Flexibility Matters: Do More Rigid Loan Contracts Reduce Demand for Microfinance?

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September 2010

Abstract: Despite the rapid expansion of microfinance services in the past several decades, the low use of formal credit exhibited by poor households, the high dropout rates experienced by many microfinance institutions, and the prevalence of dual credit markets, even in the most saturated markets, suggest that microcredit may fail to meet the needs of many poor households. This paper examines the importance of repayment rigidity in explaining these three phenomena. While repayment terms are one of many components of a credit contract, they may be of paramount importance for poor borrowers who face high levels of risk and limited means to manage it. Flexible repayment terms are a common feature of the informal loans that dominate poor households' financial lives, and significant evidence suggests they are a valued feature of informal contracts. Examining the importance of flexibility may illuminate the role that microfinance plays in the lives of poor households and improve understanding of how it can be used most effectively as a poverty alleviation tool.

*I am grateful to Miguel Arango for passing on the MIDAS Colombia data, and to Juan Trejo and Ana Cambron of INEGI for help with the ENAMIN data.

Microfinance began approximately 30 years ago with the premise of providing working capital to poor entrepreneurs unable to obtain formal credit elsewhere. With the help of significant enthusiasm and donor support the industry has spread around the world with more than 3,500 microfinance institutions collectively serving almost 150 million clients (Daley-Harris, 2009). The industry continues to grow rapidly, and in Latin America alone it is estimated that the number of institutions has grown from 193 in the year 2000 to 613 institutions in the year 2007. Meanwhile, the number of borrowers has risen from 1.67 million to 7.7 million; an increase of 364% in just 7 years (Daley-Harris, 2009).

Despite this impressive expansion, however, recent surveys reveal several phenomena that raise doubts about the ability of microcredit in its present form to fully meet the needs of many poor households. First, participation rates in microfinance programs remain low. In most countries the estimated numbers of microentrepreneurs who access formal credit are in the single or low double digits (Banerjee and Duflo 2007, Magill and Meyer 2005, Berger 2003). As shown in Table 2, nationally representative surveys of microenterprenuers in Mexico and Ecuador find that only 9.9% and 29.7%, respectively, have ever used formal credit. While this could simply be a supply side story, there is increasing evidence that demand is partially to blame. For example, when asked about demand for a hypothetical, formal loan at prevailing interest rates, 45% of microentrepreneurs in Ecuador expressed no demand, with many citing a fear of becoming indebted as the main reason. Similarly, a study in Indonesia finds that while 40% of surveyed households were deemed creditworthy by a large, microfinance institution, fewer than 10% had formal credit and many expressed little interest in applying (Johnston and Morduch 2008). Some researchers have claimed that the main obstacle to formal credit use may be muted demand rather than limited supply (Magill and Meyer 2005).

Second, dropout rates for many microfinance institutions are high. A surprising number of borrowers stay for one or two loan cycles and then exit the institution, making retention a significant problem (Meyer 2002, Rutherford 2004, 2010). For example, recent reports for sixteen of the largest microfinance institutions in Latin America estimate dropout rates that range from 19% to 54% (the Mix.org)[1]. Curiously, high dropout rates are not matched by high default rates or migration to other lenders, suggesting that many dropouts exit formal credit markets (Urquizo 2006, Pawlak and Jahic 2004). This exit is surprising given the benefits of long term relationships with lenders, such as larger loan amounts, lower interest rates and collateral requirements and longer term lengths (Diamond, Ongena and Smith 2001, Petersen and Rajan 1994, Boderhorn 2003). If borrowers choose to forgo these benefits, it suggests that the formal credit being provided fails to meet their needs.

Third, instead of displacing informal credit from moneylenders, family and friends and suppliers, microfinance loans frequently become complements to these informal sources, creating dual credit markets (Conning and Udry 2005). Surveys of poor households and entrepreneurs reveal a continued reliance on informal credit, even among long-standing microfinance borrowers (Collins et. al 2009, Banerjee and Duflo 2007). To date the explanation for dual credit markets has largely focused on supply, particularly the role that informal lenders play in acquiring information and lowering costs for formal lenders (Jain and Mansuri 2003). However, given the muted demand for formal credit expressed by some microentrepreneurs, demand may be a co-culprit in explaining continued reliance on informal credit sources.

[1] Dropout rates are measured as the percentage of clients who begin the year with a loan but do not have one by the end of the year. Information from the Social Performance Reports published by themix.org. Information as of 2008 or 2009, depending on the institution. Countries include Bolivia, Brasil, Ecuador, Colombia, Venezuela, Mexico, the Dominican Republic and Guatemala.

This paper examines the role of flexibility in loan repayment in explaining the three phenomena outlined above. Repayment terms are one of many components of a credit contract, including the interest rate, loan size, maturity length and amortization schedule, and while emphasis is usually placed on the other terms, repayment may be of paramount importance for poor borrowers who face high levels of risk and limited means to manage it. Furthermore, flexible repayment terms are a common feature of the informal loans from moneylenders, suppliers and family and friends that dominate poor households' financial lives. As such, while repayment flexibility is not common to standard bank loan contracts, it may be appropriate for poor borrowers with uncertain income flows and limited access to insurance. Examining the importance of these terms may illuminate the role that microfinance plays in the lives of poor households and improve understanding of how it can be used most effectively as a poverty alleviation tool.

The paper proceeds as follows. Section 2 compares key loan terms for microfinance and informal loans, including loan size, availability, interest rates, repayment schedules and default penalties. Section 3 documents low formal credit use by poor households, high microfinance dropout rates and the existence of dual credit markets. Section 4 presents evidence on the role of contingent repayment in explaining the demand for and use of microfinance, or lack thereof. Section 5 outlines alternative explanations for the credit behavior of poor households, including supply constraints, and demand constraints driven by small scale, a lack of savings instruments and a lack of insurance. Section 5 also addresses the ability of microfinance institutions to develop loans with a contingent repayment option. Section 6 concludes by outlining a field experiment that can directly assess the impact of increased flexibility on the use of both formal and informal credit.

2. Comparison of Loan Terms for Microfinance and Informal Loans

For many poor households and entrepreneurs microfinance is the only source of formal credit available to them. Like any formal lender, microfinance institutions face different information and transaction costs than informal lenders, and these costs explain the majority of the differences in terms across loans. Information costs play the largest role, as lenders must be able to discern borrower quality, monitor borrower behavior and enforce repayment in order to reduce default risk sufficiently to make lending profitable (Stiglitz and Weiss 1981). Informal lenders, such as moneylenders, family, friends and suppliers, can overcome information problems because they usually live in the same communities as borrowers and can more easily screen and monitor them. Formal lenders, however, usually come from outside the community and must rely on mechanisms such as collateral requirements, credit histories and restrictive covenants. Given that these mechanisms usually aren't possible for poor borrowers, microfinance institutions have to create new mechanisms for overcoming information costs and making arm's length lending to this sector possible. The most well known mechanism is the group loan, but as the industry moves increasingly toward individual loans other mechanisms have become dominant. The two most prominent ones are frequent loan repayments and harsh penalties for default, the latter of which some authors refer to as a "collateral substitute" (Bond and Rai 2002). These features are standard in almost all microfinance contracts and are unique enough to distinguish them from most types of informal credit (Armendariz and Morduch 2010).

Transaction costs also are important in explaining features of microfinance contracts, as formality generally lowers them for lenders. For microfinance institutions, formality confers access to greater and cheaper sources of funds, enabling them to provide larger and more frequent loans than their informal counterparts. Many microfinance institutions also guarantee continual access to credit as long as outstanding debts are serviced on time. Many informal lenders, who face less

reliable funding, cannot provide the same stability. Thus, formal and informal loans vary in numerous ways and borrowers may prefer one over the other for a variety of reasons. The remainder of this section details the differences in key loan terms, focusing on the appeal of one type of credit over another from the borrower´s perspective.

