Franchising Microfinance

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Abstract

Financial intermediaries worldwide are seeking mechanisms for participating in micro lending. We consider a simple model where a bank may use informed "local capitalists" as intermediaries for on-lending. But the availability of multiple credit sources provides borrowers with an incentive to default voluntarily, making the bank's on-lending mechanism a non-starter. We explore whether a coalition of local capitalists, effectively limiting borrower's opportunity for defaulting multiple times, might be sufficient to facilitate on-lending. Instead, we find that a monopoly moneylender with superior enforcement technology can out-compete the local capitalist coalition if the moneylender also enjoys the smallest transaction cost of lending. We show that a credible competitive threat to the monopoly moneylender can only arise if the local capitalist coalition also provides information sharing benefits that lower their cost of lending compared with that of the moneylender. Franchising is a mechanism that allows local capitalists to form a credible coalition that may also be cost effective. We analyze conditions under which welfare-enhancing franchising is likely to obtain.

JEL Classification: G21

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1 Introduction

Microfinance, and in particular microcredit which provides small loans, is gaining recognition because of its promise of giving access to finance to millions of world's poor and helping them rise out of poverty. Indeed, the 2006 Nobel Peace Prize awarded to Muhammad Yunus and the Grameen Bank is a testimony of this growing promise of Microfinance. The role of moneylenders, who are alleged to charge usurious rates of interest, continues to be critical in the provision of microcredit in many developing countries (Akerlof, 1970, Siamwalla *et al*, 1990). By contrast, formal financial intermediaries, such as banks, not only suffer from an informational disadvantage and an inability to enforce contracts, prohibitively high transactions costs of lending small amounts make it all but impossible to extend credit profitably. The mechanism for the provision of microfinance continues to be a challenge. Our paper offers an alternative institutional structure as a possible solution for the unique demands of microfinance.

We explore an alternative mode of credit provision based on the use of information available within the local population and consider the role of these locally-informed individuals as effective on-lenders for mainstream financial institutions. We argue that, unlike banks, there exist many individuals in the neighborhood of any given borrower who possess relevant information about the borrower that is helpful in screening and monitoring the borrower. Besides information, some of these individuals may also possess (possibly illiquid) collateral, such as houses, jewelry and animals, against which they could obtain loans from various formal financial intermediaries, such as banks, for on-lending to borrowers without such collateral but in need of funds. But these potential lenders, let us call them "local capitalists," (Greg Casagrande of South Pacific Business Development Foundation calls them "Microangels") may lack the necessary enforcement technology that is available to the moneylender. They would have to rely on self-enforcing contracts to prevent the borrower from defaulting voluntarily. Even when each local capitalist can credibly threaten to deny further credit to a borrower who defaults on a loan made by him (i.e., bilateral punishment strategy, along the lines of Greif, Milgrom and Weingast, 1994), it is ineffective in deterring voluntary default in the face of competition among such local capitalists. Following default against one local capitalist, the borrower may approach another local capitalist for a loan subsequently. The possibility of voluntary default by a borrower in the presence of multiple local capitalists without an effective enforcement technology reduces and may eliminate each local capitalist's incentive to

offer a loan in the first place.

We consider a coalition in which each local capitalist commits to refuse credit to a borrower who may have defaulted against another member of the coalition (*i.e.*, multilateral punishment strategy). If such an arrangement can attract local capitalists as lenders, it would reduce the borrower's incentive for voluntary default. The incentive for a local capitalist to join the coalition would be the possibility of making a loan profitably where no such market is feasible in the absence of such a coalition. However, each local capitalist would continue to compete against other coalition members for the borrower's business prior to a default.

The suggested multilateral punishment strategy resolves the local capitalists' commitment and contract enforcement problem. It is worth noting that the primary purpose of the coalition envisaged here is not necessarily as an institution, such as a credit bureau, for sharing borrower default information. In fact, even if such information were publicly available, lending, in our model, would not take place in the absence of a coalition. Coalition, in our model, is an multilateral punishment strategy by which lenders credibly commit not to lend to a defaulter even when it may be individually desirable to do so *ex post*.

However, the feasibility of local capitalist lending becomes suspect once we allow for competition between an independent moneylender and local capitalists who lend as a coalition. We show that when the moneylender is the cheapest producer of loans, the local capitalists, even if they form a coalition, cannot out-compete the moneylender who possesses superior enforcement technology. The moneylender repeatedly provides loans to the borrower effectively shutting the local capitalists out of the market for microcredit.

