ranging from ROSCAs to formal financial products with time or amount targets. For a time, the excitement surrounding microlending seemed to crowd out interest in savings behavior, but interest has flooded back. The policy literature now broadly recognizes the importance of savings outlets for poor households (e.g., Collins *et al.*, 2009; and CGAP, 2002), and academic research has begun to unpack the many constraints households face when attempting to save. A whole body of evidence, both in developing and developed economies, documents savings anomalies that are consistent with the general insights of behavioral economics.[4] In particular, we have seen that individuals with time-inconsistent preferences and even those with conventional preferences who are subject to resource claims by others may value commitment savings products. There is a general sense that such problems are particularly salient for poor individuals; more and more, we see the tools of behavioral economics applied to specific questions concerning microfinance and informal credit markets. Basu (2008), for example, looks directly at the effect of time-inconsistent preferences on the demand for commitment savings products and their welfare implications.

Note that the quasi-hyperbolic utility functions underlying these models can come from a number of different sources, including insecure savings, demands of future consumption from other family members, or a behavioral bias towards current consumption. The theory, following standard practice, embeds them all in the parameter for present bias and represents a further step in understanding the role these collected factors may play in

[4]See Ashraf *et al.* (2006) and Thaler (1990) for a sense of this research.

repayment behavior. One possible course of research would be, first, to test the hypothesis that greater present bias, whatever its root cause, both lowers the maximum incentive-compatible loan size and improves the relative repayment performance of more frequent installments. If data supports this hypothesis, practitioners could use this knowledge to better tailor contractual terms to their customers' needs. A natural extension would be to determine the sources of present bias, as mitigating the welfare consequences of each would call for a different intervention. If insecure savings are inducing quasi-hyperbolic behavior, the optimal response would include strengthening savings mechanisms. Whereas if behavioral biases towards current consumption are inducing these preferences, such measures would have little effect. Instead, policy responses could include commitment devices if individuals were aware of their biases or some combination of commitment devices and financial education if they were not.

An alternative view of frequent repayment focuses on the meetings rather than the act of repaying itself. Rai and Sjöström (2004) argue that frequent meetings serve as a means for the lender to extract information about borrowers' projects. By asking borrowers to report on their partner's and their own projects and punishing borrowers when reports do not match, the lender can determine if a default is strategic or if a borrower genuinely cannot repay. Under joint liability without these repayment meetings, there is no way to know if a borrower has the means to repay. It is this cross-reporting at group meetings that improves efficiency. Disentangling the effects and mechanisms behind alternative repayment structures provides an interesting opportunity for future research.

Turning back to credit mechanisms other than frequent repayment, Roy Chowdhury (2005) and Aniket (2006) highlight another mechanism often used by MFIs: sequential lending. Loans are typically not given to all borrowers simultaneously. For example, in a two-member group, one member gets a loan only after the previous member has paid a number of her installments properly. This creates an additional stake for the member who comes in later to monitor the previous one. Indeed, with simultaneous lending, borrowers will under-monitor. Sequential lending avoids the problem. In his model, Roy Chowdhury (2005) implicitly assumes that there is an escrow account such that part of the first-round borrower's revenue is taken away from her and returned to her only if the second-round borrower repays. This is a form of collateral creation, which, if practically feasible, could indeed overcome one of the key underlying problems that generate credit constraints.

Above, we discussed these alternative instruments in isolation. A potentially fascinating area of research is to look at their interactions. Some might complement each other, and some might crowd out the positive effects of one another. Consider the interaction of joint liability and frequent repayment. One potential cost of joint liability is it might sometimes lead to default by the whole group because one borrower might not be able to pay off the loans of her partners, even though she would be able to pay off her own loan (Besley and Coate, 1995). With frequent repayment and smaller repayment amounts, this constraint would be relaxed.