2.B. Loan Size and Availability

A key way in which microfinance differs from informal sources of credit is in the size and frequency of loans. Microfinance institutions, like any formal intermediary, have access to a larger and steadier source of funds than informal lenders and therefore can offer larger loans and a guarantee of continual access if borrowers maintain good credit histories. Tables 3 and 4 provide evidence on differences in loan sizes from borrowers in Peru and Colombia. Table 3 presents data from a 1997 survey of clients of ACP (later MiBanco), a large microfinance institution in Lima, and comparable non-clients. Median loan sizes for all informal sources are significantly smaller than median loan sizes from formal sources. Table 4 presents evidence from a survey of urban and rural microentrepreneurs in Colombia, none of whom are clients of any specific microfinance institution but many of whom have formal loans. Median loan sizes for loans from formal sources are three to ten times larger than median loan sizes of loans from family and friends, suppliers and moneylenders.

The enhanced size and reliability of microfinance are frequently cited by households as the main benefits of microfinance. For example, Collins et. al (2009) in their study of poor households in Bangladesh, India and South Africa note that "irrespective of how microcredit loans were used, borrowers appreciated the fact that, relative to almost all their other financial partners, microfinance providers were reliable." Meanwhile, in interviews clients of ACP/MiBanco cite larger loan size as an advantage of borrowing from ACP, while dropouts mention the difficulty in cobbling together

the same quantity of funds from other sources when microloans are not available (Dunn and Arbuckle 2001).

2.C. Interest Rates

Interest rates on microfinance loans tend to be higher than those charged by family and friends, but lower than those charged by moneylenders and suppliers (Dunn and Arbuckle 2001, Collins et. al 2009, Guirkinger 2008). For example, in a survey of households in the slums of Hyderabad, the average interest rate paid on informal loans (which constituted the vast majority of lending, as only 6% of the sample had formal loans) was 3.85% a month, or approximately 57% a year. Meanwhile Indian banks offering microloans charge interest rates of 20% (Banerjee and Duflo 2007). Data on microentrepreneurs in Colombia find similar results, shown in Table 4. The median estimated annual interest rate on loans from moneylenders is 214%, while the median interest rate on loans from family and friends is 43%. This compares with a median interest rate of 18% for microfinance institutions, 22% for credit cooperatives and 24% for banks; two to ten times lower than the rates cited on informal loans[2]. Thus while it is understandable that households continue to rely on low interest or interest free loans from family and friends, the reliance on more expensive credit from moneylenders and suppliers cannot be explained by superiority of interest rates or size[3].

2.B. Repayment Schedules

Unlike standard formal loans, microfinance loans are self-amortizing and have frequent repayment schedules, most of which start one week, two weeks or one month after the loan is granted

[2] Interest rate controls explain some of the differences in interest rates. It is also important to note that interest rates on supplier credit are usually implicit rather than explicit, which is why so many entrepreneurs cite 0% interest rates on their supplier loans.

[3] Although some argue that if you consider transaction costs, formal credit may be equally or more expensive than informal credit (Mushinski 1999, Barham, Boucher and Carter 1996, Guirkinger 2008). Some argue that there is heterogeneity across individuals in information and transaction costs, and thus whether or not informal credit is cheaper will vary across borrowers.

(Armendariz and Morduch, 2010, Dubdulal 2009). For example, in the 2007 survey of microentrepreneurs in Colombia, 94 to 100% of borrowers with formal loans have two-week repayment period (Table 3). In the 2004 of microentrepreneurs in Ecuador, 20% of borrowers with formal loans had had bi-weekly payment while 75% had monthly repayment. Finally, in the 1999 survey of ACP/MiBanco clients, 88% had bi-weekly or monthly repayment schedules (Dunn and Arbuckle 2001). The short repayment schedules mean that borrowers frequently have to start repaying the loan before a project has begun to payoff, leading to questions about why frequent repayment schedules are standard practice in the industry.

There are several theories about the role of frequent repayment in microfinance contracts. One is that it helps signal repayment difficulties early on, allowing the group or lender to take steps, such as increased monitoring, to reduce default. A second theory is that it provides borrowers an opportunity to time loan repayment with income inflows (Armendariz and Morduch 2010, Bauer, Chytliová and Morduch 2008). This may be critical to repayment if borrowers have a difficult time saving up large sums, either due to a lack of safe savings vehicles, the inability to keep funds away from family members, or problems of time inconsistency/self control. A third theory is that frequent payments require borrowers to have alternative, informal sources of finance, as they must begin repayment before a project comes to fruition. By forcing borrowers to use informal credit, microfinance institutions limit their clients to those who have already been approved by an informal lender, thereby co-opting the information advantage that informal lenders have and ensuring that borrowers have a back-up source of funding if they are hit with a liquidity shock (Jain and Mansuri 2003). A fourth theory is that frequent repayment forces borrowers to use the funds for productive rather than consumption purposes and, more specifically, to invest in short-tem, liquid projects with quick payoffs (Field, Pande and Papp 2009). By limiting borrowers' ability to use the funds for

longer term, less liquid projects or short term consumption needs, microfinance institutions ensure that the funds are directed toward uses that have a higher probability of success, thereby reducing default without enacting expensive monitoring techniques.

The short terms and frequent repayment schedules compare with more flexible terms on many informal loans. For example, as shown in Table 4, Colombian microentrepreneurs report that 70% of loans from family and friends, 16% of loans from moneylenders, 75% of loans from suppliers and 61% of loans from pawnshops have no fixed term. In contrast, less than 5% report no fixed term for formal loans. A similar pattern holds with maturity dates, with 47% of those who borrowed from family and friends, 11% for moneylenders, and 13% for suppliers reporting no fixed maturity length. In contrast, all borrowers report a fixed maturity length for formal loans.

2.C. Payment Delays and Rescheduling

In order to reduce default risk in the absence of collateral, credit histories and restrictive covenants which allow lenders to mitigate the problems of adverse selection and moral hazard, microfinance institutions have enacted harsh penalties for late payment and default. Standard practice is to charge fees for late payment and bar borrowers completely from future loans in the case of default (Armendariz and Morduch 2010)[4]. Although the penalties also apply to group loans, their importance has increased as many institutions shift from group to individual lending. For example, in a 2005 paper by Women's World Banking discussing the transition to individual loans, the authors explain that while group members provide the discipline in group loans, "in individual lending, the discipline is created by strict enforcement of contracts, including legal methods. Positive incentives for on-time repayment such as guaranteed access to larger loans with better terms, conditions and requirements are also effective means to ensure good repayment behavior" (Dellien et. al. 2005).

[4] For example, Women´s World Banking charges a daily fee of 0.5% on the outstanding balance (Dellien et. al. 2005).

While the practice of strict penalties for default is not unique to microfinance institutions (Athreya et al. 2009), it stands in stark contrast to many informal lenders, many of whom are willing to renegotiate if borrowers face difficulties. A large body of literature has documented the practice of contingent repayment by informal lenders. One of the earliest and most well known works is that of Udry (1995), who documents contingent repayment among rural households in Northern Nigeria. Udry finds that loan repayment responds to shocks to both parties, with lower payments and longer terms enacted when a borrower is hit with a shock and larger and accelerated repayment enacted when a lender is hit with a shock. Fafchamps and Gubert (2002) find similar results among rural households in the Philippines. They also find that contingent repayment is common and that lenders are most likely to modify the loan contract by lengthening the term rather than reducing the principal amount or rolling over the debt. Guirkinger (2008) in a survey of rural credit markets in Piura, Peru, finds that most debt was restructured after default, with borrowers given an extended period to pay. She also finds, interestingly, that most borrowers were not charged interest during the loan extension, further highlighting the responsiveness of some informal credit to adverse shocks. Finally, Duflo and Banerjee (2007) in a study of poor households in 13 countries find that although default is rare, delayed payments to informal lenders are quite common.