We offer Franchising as a possible solution. Franchising would perform two critical functions. One, it would provide a mechanism for all local capitalists to form a coalition that allows local capitalists to credibly commit not to lend to defaulting borrowers. Two, it would also act as an institution for information sharing among franchisees, much like a credit bureau, lowering the screening costs. The reduced costs of making loans may now allow local capitalists to effectively compete with the moneylender. Less critical, though helpful, benefits of franchising, such as standardization and superior risk-management techniques, could give a further fillip to local capitalists in successfully out-competing the moneylender.

We model franchise formation as competition among potential franchisors with initial set-up

costs which are recouped by charging a per loan fee to franchisees. We analyze conditions under which franchising fails to obtain which provides insights about incentives to join the franchise, the role of costs of lending, and possible interventions that could make welfare-enhancing franchising outcome more likely.

2 Background on Microfinance and Related Literature

Microfinance refers to the provision of financial services to low-income and poor segments of the population. Traditionally, the focus of microfinance was the provision of credit.[1] The need for microfinance arises from the alleged failure of the formal financial sector including commercial banks in catering to the low-income population. The target population for microfinance typically has little or no cash income, lacks collateralizable assets and needs financial services in small ("micro") quantities. Each of these features makes the low-income population unattractive to mainstream financial service providers such as banks. Banks are reluctant to extend loans to individuals who offer little evidence of cash flows, raising doubts about their ability to repay the loan. A loan typically requires the borrower to offer assets as collateral against the loan. Most of the poor have no assets, and certainly no assets that would qualify as acceptable collateral for a bank loan. These problems are further exaggerated in developing countries with poorly-defined property rights and ineffective contract enforcement institutions. Finally, the costs of processing loan applications makes smaller loans relatively unattractive.

A number of the roadblocks in making financial services available to the low-income population arise from problems of asymmetric information between the formal finance institutions and borrowers, which adversely impacts the availability of and access to formal credit. In the absence of formal financial institutions, alternative institutions have attempted to fill the vacuum. One of the most well-known microfinance institution is the Grameen Bank in Bangladesh. The main innovation of the Grameen model is the group-lending contract, whereby the bank lends exclusively to groups of poor individuals. Each group, typically consisting of five borrowers, forms voluntarily, and while the loans are made to individuals, the entire group bears responsibility for the repayment of any loan to its members. Under such joint liability, if any member defaults, all other group members

[1] However, there has now been recognition of the critical need for other financial services, including savings and insurance.

are denied credit. This provides incentives for group members to monitor each other.

There is a burgeoning literature on microfinance that studies peer monitoring, group lending with joint liability and various dynamic incentives, to address the problem of unenforceability of loan contracts in the face of asymmetric information between formal finance institutions and borrowers, *e.g.*, Jain and Mansuri (2003), Ghosh and Ray (2001), Armendáriz de Aghion (1999), Ghatak and Guinnane (1999), Besley and Coate (1995), to name a few. However, these papers largely ignore the possibility of other costs incurred, in the form of collusion among group members and continued monitoring by lenders (Armendáriz de Aghion and Morduch, 2000). Furthermore, unlike our paper, these papers ignore that availability of credit from competing lenders can make strategic default by borrowers more likely. Our paper considers individual lending contracts. Our focus away from group lending is to some extent prompted by the growing reliance on individual lending by MFIs, such as BancoSol, that had traditionally used group lending. Besides, in a randomized field experiment comparing individual with group liability, Gine and Karlan (2006) find no advantage in repayment rates or outreach from group lending.

Another set of papers (*e.g.*, Bubna, 2007, Jain, 1998)) recommend linking formal institutions with the better-informed informal institutions to get around the asymmetric information problem. Such a linkage also lies at the heart of our paper. However, these papers too ignore the impact of competition or the potential agency problems in case the informal lenders are hired as agents of the formal institutions. We propose that informed local individuals with collateral become *principals* in the financial intermediation chain.

Besides these papers, our paper is broadly related to two other strands in the literature. We consider the problem of contract enforcement and commitment, along the lines of the work by Greif (1993) and Greif, Milgrom and Weingast(1994), among others. As in their work, we also consider alternative punishment strategies and identify a mechanism for credible commitment on the part of the local capitalists. However, our analysis explicitly considers the role of competition among local capitalists as well as between local capitalists and a moneylender. Such interplay between different types of players is found to have important implications for the final outcome.