3 Empirics

For a long time, empirical research in microfinance long lagged behind the early wave of theoretical advances. More recently, the field has attracted a great deal of attention, inspiring randomized control trials, lab experiments and more traditional econometric work. In this section, we look at some of the areas where gaps exist between empirical evidence and our theoretical framework. In certain cases, we see what Banerjee (2005) described as the challenge to theory: observations from the "real world" that do not square with our theoretical models. In others, we see areas where long-standing theories call out for empirical tests and the iterative process of testing and reformulation that is the hallmark of scientific progress.

As discussed in the preceding section, much of the early theoretical work on microfinance focused on joint liability. Yet despite attention from theorists, empirical research lagged behind. A few academic papers exploited observational data from existing borrowing groups to test *how* joint liability worked,[5] but the question, "Does joint liability work?" was answered largely on revelation. Microfinance institutions employing joint liability were lending to poor individuals without collateral, *ipso facto* microfinance must "work". In truth, the performance of joint liability lending contracts had been mixed, and qualitative evidence documents a number of limitations. But until recently, we lacked any hard evidence on the relative performance of joint versus individual liability lending.

Motivated by this knowledge gap, Giné and Karlan (2009) analyze two randomized control trials to evaluate the efficacy of joint liability relatively

[5]Ahlin and Townsend (2007) and Wydick (1999) are exceptional examples.

to individual liability on the monitoring and enforcement of loans. This paper is an interesting and important example of the experimental approach to microfinance. They find that loan repayment behavior did not differ across clients of a large. Philippine bank that were randomly assigned to either joint or individual liability lending contracts. However, as they discuss in their paper, all these borrowers were already borrowing under joint liability when the experiment was carried out. As a result, it is possible that the pool of these borrowers was already safer than average (as implied by, say, Ghatak, 1999). Keeping or removing the instrument of joint liability would not make a difference if peer-screening is the most important mechanism through which joint liability works. As the authors point out, their experiment does suggest that conditional on this selection, the mechanisms of peer monitoring or peer pressure did not differ enough between the contract types to affect repayment rates. However, since this sample is likely to have some selectivity bias, it is possible that their findings understate the extent of peer monitoring and peer pressure (the hypothesis being, the riskier the borrowers, the greater the returns from these mechanisms).

Despite this caveat, the findings of Giné and Karlan suggest an interesting way to try to test directly the effect of one mechanism (joint liability) and try to understand the channels through which it works (or does not work). In other words, it suggests how randomized control trials can be used to explicitly test out theories about specific microfinance mechanisms. The next step could be to design an experiment where the selection effect can be teased out, for example, by directly trying to measure not only variation in social connections under joint versus individual liability, but also variation in information about risk preferences, investment opportunities and other characteristics that are at the heart of our models concerning selection. As an important complement to this step, we could also design an experiment where these characteristics were randomly varied within groups governed by the same financial contracts, thus allowing us to assess causality in both directions. Finally, along the lines of the work of Karlan and Zinman (2008), a direct test of the relative importance of peer selection, peer monitoring and peer pressure would be valuable.

There are a number of ways in which the contribution of Giné and Karlan could be profitably extended. But here we would like to focus on what this tells us about the research process itself. Many of the core theories of microfinance are over a decade old and still await careful empirical testing. The scientific method is built on the iterative process of hypotheses formation and testing. Yet in the area of microfinance, as we have seen, theory and

empirics have largely followed independent paths. We now turn to an area where there is an immediate opportunity for the two to evolve in tandem: repayment frequency.