Within the microfinance industry, there is some precedent for rescheduling of loan contracts. The most well known example is the Grameen II initiative, launched by the Grameen bank in 2002 to improve uptake, retention and loan performance (Rutherford 2004). Grameen II involved many changes to the institutions' savings and loan products, but the key one regarding flexibility is the "flexi-loan", which allowed loan officers to reschedule loans for borrowers in arrears. With a flexi-loan Grameen renegotiates the maturity and repayment schedule, freezes savings, and reduces the loan size for subsequent loans. Borrowers are also allowed to "top up" the

loan, increasing the total amount borrowed to the original value, essentially re-borrowing the repaid principal[5]. These changes allow borrowers facing repayment difficulties a chance to remain with the institution, and movement to a flexi-loan became automatic for borrowers who are more than 10 weeks in arrears (with weekly payments, this means they had missed 10 loan payments).

The Grameen II changes were deemed very successful and other institutions subsequently adopted similar practices (Rutheford 2010). In addition, some institutions have experimented with offering more flexible loans to borrowers with predictable income swings, such as dairy farmers who regularly face a dry season (KAS in India). The assessment of these modified agricultural loans is still on-going. It is important to note that while flexi-loans introduce a form of contingent repayment, it is not at the discretion of the borrower and the renegotiation only occurs if the borrower faces severe repayment problems[6]. There is limited evidence of rescheduling before a borrower is in arrears and therefore of ex-ante flexibility.

Thus the payment flexibility that borrowers encounter in some informal contracts generally is not mirrored in microloans. The reason for this may be that formal lenders, including microfinance institutions, do not have the ability to sufficiently mitigate information costs to make this possible. Unlike informal lenders, formal lenders do not benefit from close relationships with borrowers, making it more costly to verify borrower outcomes and profitably offer contingent repayment. Microfinance institutions neither are able to mimic informal lenders, nor should try, as poor household´s access to formal credit only expanded once MFIs found ways to lend to poor borrowers without knowing too much about them. The challenge is finding a loan structure that allows for some repayment flexibility without requiring much more of loan officers. The possibility for such contracts is considered in more detail in Section VI.

[5] This feature was extended to all borrowers, not just those who faced repayment difficulty.
[6] Grameen also implemented new loan loss recognition and provisioning schemes which accompanied this change.

2.D. Summary of Loan Term Comparison

In summary, microfinance loans differ in several fundamental ways from informal loans provided by moneylenders, family and friends, suppliers and ROSCAs. Loans sizes are larger and continual access usually is guaranteed. The interest rates tend to be lower than those charged by moneylenders and suppliers, but higher than those charged by family and friends. Finally, the payment schedules are more binding and frequent than those of informal loans. Collins et. al. (2009), in outlining the differences for the households they interviewed in Bangladesh, India and South Africa, comment: "We have noted that informal arrangements offer flexibility and convenience, but may lack reliability, privacy and transparency, and rely too heavily on kindness, goodwill and norms of mutual obligation." "Microfinance services, on the other hand, tend to be reliable, but not always flexible."

Due to different loan terms, relative demand for microfinance and informal loans may vary by loan destination. Borrowers are more likely to turn to microfinance for large investment projects and to informal sources for consumption needs and emergencies. Collins et. al. (2009) find that "poor households care about price, but they also care about convenience and flexibility and are willing to pay for those features." As a result, "sometimes diarists deliberately choose a more expensive moneylender because the looser repayment schedule fits their needs better, or because the money must be found quickly after an emergency has struck or a not-to-be missed opportunity arises." (Collins et al. 2009) This sentiment is mirrored in a survey of Ecuadorian microentrepreneurs, who are asked about financing sources to manage household and enterprise level shocks (SALTO 2004). When asked the reasons why they use a particular source, 28.7% say it is the most agile and rapid and 11.1% say it is because they know the lender. Only 4.4% list low

interest rates as the main reason. This suggests that credit from different sources play unique roles in the financial lives of poor households and can explain somewhat puzzling credit behavior.

3. Three Phenomena Regarding Formal Credit Use

In the last decade microfinance has become an increasingly popular part of poverty reduction agendas and its presence around the world has increased dramatically. In Latin America, the State of Microcredit Summit Campaign Report estimates that the total number of microfinance institutions has grown from 193 in year 2000 to 613 in year 2007. Meanwhile the number of borrowers has grown from 1.67 million in 2000 to 7.77 in 2007, a 365% increase in the span of just seven years. Table 1 gives a basic idea of the microfinance landscape for five countries in the region, Bolivia, Colombia, Ecuador, Peru and Mexico. This includes estimates of the number of institutions operating in each country, as of year-end 2008, the total number borrowers and the change in borrowers from the previous year. When information is available, it also provides estimates of total borrowers as a percentage of the population living on $1 day or less. Unfortunately, similar data on other providers of formal credit, such as credit cooperatives, are not available (the totals include commercial banks with microfinance arms). Thus while microfinance institutions are not the only providers of formal credit, since they tend to provide the majority of it in these countries, the data in Table 1 provide a good, general view of the supply of formal financial credit.

Despite the impressive expansion of microfinance institutions, however, there are phenomena regarding formal credit use which raise questions about the ability of microfinance, in its present form, to fully meet the needs of poor households. These phenomena, outlined in more detail below, suggest that microfinance does not fully meet the needs of poor households, leading many to eschew it in favor of informal alternatives.

3.A. Low Penetration Rates

Table 2 presents data on credit use by urban microentrepreneurs in Mexico and Ecuador, two of the few countries with nationally representative surveys of this population. The table shows that the use of formal credit is very low. In Ecuador, as of 2004, 29.7% of all urban microentrepreneurs report ever using formal credit, while in Mexico, as of 2008, only 9.9% report doing so. From the enterprise perspective, the reliance on formal credit for both start-up and on-going operations is quite low. Regarding start-up, only 4.8% of entrepreneurs in Ecuador and 4.4% of entrepreneurs in Mexico, as of 2008, cite formal credit as the main source of funding. The majority cite personal savings as the main source, followed by loans or grants from family and friends. The same holds for financing of continuing operations, with only 2.1% of microentrepreneurs in Ecuador listing it as a major source of financing (the question is not asked in the Mexican surveys).

Surveys of microentrepreneurs also reveal that formal credit use is neither a permanent state nor an inevitable result of a formal financial relationship. In Ecuador forty two percent of firms who have used formal credit in the past did not apply for a loan in the past year, while 35% of entrepreneurs with savings in a formal institution have never had a formal loan[7]. Meanwhile, data from a smaller survey of microentrepreneurs in Colombia (shown in Table 4), show that while 53% have used credit from a formal lender such as a bank, NGO or credit cooperative, only 34% took out a formal loan last year. Meanwhile, only 57% of microentrepreneurs with formal saving have ever had a formal loan.

Although low formal credit use could be a story of limited supply, with institutions only able to profitably service a small number of credit-worthy, poor borrowers, recent evidence suggests that muted demand also is to blame. In the Ecuadorian survey entrepreneurs are asked if they are be

[7] Other surveys find similar results. In India, Duflo and Banerjee (2007) find that only 6.4% of borrowing is formal (from a bank or cooperative), even in cases when a branch is nearby.

interested in receiving a formal loan for any amount at a 20% annual interest rate, close to the prevailing rates charged by local microfinance institutions. Over forty five percent of respondents did not want the loan, citing interest rates that were too high and a desire not to become indebted as the main reasons. The reluctance to borrow led the authors of the survey to conclude that while "it is often assumed that there is large unsatisfied demand for credit by microentrepreneurs, several findings in the survey-especially regarding the low frequency of loan applications and the high success rate in getting loans- cast doubt on this assumption." (Magill and Meyer 2005). They argue that instead of supply, "perhaps the most important challenge to MFIs in Ecuador is to overcome the microentrepreneurs' resistance to using credit" (Magill and Meyer 2005).