A second related strand of the literature considers the possibility of multiple sources of loans. Similar to our paper, work by Bizer and DeMarzo (1992) and Parlour and Rajan (2002) also consider moral hazard and externalities in an environment permitting multiple financial contracts. However,

there are some key differences. In Bizer and DeMarzo (1992), borrowers have the right to offer a contract, not the lender. Such an assumption in our paper would eliminate the moneylender's monopoly power, critically impacting the results. In addition, unlike Parlour and Rajan (2002), they do not allow for the possibility of strategic default, which is the source of moral hazard in our paper. Parlour and Rajan (2002) consider the impact on loan contracts when borrowers take loans simultaneously from multiple lenders. However, in our paper, loans are taken sequentially and there is no issue of debt priority since the loans do no overlap. Most importantly though, both papers assume that lenders are identical and focus only on borrower behavior. In our paper, the focus is on the role of lenders when they differ in their lending costs as well as enforcement technology.

A paper by McIntosh and Wydick (2005) considers the role of competition among lenders without any overlapping loans. They focus on the type of borrowers (with high or low collateral) who get funded when competition among lenders increases. They show that due to competition, MFIs that are unable to lend to the high collateral borrowers must therefore rely on grants. In addition, they do not consider the possibility of strategic default. In our paper, all borrowers are similar but lenders are all profit-maximizers with different enforcement technologies. Strategic default lies at the heart of the problem with increased competition among lenders even without asymmetric information about borrower types. Nor is there any asymmetric information about the identity of borrowers who default. Our paper focuses on the problem of credible commitment on the part of lenders as well as the feasibility of funding even in the absence of borrower collateral.

Finally, a paper by Varghese (2005) considers a model with borrower types as well as strategic default. In this environment, it determines a separating equilibrium when there are competing banks (without other informal lenders), and compares it to an alternative scenario when the bank forms a link with a single moneylender. Our paper differs from this along several important dimensions. To begin with, our focus is primarily on strategic default, rather than *ex ante* asymmetric information regarding borrower types. So, we are not concerned with the sorting problem. More importantly, we allow for a bank to link up simultaneously with many competing informal lenders rather than just one as in the Varghese study. We therefore allow for competition in conjunction with linkages, not just one or the other.

3 The Model

We assume a local area, *e.g.*, a small village economy, with three sets of players - borrowers, moneylenders with enforcement technologies, and local capitalists with (possibly illiquid) collateral against which they can borrow funds from financial intermediaries to potentially lend to borrowers with no collateral. All players are risk neutral.

In every period, a borrower without any collateral and without any funds of her own, needs \$1 to fund a project. In the next period, the project generates a gross payoff, R, with probability p, and 0 otherwise. The project is a positive NPV project, $\frac{pR}{1+r^f} > 1$ where all risk-neutral agents discount future cash flows at the risk-free rate r^f. Let r^p denote the discount rate adjusted for the condition that the positive payoff R is obtained only with probability $p < 1$. Thus

$$1 + r^p = \frac{1 + r^f}{p}. \tag{1}$$

The only contract that moneylenders can offer is a standard loan contract. For each borrower, there is a single moneylender in the village who has the ability to enforce the loan contract.[2] We define enforcement as the ability of the moneylender to impose a cost on the borrower, explicit or implicit, either through social sanctions or physical sanctions, equal or greater than what is owed to him by the borrower. This ensures that the borrower obtains no benefit from voluntarily defaulting against the moneylender. It is reasonable to assume that such enforcement imposes a cost on the moneylender.

There are a number of local capitalists in the local area who own assets that they can pledge as collateral to borrow from banks at the risk-free rate. However, they do not have an enforcement technology of the type that is available to the moneylender. We assume that the borrower can consume the funds after voluntarily defaulting on her loans from local capitalists, but local capitalists can prevent the borrower from defaulting and investing these funds in future projects (in essence becoming her own banker for future projects).[3] This may, however, require costly monitoring by local capitalists. Similarly, borrower screening may be required to ascertain her existing indebtedness and alternative sources of credit available to her. Local capitalists are differentially familiar with

[2] See Hoff and Stiglitz (1998) for a model with endogenous enforcement costs and effects of subsidies that might reduce these costs.