As the focus of academics and, more importantly, microfinance practitioners themselves has moved away from joint liability, high frequency repayment has attracted well-deserved attention. The typical microfinance client repays her loan in small, frequent installments beginning almost immediately after origination. Most lending contracts require weekly repayment. The intuition captured in Yunus's quote above is appealing and shared by many microfinance practitioners. Yet empirical evidence on the effect of repayment frequency is both limited and mixed. BRAC, one of the largest MFIs with nearly six million clients, abandoned a move to biweekly repayment when an experiment showed increased delinquencies (Armendariz and Morduch, 2004). In Latin America, several MFIs have migrated a portion of their clients to biweekly repayments but have been reluctant to lengthen installments further (Westley, 2004). Satin Credit Care, an urban MFI targeting trading enterprises, saw delinquencies increase from less than 1 percent to nearly 50 percent when it tested a move from daily to weekly repayment.[6] In Bolivia, BancoSol has revised its repayment policy repeatedly in response to fluctuating arrears (Gonzalez–Vega, 1997; Westley, 2004).

Recently, the importance of this issue has attracted experimental and quasi-experimental investigation. In 2000, FINCA Uganda, one of the largest and best-established microfinance institutions in Africa, introduced the "flexibility program", under which borrowing groups in selected areas could elect by a unanimous vote to change from weekly to biweekly repayment. As with many other microfinance institutions, FINCA shared the belief that frequent installments are critical for repayment performance and thus was reluctant to offer less frequent repayment despite the high costs associated with weekly meetings. One naturally worries that FINCA only offered the less frequent repayment option in areas where it felt the risks of increasing delinquency were the lowest, which would induce selection bias in estimates of the change's effects due to endogenous program placement. Using an econometric strategy designed to account for these effects, McIntosh (2008) finds that, relative to borrowing groups choosing to stay with the weekly repayment schedule, those that elected biweekly repayments have higher retention and, surprisingly, slightly better repayment performance. However,

[6]Greg Fischer's interview with H.P. Singh, November 2005.

as he notes, this tests the effects of allowing existing clients to decide from a menu of contract options and not the direct effect of changing repayment terms.

Field and Pande (2008) conduct just such a test by randomly assigning clients of a large Indian microfinance institution to either weekly or monthly repayment schedules. They find no significant effect on delinquencies, with all treatment groups reporting extremely low default and delinquency rates. As their study extends to future and larger borrowings for which the incentive compatibility constraint for repayment is more likely to bind, differences may emerge. But, for now, the evidence is silent.

Nonetheless, microfinance practitioners maintain an almost universal belief that frequent repayment schedules improve repayment rates. It is here that the experience of practitioners and the emerging empirical evidence move beyond theoretical foundations. At first glance, this belief in the importance of frequent repayment is theoretically puzzling. Classically, rational individuals should benefit from more flexible repayment schedules, and less frequent repayment should increase neither default nor delinquency. Insights from behavioral economics and psychology suggest a possible mechanism. Ariely and Wertenbroch (2002) demonstrate that externally imposed deadlines can improve task performance, and many others have described the consequences of procrastination and present bias in a range of settings.[7] Present bias has long been assumed and is now well-documented among microfinance borrowers (Bauer, Chytilová and Morduch, 2008).[8] It can also explain the importance of frequent repayment. Fischer and Ghatak (2009) show that with present-biased borrowers, more frequent repayment can support larger loan sizes. In fact, when interest rates are set competitively, more frequent repayment will relax the repayment incentive compatibility constraints for borrowers with any degree of present bias.

This does not mean that repayment frequency is unimportant for institutions, such as BRAC or ASA, that make small loans. For any given degree of present bias, the incentive compatibility constraints will only bind and repayment frequency will only affect repayment behavior for loans above a certain size. However, for sufficiently present-biased borrowers or loans where the consequences of non-payment are relatively small, this lower

[7]See, for example, Akerlof (1991) or O'Donoghue and Rabin (1999).

[8]More generally, Mullainathan (2005) makes a convincing argument that time-inconsistent preferences may be central to understanding many of the core issues in development economics.

bound can be quite small. Because of the heterogeneity in microfinance borrowers' utility, use of proceeds, outside financial options and susceptibility to default penalties, it is not surprising that we see a range of responses to changes in repayment frequency. Thus far, we do not know why some attempts to reduce the repayment frequency for small loans have succeeded while others have failed. Microfinance institutions currently considering changing their repayment terms are left to consider the range of experimental and observational results and make their own best guess as to what might happen within their borrower pool. One aim of this theory is to underpin future experiments, thereby unpacking the mechanisms through which repayment frequency affects repayment and helping practitioners make informed decisions about their loan terms and experiment optimally.