A handful of other studies find evidence that muted demand partially explains low formal credit use. The first is a detailed survey of potential microfinance borrowers in Indonesia (Johnston and Morduch 2008). A leading microfinance institution (BRI) was asked to deem which of the surveyed households were creditworthy and likely would be approved for a loan by the institution. While 40% of the sample was deemed creditworthy, only 10% had formal credit and many potential borrowers expressed little interest in receiving a loan. The second is a study of rural households in India and subsidized agricultural credit from state banks, as it is often assumed that the low use of formal credit by poor, rural households stems from excess demand for loans and credit rationing (Kochar 1997). Kochar finds that the households are less rationed by formal lenders than assumed, implying that demand is part of the story. These studies provide two distinct cases in which limited supply is not the full explanation for low credit use.

3.B. High Dropout Rates

A second, related phenomenon is the high dropout rates that many microfinance institutions experience. A surprisingly high number of microfinance borrowers stay for one or two loan cycles

and then exit. For example, measuring dropout as the percentage of clients from one year to the next who do not have an outstanding loan, 2008 and 2009 reports from the Mix for sixteen of the largest microfinance institutions in Latin America, estimate dropout rates that range from 19% to 54%[8]. This means that between nineteen and fifty four percent of borrowers who start the year with a loan do not have one by the end of the year. Given that many dropouts do not default or migrate to other formal lenders, desertion largely constitutes an exit from formal credit markets altogether.

Although exit could be exclusively non-voluntary, with dropouts either forced out by their group members or removing themselves after realizing they will face repayment difficulties, there is weak evidence that voluntary dropout exists. For example, Urquizo (2006), in a survey of four Latin American microfinance institutions linked with Accion International, finds that dissatisfaction with microloans is a major driver of client dropout. Meyer (2002), in a survey of client satisfaction among microfinance clients in Bangladesh, finds significant problems with the standard contracts being offered by institutions such as Grameen and BRAC. He observes that "dropouts, overlap and delinquencies appear to be rising, many of the poor refuse to use MFI products and informal sources continue to be important for poor households. These point to the need for a re-engineering of most MFIs that is based on careful market research…" (Meyer 2002). Overall, however, there is a shortage of papers examining microfinance dropout and no definitive, empirical evidence on the voluntary or non-voluntary nature of client exit.

If dropout from microfinance programs is voluntary, it is curious for two reasons. First, borrowers, particularly small firms with few assets and little reputation, can benefit from long term relationships with lenders. A number of theoretical and empirical papers have outlined how banks acquire more information about borrowers and subsequently face lower costs as the number of loan

[8] Information as of 2008 or 2009, depending on the institution, from the Social Performance Reports published by themix.org. Countries include; Bolivia, Brasil, Ecuador, Colombia, Venezuela, Mexico, the Dominican Republic and Guatemala.

contracts increases (Diamond, Ongena and Smith 2001, Petersen and Rajan 1994, Boderhorn 2003). Borrowers benefit in the form of increased credit availability, lower interest rates, fewer collateral or personal guarantee requirements, and longer term lengths. While the relationship between microfinance borrowers and microfinance institutions is unique, many of the benefits are the same. Borrowers who prove creditworthiness through repeated loan cycles generally are rewarded with larger loans, longer terms, and lower transaction costs (Armendariz and Morduch 2010).

Second, the standard short-term microfinance loan is designed to finance working capital and the need for this type of financing should not disappear after one or two loan cycles. So while borrowers may use microfinance loans to finance one time, large purchases at either the enterprise or household level, the credit is not principally designed for this purpose. Thus it is unclear why firms with working capital needs, such as retail stores that continually have to buy inventory, would take long breaks between microfinance loans. In many cases it entails forgoing a cheaper source of working capital finance for a more expensive informal one.

3.C. Dual Credit Markets

The final phenomenon is that instead of displacing informal credit, microfinance has become a complement to it, creating dual credit markets. Numerous papers have documented the existence of dual credit markets, with the simultaneous use of formal loans and informal loans occurring even in saturated microfinance markets like Bangladesh. (Conning and Udry 2005, Guirkinger 2008, Kochar 1997). For example, Collins et. al (2009), in their studies of households in Bangladesh find that despite the fact that almost all of the households are microfinance clients, only one half of all loans are from formal sources. The other half comes from informal sources, despite access to numerous microfinance institutions. Survey data on microentrepreneurs in Lima, Peru and Colombia show similar trends. Table 3 shows data on credit use by clients of ACP/MiBanco and comparable non-

clients. Microfinance clients exhibit as much reliance on informal loans as non-clients, with no significant difference in the percentage of entrepreneurs who have loans from suppliers, family and friends, moneylenders and ROSCAs. Indeed, ACP clients appear to be more active borrowers in informal markets than their non-ACP counterparts. They have a larger number of non-microfinance credit sources and the total amounts borrowed are larger. This suggests that microfinance credit does not always displace informal credit.

Table 4 shows similar evidence from Colombia. Of microenterprises that have used a formal loan in the past 12 months, 20% also have taken a loan from family and friends, 22% have taken a loan from a moneylender, and 40% have taken a loan from a supplier. Finally, Table 7 provides data on the incidence of supplier credit, an important source of informal funding, among small and medium size firms in Peru, Ecuador and Bolivia (countries where data are available). The data, from World Bank Enterprise Surveys, show significant use of supplier credit, even among firms with bank loans. For example, approximately 20% of firms in Ecuador and Peru and 12% of firms in Bolivia rely on supplier credit, and these percentages change very little when we only consider firms that have bank loans.

4. Risk, Vulnerability and Credit

This section examines why repayment flexibility, or lack thereof, might determine preference for one form of credit over another and explain the three phenomena regarding credit use by poor households outlined above.

4.A. Risk and Vulnerability

While emphasis is usually placed on other terms, flexibility may be of paramount importance to poor borrowers who face high levels of risk and limited means to manage it. A large body of research has

documented the risk, related income variability and vulnerability inherent in the lives of poor households, including urban microentrepreneurs (Banerjee and Duflo 2007, Collins et al. 2009, Dercon 2002 2004). For example, in recent surveys urban microentrepreneurs report struggling with shocks in the form of a reduction in income, illness of household income earners and robbery. In particular, for urban households in Latin America robbery is one of the most frequent and damaging shocks. For example, in the 1999 survey of ACP/MiBanco clients in Lima, a loss or reduction in income is the most cited shock (35.4%), followed by robbery (21.8%) and serious illness (18.7%). Meanwhile, in Mexico, 9.6% of urban microenterprises report suffering a loss due to robbery (ENAMIN 2008). This compares with 8.3% who suffer a loss due to fines or bribes, 1.2% who suffered a loss due to extortion, 8.9% who suffered a loss due to fraud, and 2.6% who suffered a loss due to natural causes or accidents. In addition, the estimated losses from robbery are significantly higher than the other shocks[9], with estimated losses from robbery constituting 1.7 times average monthly profits. This compares with fines and bribes, which constitute 0.5 times average monthly profits, losses from extorsion, which constitute 0.5 times monthly profits, and losses from accidents or natural disasters, which constitute 0.8 times monthly profits. Such large shocks limit entrepreneurs' ability to meet such rigid repayment schedules and may reduce demand for microfinance over time.