[3] This type of assumption is standard in the literature on sovereign lending (see Chowdhry, 1991 and references therein).

a borrower. The more familiar is the local capitalist, the lower is his transaction cost. One way to think about this is that the transaction cost is based on the distance between the local capitalist and the borrower. So, the closer the borrower, the lower the transaction cost. Note that these costs are specific to the borrower. In other words, a local capitalist will have different transaction costs for different borrowers.

To formalize this, we assume that each local capitalist incurs a unique cost of screening and monitoring the loan (let us call it transaction cost of lending) to a given borrower every time he enters into a loan contract with the borrower. Without any loss of generality let us denote these costs for other local capitalists as

$$0 < c^1 < c^2 < c^3 < .....$$

We assume that for each borrower, there is a moneylender who also incurs transaction cost of c^M which includes the enforcement cost and possibly some screening and monitoring cost. Given the moneylender's enforcement ability, his screening and monitoring of the borrower is not required to be as intensive as it would be for local capitalists. For simplicity, we do not carry any notation denoting the borrower.

We assume that project return, success probability, discount rates and lenders' transaction costs are all common knowledge. We also assume that a borrower cannot have multiple loans at any point in time. So, borrowing may take place sequentially without concerns about debt priority.

In case the project fails, the borrower would be forced to default. However, a borrower can also default voluntarily when the project is successful. Each local capitalist chooses never to re-lend to a borrower who has defaulted on his loan to him. This can be supported by a reputation argument in which a local capitalist deviating from this policy might be flooded with defaults by his other borrowers.

In every period, there are two stages. In stage one, a lender decides whether to lend to a specific borrower or not, and what interest rate (r) to charge. Then the borrower decides whether to undertake the project. If she decides to undertake the project, she chooses the lender to borrow from. In stage two, payoffs are realized and a borrower decides whether or not to default on the loan. The same game can be repeated over multiple periods for every borrower.

Borrower's participation constraint is simply that the total amount owed, the principal payment

of 1 plus the interest payment of r, cannot exceed the gross payoff from the project. Formally,

$$1 + r \leq R.$$

Lenders' participation constraints are that they must expect to recover the amount owed plus the transaction cost c of making the loan. Let $r^0(c)$ denote the minimum interest that a lender must charge to break-even (make zero expected profits). Thus $1 + r^0(c)$ represents the total cost of making a \$1 loan to the borrower. For a lender with transaction cost c,

$$1 + r^0(c) = (1 + r^p)(1 + c). \tag{2}$$

It is easy to see that

$$r^p \equiv r^0(0) < r^0(c^1) < r^0(c^2) < r^0(c^3) < .....$$

Lenders' participation constraints, then, are that the interest charged must be such that it exceeds the cost of lending. Formally,

$$1 + r \geq 1 + r^0(c). \tag{3}$$

3.1 A Monopolist Moneylender

We assumed that for every borrower, there exists a moneylender with transaction cost c^M and an enforcement technology that ensures that the borrower will choose not to default voluntarily against him. Suppose the moneylender is the only lender willing to make a loan to the given borrower. In this case, because the moneylender is a monopolist, he will extract all the surplus possible and charge an interest rate r^M such that

$$1 + r^M = R.$$

This fits in well with the observation that borrowers in many cases face a monopolist moneylender who charges usurious rates on interest. So the borrower has a net payoff of 0. The entire surplus that the moneylender enjoys is due to his monopoly position; in a competitive market, he would have charged $r^0(c^M)$ and not suffered any voluntary default given his enforcement technology.

3.2 Competing Local Capitalists as Potential Lenders

Now consider the case where there exist many local capitalists who could potentially lend to the borrower. They rely on self-enforcing contracts to deter borrower default. In particular, we study

each local capitalist's use of a bilateral punishment strategy whereby he does not lend to a borrower who defaults against him. We determine conditions under which such a mechanism would permit local capitalist lending.