Questions about repayment frequency are just one area where empirical evidence, intuition and experience about microfinance have extended beyond theoretical support. But there are also many areas where long-standing theories call for testing. Take, for example, the theory of group formation. Even as many microfinance institutions move beyond traditional joint liability lending, they continue to rely on groups for screening, monitoring and repayment activities. The benchmark models conclude that groups match homogenously such that similar risk types are matched together (Ghatak, 1999, 2000; Gangopadhyay *et al.*, 2005), while a competing strand suggests borrowers may match heterogeneously to maximize the potential gain from mutual insurance (Sadoulet, 1999). Ahlin (2009) makes innovative use of data from borrowing groups in Thailand to find support for homogenous matching. The continual and evolving importance of groups suggests that further work along these lines would be fruitful.

4 Spanning the Chasm

In light of the costs and consequences of frequent repayment, research could be productively directed towards understanding how to lower these costs. Some of the advances will be necessarily operational, for example, scheduling and locating meetings to reduce the direct costs to borrowers and credit officers including using innovations in communication technology, such as mobile phones in creative ways. Others may be suggested by theory. For example, if repayment is driven by frequent payments per se rather than the social pressure or information structure of face-to-face meetings, then migration to high frequency electronic payments would reduce costs without

increasing defaults. However, if the key welfare cost of frequent repayments occurs through distorted investment decisions, such a change would have little benefit. Instead, microfinance institutions and their borrowers may be better served by loans with deferred or reduced early amortization schedules, which allow for potentially higher return investments that do not necessarily generate frequent and immediate cash flows.

Much more work is required to understand the solutions to these long-standing issues. Our movement towards these solutions will be more certain if we unite the insights of theory, field research and practitioners. Quantifying the impact of any changes through careful field research is essential if microfinance institutions are to assess the costs and benefits of any policy changes. A clear understanding of the mechanisms, the theory, behind any changes will facilitate translating these findings into action. And the input of practitioners will ensure that the research is grounded in reality and informed by the best thinking of all those interested in finding an answer.

Among theorists, one often hears the complaint that while randomized control trials can offer clean tests of a hypothesis, not a lot of thought goes into choosing the hypotheses to be tested. We reject this criticism. At the same time, we recognize that while the body of field experiments has generated an abundance of intriguing findings, in many cases, one genuinely does not know where to hang these results in our theoretical framework. Duflo (2005) beautifully captures this line of reasoning when she writes, "Field experiments need theory, not only to derive testable implications, but to give general direction to what the interesting questions are". Conversely, one often encounters theory, worked out with detailed extensions and modifications of core insights, but without due attention to the facts generated by empirical research and observation.

Nearly everyone agrees, in fact it is perhaps trite to say, that closer interactions between theory and empirics would benefit the research agenda in microfinance. We would like to take this claim a step further. Yes, much can be learned from careful empirical work or randomized control trials onto which theory is fitted after the fact. So, too, is there much value in stand-alone applied theory that is tested at a later date and by a different researcher. However, we would like to suggest that there is a great opportunity within the microfinance literature to unite theory and empirics from their inception.

Consider an application to the question of repayment frequency. The interesting and important empirical results generated by McIntosh (2008)

and Field and Pande (2008) have immediate policy relevance. They will likely spur other practitioners to experiment with reducing repayment frequency. But the mechanisms behind these results remain unclear. For example, the theory of Fischer and Ghatak (2009) offers several testable predictions. Repayment frequency will matter more for, (a) larger loans as the incentives for default are stronger; (b) for borrowers who are more prone to present bias; and (c) where transactions costs for organizing group meetings are lower. These predictions are testable and falsifiable. And should testing prove them false, we can refine and retest until we arrive at some generalizable understanding of how these mechanisms work.