Given the variability in income, financial instruments which allow for consumption smoothing across time and states are essential. Frequently, however, the only available instruments are informal lending and saving (Udry 1995, Dercon 2002). The reliance on informal credit in particular is quite high. In the survey of ACP/MiBanco borrowers in Lima, one quarter of the

[9] 8.3% report losses in the past year due to fines or bribes, 8.9% report losses due to fraud, and 2.6% report losses due to accidents or natural causes. Average losses for robbery were 8,561 pesos, as compared to 2,525 pesos for fines and bribes and 4,186 pesos for fraud and extortion.

sample lists borrowing money as the main method of dealing with a shock, and the majority says the primary source is family and friends (57.5%). This is followed by banks (23.3%) and moneylenders (12.3%). In Ecuador 55% of microentrepreneurs cite family and friends as the main source of funds for household emergencies, while 43% cite them as the main source of funds for enterprise emergencies. Meanwhile, 11.3% cite moneylenders as the main source of funds for household emergencies and 10.8% say they are the main source of funds for enterprise emergencies. Only 11% cite formal credit from a bank or cooperative as the main source of funds for family emergencies.

It also appears that microfinance credit is not always apt for smoothing consumption across a negative shock, and many microfinance borrowers remain vulnerable despite their participation in these programs. For example, 12.1% of the ACP/MiBanco clients interviewed in 1999 say that reducing expenditures was the main way of dealing with a negative shock. This is only slightly lower than non-clients, 12.8% of whom say reducing expenditures was the main coping mechanism. Indeed, only 20.4% of ACP/MiBanco clients list borrowing money as the main coping mechanism, as compared with 28.7% of non-clients.

Some practitioners and researchers argue that increased flexibility on the part of microfinance institutions might make formal savings and credit products a more viable mechanism for managing adverse events. For example, Rutherford (2010) notes that "the irregularity and unpredictability of poor household's cashflows means that flexibility of financial services is extremely important to them. While a disciplined, inflexible deposit produce is desirable for saving up in readiness for predicable events; flexible, rapid response opportunities to withdraw and borrow are essential to respond to the unpredictable crises and needs that beset the poor." Athreya et. al. (2009) argue that "… to the extent that borrowers face uninsurable risks, harsh penalties also make borrowing risky, as debt must be paid irrespective of debtor's ex-post situation." Furthermore, strict

default penalties may not only reduce borrower welfare, but also unnecessary to elicit high repayment rates. Tedeschi (2006) shows that non-refinancing threats are overly severe by outlining a model in which the optimal punishment period is less than infinity. Given the vulnerability that many poor households face, it is understandable that some would be reluctant to enter into a binding contract that cannot be changed if a shock occurs.

4.B. Evidence on Flexibility and Demand

The previous sections outlined the need for flexible repayment by many microfinance borrowers given that rigidity increases the risk of taking on formal credit. The next question, however, is the extent to which rigidity may mute demand for microloans. Looking specifically at demand for microfinance, there is no direct evidence on the role that flexibility plays. At this point there is only indirect evidence that flexibility may increase client retention. For example, Rutherford (2010) finds that the Grameen bank saw a decline in dropouts once it enacted Grameen II, which allowed for greater flexibility within both savings accounts and loans. Meanwhile, McIntosh (2007) finds that changes enacted by FINCA Uganda that allowed some borrowers to adopt a biweekly rather than a weekly repayment schedule causes dropout to fall by ten percentage points, suggesting that the high transaction costs associated with such frequent repayment dominates potential benefits in the form of better timing with cash flows or more restrictive commitment devices.

Interestingly, some of the most compelling evidence that flexibility may impact demand comes from credit use by small firms in the U.S. In 2003 the Federal Reserve conducted its most recent Survey of Small Business Finance (SSBF 2003), a nationally representative survey intended to capture the financing patterns of firms with 500 employees or less. As shown in Table 5 the survey reveals heavy reliance on supplier credit, with 58% of firms with 19 employees of less and over 86% of firms with 20 employees or more using supplier credit. Furthermore, reliance is not limited to

firms without bank credit, as 40-76% of firms who use supplier credit also have a line of credit from a bank. This shows that dual credit markets are not simply a symptom of financial underdevelopment; they also exist in the world's most well developed financial market.

What is curious about the high incidence of supplier credit is that it is significantly more expensive than credit from banks and credit cards. The interest rates on supplier loans usually are implicit and stem from differences in the prices charged to customers depending on when they pay. A standard contract is a "2-10 net 30", where customers are given 30 days after receipt of the goods to pay and receive a discount of 2% if they pay within the first 10 days. The 2% represents the cost of borrowing over a 20 day period, and on an annual basis constitutes an interest rate of 44%. Contracts with longer repayment periods and deeper discounts can reach annualized interest rates of 358%. Table 6 presents calculations of implicit interest rates on supplier credit in the 2003 SSBF sample. The median annualized interest rate is 43.4%, in line with that of a 2-10 net 30 contract. This compares with annual rates of 12% for credit card debt and 6% on bank loans. At the median, supplier credit is 3.6 times more expensive than credit card debt and 7.2 times more expensive than bank debt.

Given the vast differences in cost it would seem that supplier credit would be a last resort for firms with no other funding sources. A quick survey of the data, however, shows this is not the case. Sixty two to seventy six percent of firms who use supplier credit also have a line of credit with a bank, with the percentages increasing in firm size. It appears that bank relationships do little to mute those with suppliers. This duality is curious, as firms with lines of credit could borrow from the bank at lower rates, pay their supplier in full, and save more than 30 percentage points a year in interest charges. Why, then, do so firms rely on supplier credit?

The second part Table 5 reveals part of the answer: suppliers are flexible in terms of repayment. Over 40% of firms say they paid their suppliers late during the past year alone and the majority faced no penalty for doing so. This compares to limited flexibility from banks and credit card companies. Interestingly, the incidence of late payment increases in firm size, implying that it is not simply small, young firms that rely on these benefits. Cuñat (2007) outlines a theory in which suppliers offer a form of insurance to borrowers. Firms facing liquidity shocks value this service and therefore continue to use supplier credit even though they have access to dramatically cheaper bank credit. This is one explanation for the high interest rates and stable use of supplier credit and suggests that borrowers are willing to pay for the reduced risk that contingent repayment entails.

While the evidence from small U.S. firms suggests that borrowers demand flexibility and are willing to pay for the increased risk it entails, there is no direct evidence on the impact that changing this loan term has on demand for microfinance or any form of formal credit. The difficulty is that in the absence of a random change in loan terms across current or perspective borrowers, it is impossible to disentangle demand from supply as the driver of changes in outcomes. Ideas for an empirical study that would allow for this separation are outlined in section VI.

5. Alternative Explanations for the Use of Formal and Informal Credit

This section outlines alternative explanations for low formal credit use, high dropout rates and the existence of dual credit markets. The first sub-section outlines the supply side explanation. The next three sub-sections outline alternative demand side explanations rooted in other elements of formal financial services that poor households may find lacking.

5.A. Supply Constraints

Low formal credit use, high dropout rates and the existence of dual credit markets can all result from supply constraints. If there are a small number of poor but creditworthy borrowers able to start and maintain relationships with formal lenders, it is no surprise that few poor households have formal credit, and that among those who do, many are unable to borrow as much as they want or fail to maintain good standing. The fact that microfinance borrowers tend have higher incomes, assets, enterprises with longer durations and more employees supports these claims. So too does the fact that dropouts tend to be worse off than microfinance clients who stay.

If the three phenomena outlined in section three are a result of supply constraints, reliance on informal sources should fall once microfinance borrowers establish creditworthiness and are granted larger loans. However, if this is largely a demand side story, with borrowers preferring certain features of informal loans, reliance on informal sources should be unaffected by increased access to microloans. At present there is no definitive evidence pointing either way, although the field experiment outlined in the conclusion would help fill this gap in the literature.