Let V_n denote the present value of borrower's surplus when there are n opportunities to borrow sequentially from local capitalists after each successive default, assuming that default is not voluntary but is the result of bad state of nature that occurs with probability $(1-p)$. If the borrower does not default voluntarily, then with probability p, the project returns R, the borrower repays $(1+r_n)$ and she is in the same situation as before. With probability $(1-p)$, the project returns zero, the borrower is forced to default and she now has only $n-1$ opportunities left for defaulting. Formally,

$$V_n = \frac{p\{R-(1+r_n)+V_n\}+(1-p)V_{n-1}}{1+r^f}.$$

Solving, we get

$$V_n = \frac{R-(1+r_n)}{r^p} + \theta V_{n-1}, \tag{4}$$

where

$$0 < \theta \equiv \left[\frac{(1-p)}{(1-p)+r^f}\right] < 1. \tag{5}$$

The first term in the above expression represents the present value of the surplus $R-(1+r_n)$ in perpetuity discounted at r^p, the risk-free rate adjusted for the probability of default by the borrower. The second term represents the borrower surplus when she has $n-1$ opportunities for default discounted by θ which depends on the risk-free rate as well as the probability $(1-p)$ with which the borrower is likely to default on her first loan.

The borrower will compare the cost of voluntarily defaulting, $V_n - V_{n-1}$ to the benefit of defaulting which is $(1+r_n)$ and will choose not to default when

$$V_n - V_{n-1} \geq (1+r_n).$$

Clearly, $V_0 = 0$ since there are no further credit opportunities to borrow from local capitalists. (Whether the moneylender is still available to borrow from after exhausting all possible opportunities to borrow from local capitalists does not affect V_n since borrower's surplus is zero when the moneylender is the last possible source of loans.) With only 1 potential lender (i.e., $n=1$), the borrower will choose not to default if what she owes to the lender $(1+r_1)$ is smaller than the value

V_1 from not defaulting. Formally, this condition is expressed as

$$(1 + r_1) \leq V_1 = \frac{R - (1 + r_1)}{r^p}.$$

Simplifying, we get

$$(1 + r_1) \leq \frac{R}{1 + r^p}$$

and substituting this in the expression for V_1 above we get,

$$V_1 = \frac{R - (1 + r_1)}{r^p} \geq \frac{R - (\frac{R}{1+r^p})}{r^p} = \frac{R}{1 + r^p}.$$

Thus, we have

$$(1 + r_1) \leq \frac{R}{1 + r^p} \leq V_1. \tag{6}$$

Combining this with lenders' participation constraint (3), we get

$$1 + r^0(c) \leq \frac{R}{1 + r^p}. \tag{7}$$

This gives us our first proposition.

Proposition 1 *If every local capitalist's cost of lending* $1 + r^0(c^i) > \frac{R}{1+r^p}$*, then the borrower will only be able to borrow from the monopolist moneylender who will extract all surplus.*

Financial intermediaries such as banks may be characterized by high transaction costs of lending (partly caused by asymmetric information) and no technology to enforce loan contracts such that (7) is violated. These constraints on lending may explain why banks are unable to lend to borrowers in the absence of collateral without suffering losses caused by frequent defaults by borrowers. We assume that there exist many local capitalists who possess relevant local information about any given borrower such that their transaction cost c is small enough that condition (7) is satisfied. We will now show that the mere presence of many such local capitalists does not guarantee that they will be willing to lend to the borrower with no collateral.

We derive a condition for the borrower not defaulting voluntarily when she has two opportunities for defaulting before exhausting all sources of credit from local capitalists. Substituting $n = 2$ in (4), we get

$$V_2 = \frac{R - (1 + r_2)}{r^p} + \theta V_1$$

which implies that

$$V_2 - V_1 = \frac{R - (1 + r_2)}{r^p} - (1 - \theta)V_1.$$

Since $V_1 \geq \frac{R}{1+r^p}$ from (6), we get

$$V_2 - V_1 \leq \frac{R - (1 + r_2)}{r^p} - (1 - \theta)\frac{R}{1 + r^p}.$$

The term $V_2 - V_1$ represents the penalty of defaulting voluntarily when there are two opportunities to borrow from local capitalists because by defaulting voluntarily, the borrower forgoes one of the two opportunities. When $n = 2$, the borrower will choose not to default if

$$(1 + r_2) \leq V_2 - V_1 \leq \frac{R - (1 + r_2)}{r^p} - (1 - \theta)\frac{R}{1 + r^p}.$$

Simplifying, we get

$$(1 + r_2) \leq \frac{1}{1 + r^f}\left[\frac{R}{1 + r^p}\right].$$

Again, combining this with lenders' participation constraint, we get

$$1 + r^0(c) \leq \frac{1}{(1 + r^f)}\left[\frac{R}{1 + r^p}\right]. \tag{8}$$

Proposition 2 *Assume that there exist many local capitalists with costs of lending* $1 + r^0(c)$ *such that*

$$\frac{1}{(1 + r^f)}\frac{R}{1 + r^p} < 1 + r^0(c) < \frac{R}{1 + r^p}.$$

Lending by local capitalists, even though individually feasible, will not occur in equilibrium when there exists an even number of opportunities for default.