This follows the established line of scientific inquiry and is not unique to economics or microfinance. What is unique is the situation where some methodological innovations in economics (such as randomized experiments) have made testing theories easier. With secondary (non-randomly generated data) there are always many confounding factors at work that make it hard to make inferences about even broad causal mechanisms, let alone subtle nuances of theory. Also, by their very nature, these experiments can only be carried out in close cooperation and partnership with the practitioners. These two features make the current environment somewhat unique, and, for those of us working in it, very exciting.

5 Conclusions

In this paper we have reviewed some recent theoretical and empirical work on microfinance. Our goal has been not to provide a comprehensive survey of the literature but to highlight the main themes and their inter connections. We have offered our views on how future research can bridge the chasm between theoretical and empirical work and argued that randomized experiments can play a very important role here. There is another chasm that needs to be bridged, and that is between academic research and the work carried out by practitioners. It is important to realize the two-way nature of this interaction. Practitioners are pioneers whose work — both the successes and failures — gives researchers the basic material for thinking about what works and what does not work. Researchers use both theory and empirical work to establish some broad patterns or stylized facts that serve as a benchmark for practitioners when they think of carrying out innovations in the design of these programs, generating new puzzles and questions, and the three-way interaction continues.

References

Ahlin, C (2009). Matching for Credit: Risk and Diversification in Thai Micro-Borrowing Groups.

Ahlin, C and N Jiang (2008). Can Micro-credit Bring Development? *Journal of Development Economics*, 86(1): 1–21.

Ahlin, C and RM Townsend (2007). Using Repayment Data to Test Across Models of Joint Liability Lending. *Economic Journal*, 117(517): F11–F51.

Alexander Tedeschi, G (2006). Here Today, Gone Tomorrow: Can Dynamic Incentives Make Microfinance More Flexible? *Journal of Development Economics*, 80(1): 84–105.

Aniket, K (2006). Sequential Group Lending with Moral Hazard. LSE mimeograph.

Ariely, D and K Wertenbroch (2002). Procrastination, Deadlines, and Performance: Self-control by Precommitment. *Psychological Science*, 13(3): 219–224.

Armendariz de Aghion, B and J Morduch (2005). *The Economics of Microfinance*. Cambridge, MA: MIT Press.

Aubert, C, A de Janvry and E Sadoulet (2008). Designing Credit Agent Incentives to Prevent Mission Drift in Pro-poor Microfinance Institutions. *Journal of Development Economics*.

Banerjee, A (2005). New Development Economics and the Challenge to Theory. *Economic and Political Weekly*.

Banerjee, AV, T Besley and TW Guinnane (1994). Thy Neighbor's Keeper: The Design of a Credit Cooperative with Theory and a Test. *Quarterly Journal of Economics*, 109(2): 491–515.

Basu, K (2008). The Provision of Commitment in Informal Banking Markets: Implications for Takeup and Welfare. University of Chicago mimeograph.

Bauer, M, J Chytilová and J Morduch (2008). Behavioral Foundations of Microcredit: Experimental and Survey Evidence. Institute for Economic Studies mimeograph.

Besley, T and S Coate (1995). Group Lending, Repayment Incentives and Social Collateral. *Journal of Development Economics*, 46(1): 1–18.

Bond, P and AS Rai (2009). Borrower runs. *Journal of Development Economics*, 88(2): 185–191.

Chowdhury, PR (2005). Group-lending: Sequential Financing, lender monitoring and joint liability. *Journal of Development Economics*, 77(2): 415–439.

Collins, D, J Morduch, S Rutherford and O Ruthven (2009). *Portfolios of the Poor: How the World's Poor Live on $2 a Day*. Princeton, NJ: Princeton University Press.