5.B. Demand Constraints

Demand for microfinance loans could be muted simply because many poor households don't need or want to borrow on a regular basis. Borrowers may choose to use microfinance loans only to finance one-time bulky purchases, relying on savings the rest of the time. Since bulky purchases are not regular events, dropout could simply be driven by household seeking funds every couple of years to finance large purchases. This would explain dropout without default, and given that one of the main advantages of microfinance is that the loan sizes are generally larger than those from informal lenders, this type of behavior should not be surprising.

Microentrepreneurs also may limit their use of microfinance loans if they have no plans for expansion and finance existing operations with retained earnings. Indeed, the surveys of

microentrepreneurs in Ecuador and Mexico find that most of the sector is stagnant, with few enterprises registering increases in products, assets, or employees. A host of factors can potentially explain the lack of dynamism in the industry, including skill constraints (Karlan and Valdivia 2010), labor constraints (Emran et. al 2007), and the high costs of formality (DeSoto). These constraints may limit microentrepreneurs' ability to use formal credit and any alleviation of them may increase overall use.

5.C. Savings

Another hypothesis agrees that the restrictive nature of microfinance loans is the key factor that distinguishes them from informal alternatives. It argues, however, that due to an inability to save the restrictiveness increases rather than decreases demand for microfinance loans. The first argument is that rigid loan contracts offer a superior way for borrowers with limited savings vehicles to transfer income into loan payments. If the timing of loan payments coincides with cash availability, frequent payments may be optimal for borrowers who are unable to safely save. This may particularly important for women who have difficulty keeping funds away from spouses or individuals who face repeated requests for assistance from family and friends. Thus despite the higher transaction costs associated with more frequent repayment, borrowers who lack savings options may actually prefer them (Armendariz and Morduch, 2010).

A number of empirical studies find evidence that savings difficulties are real and severe. A MicroSave survey of households in Uganda finds that 22% with savings in the informal sector report losing a portion of them (Wright and Mutesasira 2001). Meanwhile a field experiment in Kenya which offered safe, convenient and costly savings vehicles to women vendors found very high take-up rates, suggesting binding savings constraints (Dupas and Robinson (2009)). Few studies, however, have directly examined the impact that access to improved savings instruments have on

borrowing. If the borrowing as savings hypothesis holds, borrowing should fall as individuals gain access to safe and flexible savings instruments. In this case, it is unclear if increased repayment flexibility will have much of an impact of microloan use.

The second argument is that inflexibility might be desired because it creates an enforcement device that borrowers with time inconsistency or self control problems can use to force their future selves to comply with their current selves' wishes. Due to the regular repayment schedule of microfinance loans they constitute a form of saving in reverse: instead of saving small amounts of income today to make a bulky purchase in the future, microfinance borrowers make a bulky purchase today and save small amounts of income in the future to make loan payments. The loans thus force a borrower's future self to save, providing a valuable and elusive commitment device. Under this explanation individuals borrow because they cannot save, and the enforcement mechanism is so valuable that individuals are willing to pay interest to obtain it.

The literature examining behavioral explanations for credit use by poor households is new, but increasing at a rapid rate (Karlan and Morduch 2009). One strand has examined the impact of commitment savings devices on household's financial decisions. Ashraf et. al. (2006), using a field experiment with microfinance borrowers in the Philippines, find that a commitment savings device which allowed individuals to set savings specific goals and restrict any withdrawals from the account until the goals were achieved significantly increased saving. All of the borrowers previously had access to regular, non-binding savings account, and the increase in savings suggests a need for a commitment device. Another strand directly examines the decisions of microfinance borrowers. Wydick et. al (2009) ran lab experiments with microfinance borrowers in Bolivia, and found that those with repayment problems were no less likely to invest in a risky enterprise with a higher risk of failure, but they were significantly more likely to use the loan funds for immediate consumption.

Borrowers who recognize their own control problems may seek the binding constraint of regular payments as a means of keeping their current selves from over consuming. Self control problems therefore can be a major driver of financial decisions made by poor households.

Although savings difficulties clearly are important to explaining households' financial lives, it is doubtful that "borrowing to save" is the dominant explanation for formal credit use, or lack thereof. The most compelling evidence for this comes from small firms in the U.S., which have ample access to safe and convenient savings vehicles, including those, like certificates of deposit and automatic transfers, which impose self control. Despite this, firms rely heavily on supplier credit that is three to four times more expensive than credit from other sources. Unless there are gross differences in the degree of time inconsistency or self-control problems among micro and small firms in the developing world and those in the U.S., the credit behavior of U.S. firms suggest that most borrowers prefer more, rather than less flexibility.

5.D. Insurance

The need for loan repayment flexibility arises from the exposure to shocks and related income risk that poor households face. Although households largely rely on informal credit, it is unclear that this is the optimal financial contract to achieve the goal of smoothing consumption across states of nature. In an ideal world insurance contracts are used to smooth consumption across states, thereby making "credit as insurance" irrelevant. Given the advent of microinsurance and efforts to further develop and expand these services, the question of where microfinance institutions should focus their efforts is quite open.

Part of the discussion involves figuring out if designing a viable insurance scheme is more or less difficult than designing a viable loan contract with a contingent repayment option. By necessity any insurance scheme requires state verification by the insurer, something which is costly and vastly

limits the range of risks which can be insured. To date many microinsurance schemes have focused on easily verifiable risks, like weather risk as measured by rainfall quantity. Meanwhile, an optimally designed loan contract with a contingent repayment option would require little monitoring on the part of the lender, making it less costly than insurance. For example, Karlan and Mullainathan (2007) suggest pre-specifying the number of optional repayment periods that borrowers can use, but not their timing. Borrowers who have successfully made the first four loan payments can move the balance of the next payment to any later one in the cycle, including the last one. They receive another optional repayment after successfully making the next four loan payments. Mullainathan and Krishnan (2008) describe this as "flexible inflexibility", and argue that this type of contract might be what borrowers most demand as well as the only way a lender with limited information can introduce flexibility.

A second challenge to microinsurance is limited demand given poor households' lack of exposure to insurance schemes and heavy reliance on credit as insurance. For example, Giné and Yang (2009) structured a field experiment in Malawi in which they offered credit for high yielding but more risky crops to one group of farmers and the same credit coupled with insurance that forgave the loan in the case of insufficient rainfall to another group of farmers. The goal was to see if the provision of insurance which reduced the risk of taking the loan and investing the new crops increased loan uptake. Surprisingly, they found the exact opposite; take-up rates were 13 percentage points lower among farmers who were offered credit coupled with insurance than among farmers who were only offered credit. The authors suggest that the high cognitive cost of evaluating insurance partially explains this result. In a related paper examining participation in a rainfall insurance program in rural India, Giné, Townsend and Vickrey (2008) find that take-up rates are highly correlated with knowledge of the insurer and connection to local networks but uncorrelated

with risk aversion. The authors "…interpret these finding to suggest that many households are uncertain about the insurance product itself, leading risk-averse households, households with higher costs of evaluating new technologies, and households that are less familiar or place less trust in the insurance provider, to eschew purchasing insurance." As microfinance institutions experiment with new forms of credit and insurance, we will better understand which types of financial services are optimal.

6. Conclusions

This paper argues that repayment flexibility is important for poor borrowers facing high levels of income risk and limited means to manage it, and that a lack of flexibility in microfinance contracts might explain the low formal credit use and continued reliance on informal credit exhibited by many poor households. It presents indirect evidence that repayment flexibility matters, based on the observations that poor households who face high degrees of risk and vulnerability rely heavily on flexible, informal loans, even when they have access to microfinance and evidence that small firms in the U.S. with a vast array of financing options rely heavily on expensive, but flexible supplier credit.

Overall, however, the question about the viability and importance of repayment flexibility within formal loan contracts remains open. On the first point, it is unclear if formal lenders can introduce a form of cost effective, contingent repayment that meets borrowers' needs as well as their own. The challenge of microfinance institution is to overcome information problems while still providing credit products that poor households want. The solution may lie in "flexible inflexibility" (Mullainathan and Krishnan, 2008), which grants small grace periods, giving borrowers some breathing space while maintaining a fairly rigid repayment structure. Regardless, any experiment with different loan structures will have to examine the impact on repayment delays and default.