Proof: The condition on cost of lending satisfies (7) but violates (8). So, lending would occur if the borrower has only one opportunity for default. Now, suppose there are only two local capitalists. In this case, neither of the two has an incentive to lend first because he knows that the minimum interest rate that he must charge to recover his costs are so high, since (8) is violated, that the borrower has an incentive to default on the loan offered by the local capitalist and then subsequently borrow from the other local capitalist. Now suppose there were three local capitalists. Now, every local capitalist would like to lend first knowing that following a default the remaining two will not lend to the borrower again. So lending will be an equilibrium outcome when it is common knowledge that there are exactly three lenders. This implies, however, that with exactly four

lenders, no lending will be an equilibrium outcome again. This creates a pattern in which lending occurs in equilibrium when there are odd number of lenders and no lending takes place when the number of lenders is even.■

The above proposition shows that with exactly two local capitalists, no lending will take place. Arguably, this could provide an incentive for the two local capitalists to form a coalition such that together they restrict the borrower from defaulting more than once. Given that lending decisions are made sequentially, with three local capitalists, lending is in fact no longer an equilibrium. This is because no lender would risk lending to the borrower first fearing that the remaining two lenders might form a coalition and lend to the borrower after she has defaulted on the first lender. However, if all three lenders were to form a coalition and restrict the borrower from borrowing again after default, lending becomes feasible again. This suggests that the only way lending will occur with many local capitalists will be if all were to form a coalition based on a multilateral punishment strategy that restricts the members from lending to a borrower after a default. Restricting attention to situations where borrower has either one or two opportunities to borrow is adequate for the analysis that follows.

4 A Solution with Local Capitalist Coalition

Formation of a coalition of local capitalists requires credible commitment among its members to ensure that the borrower would effectively obtain only one opportunity for defaulting against local capitalists as a group. Such a commitment may arise endogenously as in Greif (1993). Of course, coalitions may also arise in the form of institutions that put in place explicit restrictions on participating coalition members who agree to abide by these restrictions because it is profitable to join the coalition (Greif, Milgrom and Weingast, 1994).[4]

Consider a coalition of local capitalists (henceforth referred to as "coalition") in which no coalition member can offer a loan to a borrower who may have defaulted against any coalition

[4] A multilateral punishment strategy along the lines suggested in Greif (1993) may not work in our model. Suppose the local capitalist coalition does not explicitly restrict lending to defaulting borrowers. Following a default, each member would have an incentive to lend, given his expectation that all other coalition members adhere to the strategy of not lending as suggested by the coalition. Therefore, the multilateral punishment strategy where each coalition member voluntarily decides to not lend to a defaulting borrower cannot be an equilibrium strategy.

lender. However, there is no restriction on the interest rate that any participating coalition member may charge.

It is obvious that each local capitalist would have an incentive to join the coalition, given that he does not make a loan in the absence of such a mechanism. Assume that the moneylender does not join the coalition. (We can later demonstrate that this is indeed the moneylender's optimal decision.) So, a default against the local capitalist coalition does not preclude the moneylender from extending another loan to the borrower, and vice versa. Effectively, there is only one possible opportunity to borrow from local capitalists.

4.1 Competition between the Coalition and a Non-forgiving Moneylender

It is useful to first consider the case in which the moneylender chooses to deny further credit to a borrower who defaults on the moneylender's loan. (We shall later see, that the moneylender will, in fact, continue lending to a defaulting borrower.) Thus the borrower has two chances to default before getting shut-off completely from the market for loans.

The borrower can approach the moneylender and the coalition in two possible sequences. One is to borrow from a local capitalist first and in the event of a non-voluntary default, go to the moneylender as the last resort. The second possible sequence is to borrow from the moneylender first and in the event of a non-voluntary default, go to a coalition member as the last resort.

We have seen earlier that if the moneylender is borrower's only lending source, he acts as a monopolist and charges her an interest rate r_1^M to extract all the surplus. Formally,

$$1 + r_1^M = R. \tag{9}$$

The subscript 1 on the interest rate indicates that the borrower has one chance to default before exhausting all borrowing opportunities. The superscript denotes the lender who is the moneylender M in this case.