Consultative Group to Assist the Poor (2002). *Microfinance Consensus Guidelines. Developing Deposit Services For The Poor*. Washington DC: CGAP/The World Bank.

Duflo, E (2006). Field Experiments in Development Economics. In *Advances in Economics and Econometrics: Theory and Applications: Ninth World Congress*. Cambridge University Press.

Field, E and R Pande (2008). Repayment Frequency and Default in Microfinance: Evidence from India. *Journal of the European Economic Association*, 6(2–3): 501–509.

Fischer, G (2009). Contract Structure, Risk Sharing and Investment Choice. LSE mimeograph.

Fischer, G and M Ghatak (2009). Repayment Frequency and Lending Contracts with Present-Biased Borrowers. LSE mimeograph.

Gangopadhyay, S, M Ghatak and R Lensink (2005). Joint Liability Lending and the Peer Selection Effect. *Economic Journal*, 115(506): 1005–1015.

Ghatak, M (1999). Group Lending, Local Information and Peer Selection. *Journal of Development Economics*, 60(1): 27–50.

Ghatak, M (2000). Screening by the Company You Keep: Joint Liability Lending and the Peer Selection Effect. *Economic Journal*, 110(465): 601–631.

Ghatak, M and TW Guinnane (1999). The Economics of Lending with Joint Liability: Theory and Practice. *Journal of Development Economics*, 60(1): 195–228.

Giné, X and DS Karlan (2009). Group versus Individual Liability: Long-Term Evidence from Philippine Microcredit Lending Groups. Yale Economics Department Working Paper 61.

Gonzalez–Vega, C, S Navajas and M Schreiner (1995). *A Primer on Bolivian Experiences in Microfinance: An Ohio State Perspective*. Ohio State University.

Guttman, JM (2008). Assortative Matching, Adverse Selection and Group Lending. *Journal of Development Economics*, 87(1): 51–56.

Jain, S and G Mansuri (2003). A Little at a Time: The Use of Regularly Scheduled Repayments in Microfinance Programs. *Journal of Development Economics*, 72(1): 253–279.

Karlan, D and J Zinman (2008). Observing Unobservables: Identifying Information Asymmetries with a Consumer Credit Field Experiment. *Econometrica forthcoming*.

Laffont, J-J (2003). Collusion and Group Lending with Adverse Selection. *Journal of Development Economics*, 70(2): 329–348.

McIntosh, C (2008). Estimating Treatment Effects from Spatial Policy Experiments: An application to Ugandan Microfinance. *The Review of Economics and Statistics*, 90(1): 15–28.

McIntosh, C and B Wydick (2002). Competition and microfinance. University of California, Berkeley mimeograph.

Rai, AS and T Sjöström (2004). Is Grameen Lending Efficient? Repayment Incentives and Insurance in Village Economies. *Review of Economic Studies*, 71(1): 217–234.

Roy Chowdhury, P and J Roy (2008). Public-private Partnerships in Micro-finance: Should NGO Involvement be Restricted? *Journal of Development Economics, forthcoming*.

Sadoulet, L (1999). Equilibrium Risk-Matching in Group Lending. ECARES/Universite Libre de Bruxelles mimeograph.

Stiglitz, JE (1990). Peer Monitoring and Credit Markets. *World Bank Economic Review*, 4(3): 351–366.

Varian, HR (1990). Monitoring Agents with Other Agents. *Journal of Institutional and Theoretical Economics*, 146(1): 153–74.

Westley, GD (2004). *A Tale of Four Village Banking Programs: Best Practices in Latin America*. Washington DC: Inter-American Development Bank.

Wydick, B (1999). Can Social Cohesion Be Harnessed to Repair Market Failures? Evidence from Group Lending in Guatemala. *Economic Journal*, 109(457): 463–475.

Yunus, M and A Jolis (2003). *Banker to the Poor: Micro-lending and the Battle Against World Poverty*. Public Affairs.