On the second point, measuring the impact that changes in flexibility would have on the use of both formal and informal credit necessitates a field experiment. The experiment, which is a future extension of this paper and is detailed in the appendix, would involve offering a loan with some form of contingent repayment option to a randomly chosen group of existing microfinance borrowers. The comparison group would be microfinance borrowers with the standard loan contracts. By randomly varying the contract terms the experiment will directly measure the impact of increased flexibility on retention and the use of informal credit. A field experiment is the only way to test the hypothesis that repayment flexibility matters, as the change in the microfinance loan contract will be uncorrelated with borrower quality, allowing for identification of increased flexibility on the outcome variables. The first outcome variable will be of greatest interest to microfinance practitioners and policy makers interested in increasing the use of microfinance services. The second outcome variable places the use microfinance in a larger context and will shed more light on credit use by poor households, something that recent research indicates is less comprehensive than previously assumed. The author, in conjunction with the research group of CAF, is in the process of finding a partner microfinance institution for this experiment and hopes to launch it in the near future. Again, details of the proposed experiment follow in the appendix.

Appendix 1: Proposed Experiment on Microfinance Loan Flexibility

1A. The new loan contract

The proposed loan with a contingent repayment option loan follows the standard microfinance contract, with a fixed loan amount, fixed uniform payments and a fixed number of periods. However, after making the first one or two payments on time and in full, borrowers are given the option of reducing the next payment and pushing the balance to any future period, including the last one. If borrowers decide to reduce a payment, they either can continue with the regular payments, thereby pushing the outstanding balance to the end of the loan, or they can repay the outstanding balance at an earlier point in the cycle. If the borrower chooses to push the outstanding balance to the end of the loan cycle, borrowers must make the remaining payments in full and are given no more options for flexible payment. If, however, a borrower chooses to repay the balance earlier in the cycle, he/she re-opens the option of a flexible payment in the future. That is, a borrower is given another option of reduced payments once the initial balance is repaid. For example, a borrower who decides to pay only 25% of the third payment, but repays the remaining 75% plus interest in the 4th payment (the initial 4th period amount plus the outstanding balance on the 3rd payment plus interest), has the option of reducing the amount of the 5th payment or beyond. Thus the loan is the standard contract with an option of flexibility, and borrowers who do not want the flexible option simply can stick with the regular payments.

There are multiple benefits to this contract. First, the structure does not depart greatly from the standard one and thus should not require too many more resources on the part of the lender nor high levels of financial sophistication on the part of borrowers. Borrowers do not have to give a reason for taking the reduced payment option, eliminating the need for costly state verification by the lender. By maintaining regular payments, the loan elicits information about repayment difficulties early on and allows borrowers with limited ability to save to match loan payments to income flows. Furthermore, this structure may be superior to the standard one for borrowers who have somewhat predictable income variability.

Second, the loan should not lead to a sharp increase in late payments and default as the structure creates incentives not to do so, as good credit behavior is rewarded with more flexibility. Third, by keeping the total number of payments and the term the same, the net present value of the loan does not change, avoiding the problem of simultaneously changing the borrowing costs.

1.B. Structure of the experiment

We propose three groups within the study, all of whom are existing clients in a position to receive another loan from the institution. We propose 800 clients in each group, leading to a total sample size of 2,400 individuals. We envision the variation among individual rather than group loans.

1) (C) Control group= existing clients offered the standard loan
2) (T1) First Treatment group=existing clients offered the new loan

3) (T2) Second Treatment group= existing clients offered the new loan plus an in-depth discussion of how it works.

The lender will send a letter to all clients in the sample, advising that they are eligible for the next loan and outlining the terms. For the control group this is the letter they would normally get. For the treatment groups this letter outlines the terms of the new loan. Each letter will also contain information about existing products, advertising the many ways in which clients can use the microfinance institution. We hope this advertising will control for the emotional effects of being offered a new product by the institution (the concern is that being offered a new product increases trust in/appreciation of the institution, leading to a decline in dropout and informal credit use).

There are 3 outcome variables of interest:

1) Client dropout
2) Late payment and default
3) Use of informal loans

Ideally, the difference in outcomes across T and C capture the impact of increased flexibility on retention and informal credit use. One concern, however, is that any change, or lack thereof, may be driven by cognitive or emotional effects rather than responses to the flexibility option. For example, by simply varying the terms of the loan we will not know if any differences are due to the flexibility option itself, understanding of the changes, or the emotional impact of being offered a new product. We hope the control for latter by offering a special advertisement to the treatment and control group. We hope to control for cognitive effects by introducing two treatment groups- one that receives a basic description of the product and a second group that receives a more detailed explanation of the product. Thus T1-C measures the impact of the flexibility option, while T2-C measures the impact of the flexibility option plus the detailed explanation. Any difference in outcomes between T2 and T1 captures the impact of the detailed explanation.

The survey, in addition to basic household and enterprise information will include measures of participation in informal financial markets, such as the use of ROSCAS, as well as credit from moneylenders, suppliers, and family and friends. The baseline survey also will include questions related to vulnerability and financial literacy. If possible, we also would like to have measures of time inconsistency, to test the hypothesis that increased flexibility is less rather than more desirable.

We propose a first follow up at the end of the first loan, and a second follow up six months to one year later. This timing should be sufficient to see immediate changes in retention and informal credit use. If the new loan proves cost effective and popular, we propose an extension of the experiment which would randomize roll-out of the new loan across branches, thereby addressing the issue of take-up.

1.C. Theory of Change

We anticipate that provision of a contingent repayment option within microfinance loans will change poor household's participation in both formal and informal credit markets. The changes should be greater among more vulnerable households- those with greater income variability and more limited means to smooth consumption across income fluctuations. The changes should be more muted among households suffering from time inconsistency problems. If the primary channel is "credit as insurance", the change should increase retention and decrease the use of informal credit. Finally, if the product is properly designed, the impact on default rates minimal, making the loan should be cost effective.

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Table 1: Microfinance Markets in Five Latin American Countries

As of 2008	Bolivia	Colombia	Ecuador	Peru	Mexico
# of MFIs	30	48	100	89	98
# of borrowers	768,333	1,905,633	889,211	2,607,104	3,882,829
Growth in borrowers from previous year	11.9%	12.0%	15.0%	3.3%	27.9%
Borrowers as estimated % of poor population[1]		6.5%			

Source: The Mix. Rows 1, 2 and 3 are from the Colombia, 2009 Microfinance Sector Analysis. Row 4 is from Microfinance Analysis and Benchmarking Report, Latin America and Caribbean 2009. Row 5 is from Colombia 2009 Microfinance Sector Analysis

[1]Very poor borrowers are defined as those living on $1 or less a day, in purchasing power parity terms.

Table 2: Credit Behavior in Nationally Representative Surveys

Data Source	ENAMIN	ENAMIN	SALTO
Percent Entrepreneurs Who:	Mexico	Mexico	Ecuador
Used formal credit for start-up	1.36%	3.51%	5.7%
Have ever used formal credit	2.68%	9.95%	29.7%
Financed Start-Up With (main source):			
Formal credit	2.3%	4.4%	4.8%
Savings	48.0%	50.8%	67.5%
Moneylender	1.9%	1.7%	1.6%
Family/friends	13.7%	17.9%	19.3%
Currently Finance Enterprise With:			
Formal credit			2.1%
Retained Earnings			90.9%
Supplier credit			5.2%
Family/friends			2.8%
Have used formal credit but did not apply last year			42.1%
Have formal savings but have never used formal credit			35.4%
Observations	11,306	15,203	12,618
Year	2002	2008	2004
Representative of:	National, Urban	National, Urban	National, Urban

For national samples, averages weighted to be representative of the population rather than the sample. 2008 ENAMIN sample limited to microentrepreneurs in cities of 100,000 or more (urban sample as defined by INEGI). This population corresponds with earlier ENAMIN samples, which were exclusively urban.