On the other hand, if the borrower has already defaulted on the moneylender and coalition is the only sources left for borrowing, there will be Bertrand competition among the local capitalists and the local capitalist with the smallest transaction cost to the borrower, c^1, will lend and charge an interest rate that prevents the local capitalist with the next smallest transaction cost, c^2, from

offering the loan and making a positive profit. Formally,

$$1 + r_1^1 = 1 + r^0(c^2). \tag{10}$$

At this interest rate, local capitalist with the smallest transaction cost c^1 will expect to make a positive profit whereas all remaining local capitalists with transaction costs greater than or equal to c^2 will make non-positive profits.

Let $X(r, c)$ denote the present value of the profits made by a lender charging an interest rate of r and transaction cost c. Then,

$$X(r, c) = -(1 + c) + \frac{p\{(1 + r) + X(r, c)\}}{1 + r^f}.$$

The term $1 + c$ represents the total upfront costs of making a loan of 1. With probability p, the borrower will repay $(1+r)$ next period and the lender will be in identical situation. With probability $(1 - p)$, there is default and hence no further lending occurs resulting in zero payoff. Solving for $X(r, c)$, substituting from (1), (2) and simplifying, we get

$$X(r, c) = \frac{(1 + r) - [1 + r^0(c)]}{r^p}.$$

The expression above has a simple intuitive interpretation. The lender collects $(1+r)$ every period whereas the cost of making the loan is $[1+r^0(c)]$. This difference between the two is lender's surplus in perpetuity which is discounted at the default-risk adjusted rate r^p. Thus, for the moneylender lending last, from (9)

$$X(r_1^M, c^M) = \frac{R - [1 + r^0(c^M)]}{r^p}, \tag{11}$$

and for the local capitalist with transaction cost c^1 lending last, from (10)

$$X(r_1^1, c^1) = \frac{[1 + r^0(c^2)] - [1 + r^0(c^1)]}{r^p} = \frac{1 + r^p}{r^p}(c^2 - c^1) > 0. \tag{12}$$

Let r_2^M denote the interest charged by the moneylender, if he decides to lend first and the borrower has two opportunities to default before exhausting all sources of credit. Then,

$$X(r_2^M, c^M) = \frac{(1 + r_2^M) - [1 + r^0(c^M)]}{r^p}. \tag{13}$$

Similarly, let r_2^1 denote the interest charged by the local capitalists with the smallest cost, c^1, if he decides to lend first and the borrower has two opportunities to default before exhausting all sources of credit. Then,

$$X(r_2^1, c^1) = \frac{(1 + r_2^1) - [1 + r^0(c^1)]}{r^p}. \tag{14}$$

We now examine lenders' incentives to lend first rather than wait for the borrower to default and then lend. Let $Y(r_1, c)$ denote the present value of a lender's expected profits, if he waits for the borrower to default against the first lender, which happens with probability $(1-p)$. With probability p, the borrower repays the loan to the first lender in which case the lender who waits is in exactly the same situation. Then,

$$Y(r_1, c) = \frac{pY(r_1, c) + (1-p)X(r_1, c)}{1 + r^f}.$$

Solving for $Y(r_1, c)$, we get

$$Y(r_1, c) = \theta X(r_1, c). \tag{15}$$

The moneylender will choose to lend first rather than wait for the borrower to default and then lend if

$$X(r_2^M, c^M) \geq Y(r_1^M, c^M) = \theta X(r_1^M, c^M).$$

Substituting from (11) and (13) and simplifying, we get

$$1 + r_2^M \geq \theta R + (1-\theta)[1 + r^0(c^M)]. \tag{16}$$

The right hand side of the above condition is a weighted average of what the moneylender will collect if he waits to lend to the borrower after she has defaulted on the coalition lender, R, and the smallest rate the moneylender can charge without making losses, $[1 + r^0(c^M)]$. The weight given to R is θ.