Source ENAMIN data: INEGI (www.inegi.gob.mx)
Source SALTO Ecuador: USAID (www.salto-ecuador.com)

Table 3: Credit Use by Microenterprises in Lima, Peru

Source	Microfinance Clients	Not Microfin. Clients	Difference (p-value)	Median Amount Outstanding
Informal				
Family/Friend	9.8%	10.8%	0.734	500
Moneylenders	2.6%	4.6%	0.253	225
Pawnshop	0.7%	0.5%	0.751	200
Suppliers	47.3%	45.4%	0.674	200
ROSCAs	4.2%	4.1%	0.982	200
Formal				
Companies/Credit Unions	2.3%	1.5%	0.581	715
Banks	5.7%	2.1%	0.055	2,171
EDPYMEs[10]	1.5%	0.0%	0.085	700
Cooperatives	0.4%	0.5%	0.826	2,000
Government	0.4%	1.5%	0.185	115
Construction Banks	7.6%	3.1%	0.041	2,510
ACP (MiBanco)				1,300
Total non-MFI debt sources	0.97	0.86	0.195	
	(.92)	(.91)		
Debt outstanding, non ACP	1,093.7	722.7	0.053*	
	(2630.9)	(2113.2)		
Debt from family and friends	139.4	134.7	0.481	
	(648.4)	(711.7)		
Debt from suppliers	435.4	219.0	0.076*	
	(2028.0)	(657.0)		
Observations	264	194		

Mean values reported with standard errors in parentheses

Source: AIMS Peru. The data surveyed clients of ACP (later MiBanco) and comparable non-clients in September 1997 and again in September 1999. Only the 1997 survey contained information on non-ACP sources of credit, including other formal credit. Reports for the balanced panel reported above.

[10] *Entidades de Desarrollo para la Pequena y Microempresa*. These are MFIs that are regulated financial institutions, unlike most NGOs that are unregulated.

Table 4: Credit Use by Microenterprises in Colombia

	Informal Lenders				Formal Lenders		
Microenterprises	Family/ Friends	Money-lender	Supplier	Pawnshop	NGO	Co-operative	Bank
Ever used credit from:	49.6%	28.9%	37.6%	4.8%	20.6%	13.7%	30.7%
Used credit in past 12 months from:	25.3%	18.9%	33.0%	1.4%	15.2%	6.0%	15.6%
Of those who have taken a formal loan in past 12 months:							
Used credit in past 12 months from:	20.7%	21.8%	39.9%	3.0%			
<u>For microenterprises who have taken a loan in past 12 months</u>							
Amount of current loan:							
Average	3,221,394	1,290,109	20,400,000	842,947	3,056,563	6,546,469	7,336,296
Median	1,000,000	300,000	600,000	250,000	3,000,000	4,000,000	5,000,000
Annual interest rate:							
Average	63.7%	262.0%	7.5%	137.6%	29.2%	48.0%	281.7%
Median	42.5%	213.8%	0.0%	213.8%	18.2%	22.4%	23.9%
No interest charged	36.2%	0.1%	70.9%	0.0%	0.0%	0.1%	0.0%
Loan Term:							
Daily or Weekly	6.3%	27.2%	41.7%	0.0%	0.0%	0.0%	0.7%
Monthly	34.7%	56.8%	45.4%	80.1%	61.1%	50.4%	48.3%
Yearly	12.1%	4.7%	0.0%	0.0%	38.9%	49.6%	51.0%
No Term	47.0%	11.3%	12.8%	19.9%	0.0%	0.0%	0.0%
Repayment Schedule:							
Daily	5.9%	60.9%	0.8%	0.0%	0.0%	5.4%	0.0%
Weekly	2.6%	0.0%	14.4%	0.0%	0.0%	0.0%	0.0%
Bi-weekly	1.6%	9.4%	2.3%	38.6%	100.0%	94.6%	94.0%
Monthly	19.2%	0.0%	7.6%	0.0%	0.0%	0.0%	0.0%
Quarterly or Semester	0.8%	0.0%	0.0%	0.0%	0.0%	0.0%	1.9%
Yearly	0.0%	13.5%	0.0%	0.2%	0.0%	0.0%	0.0%
No Term	69.9%	16.2%	74.9%	61.2%	0.0%	0.0%	4.1%
What occurs when borrower doesn't repay:							
Non-refinancing	63.5%	58.3%	48.5%	0.7%	32.3%	18.2%	24.3%
Report to authorities	6.8%	9.8%	16.0%	0.0%	34.2%	64.3%	59.8%
Collateral taken	3.2%	1.8%	18.4%	98.6%	31.1%	2.8%	11.5%
Term extended	6.7%	3.1%	12.4%	0.0%	1.1%	5.5%	0.0%
No default penalty	11.9%	6.2%	8.6%	0.0%	0.0%	0.0%	0.0%
Observations	90	79	164	13	78	39	91

Source: Colombia MIDAS Program 2007, USAID

Table 5: Evidence from Small and Medium U.S. Firms

		By Firm Size (Employees)			
	All Firms	0-19	20-49	50-99	100-499
Used Trade Credit last year	60.1%	58.0%	86.6%	89.4%	86.4%
o/w also had a line of credit	42.5%	39.8%	62.4%	69.9%	76.4%
o/w also had a checking account	98.3%	98.1%	99.8%	99.8%	100.0%
Observations	4240	2707	530	534	469
Of those with Trade Credit					
Paid late last year	40.9%	40.5%	43.3%	46.5%	46.5%
No penalty for late payment	43.0%	41.6%	53.8%	58.7%	57.6%
Average penalty if there is one	1.6%	1.6%	1.5%	1.4%	1.5%
Observations	2922	1586	457	469	410

Averages weighted to be representative of the population

Source: Federal Reserve, Survey of Small Business Finance, 2003

Table 6: Interest Rate Comparison, U.S. Small Firms [1]

	Suppliers [2]	Credit card	Last bank loan
Mean	141.66%	12.57%	6.54%
Median	43.53%	12.00%	6.00%
25th percentile	31.22%	9.00%	4.95%
75th percentile	105.29%	16.20%	7.80%
Observations	695	1,850	1,761

1 Statistics weighted to be representative of the population
2 Author's estimate from the SSBF 2003. Discount in days, annualized

Table 7: Financing for Working Capital by Small and Medium Firms, Andean Region

	Firms By Size			Firms
% Working capital financed by:	Small (5-19)	Medium (20-99)	Large (>100)	With Line of Credit
PERU				
Internal Funds	50.4%	44.9%	40.7%	39.0%
Banks	23.3%	29.6%	34.1%	36.5%
Suppliers	19.6%	19.2%	18.5%	19.7%
Family/Friends	4.3%	3.0%	1.0%	2.1%
Observations	272	250	108	443
ECUADOR				
Internal Funds	49.7%	48.3%	47.4%	41.6%
Banks	12.3%	19.0%	30.3%	28.1%
Suppliers	27.7%	23.6%	18.6%	23.2%
Family/Friends	4.6%	3.1%	0.9%	2.7%
Observations	279	233	138	377
BOLIVIA				
Internal Funds	58.9%	59.7%	56.5%	46.6%
Banks	16.7%	21.7%	23.1%	31.8%
Suppliers	12.6%	11.1%	16.5%	12.5%
Family/Friends	7.3%	3.2%	1.1%	4.9%
Observations	295	213	96	332

Source: Author's calculations from World Bank Enterprise Surveys