Analogously, the local capitalist with transaction cost c^1 will choose to lend first rather than wait for the borrower to default and then lend if

$$X(r_2^1, c^1) \geq Y(r_1^1, c^1) = \theta X(r_1^1, c^1). \tag{17}$$

Substituting from (12) and (14) and simplifying, we get

$$1 + r_2^1 \geq \theta[1 + r^0(c^2)] + (1-\theta)[1 + r^0(c^1)]. \tag{18}$$

The right hand side of the above condition is a weighted average of the rate the local capitalist will charge when he competes with the local capitalist with the next smallest transaction cost, $[1 + r^0(c^2)]$, and the rate he can charge without making losses, $[1 + r^0(c^1)]$.

We now consider the borrower's decision. Let $V_2^{M,1}$ denote the present value of the borrower's surplus if she chooses to borrow from the moneylender first and then the local capitalist with transaction cost c^1. The surplus after defaulting on the moneylender, denoted V_1^1, is:

$$V_1^1 = \frac{R - (1 + r_1^1)}{r^p} = \frac{R - [1 + r^0(c^2)]}{r^p}. \tag{19}$$

Thus,

$$V_2^{M,1} = \frac{p\{R - (1 + r_2^M) + V_2^{M,1}\} + (1 - p)V_1^1}{1 + r^f}.$$

Simplifying and substituting from (5), we get

$$V_2^{M,1} = \frac{R - (1 + r_2^M)}{r^p} + \theta V_1^1. \tag{20}$$

Let $V_2^{1,M}$ denote the present value of the borrower's surplus if she chooses to borrow from the local capitalist with transaction cost c^1 first and then the moneylender. The surplus after defaulting on the local capitalist is zero as the moneylender extracts all the surplus from the borrower when he is the last lender. Thus,

$$V_2^{1,M} = \frac{R - (1 + r_2^1)}{r^p}. \tag{21}$$

Proposition 3 *If $c^M < c^1$, each borrower will choose to borrow from the moneylender first and after she is forced to default on the moneylender, she will borrow from the local capitalist with the smallest transaction cost of lending to her. If $c^M > c^1$, this sequence of borrowing is reversed.*

Proof: Suppose that the moneylender offers the smallest interest rate that is consistent with his incentive to lend first. This is when (16) is satisfied as an equality. Substituting in (20) and using (19), we get:

$$V_{2,\max}^{M,1} = \frac{R - \left\{\theta\left(1 + r^0(c^2)\right) + (1 - \theta)\left(1 + r^0(c^M)\right)\right\}}{r^p}. \tag{22}$$

Similarly, borrower welfare at the smallest interest rate that the local capitalist with transaction cost c^1 would be willing to charge to lend first is:

$$V_{2,\max}^{1,M} = \frac{R - \left\{\theta\left(1 + r^0(c^2)\right) + (1 - \theta)\left(1 + r^0(c^1)\right)\right\}}{r^p}. \tag{23}$$

Comparing (22) and (23), it follows that, if $c^M < c^1$, the moneylender can out-compete the local capitalists such that the borrower would choose to borrow from the moneylender first. If $c^M > c^1$, the reverse holds.■

Proposition 4 *If $c^M < c^1$, the borrower borrows from the moneylender first at an interest rate r_2^M which is higher than what the local capitalist would be willing to charge to lend first r_2^1.*

Proof: The moneylender chooses an interest rate just below the rate which makes the borrower welfare equal to the maximum she could obtain were she to borrow from the local capitalist first which is given by (23). Using (19) in (20) and equating it to (23), we get:

$$1 + r_2^M = \theta R + (1 - \theta)[1 + r^0(c^1)]. \tag{24}$$

Since $c^M < c^1$, the rate above satisfies the moneylender's incentive to lend first as given in (16). Comparing (24) with the local capitalist's best offer given by the RHS of (18), the result follows.■

The result above is interesting – it shows that the borrower prefers to borrow from the moneylender first even though the interest rate charged by the moneylender is higher than what the coalition would charge to lend first. When the moneylender is competing for borrower's business with the coalition, he has an incentive to lower his interest rate. However, the moneylender does not have to lower the interest rate charged too much because the borrower realizes that were she to borrow from the coalition lender first, she would have no surplus left after she has defaulted on the coalition and the moneylender is the only game in town.

It is easy to see that the moneylender makes positive profits. When $c^M < c^1$, the coalition lends only after the borrower has defaulted against the moneylender who refuses to lend him again by assumption. The local capitalist with the smallest cost c^1 charges $r^0(c^2)$ and makes strictly positive profits in equilibrium, from (12).

Note that if the moneylender too were to join the coalition, with Bertrand competition, the moneylender would charge $r^0(c^1)$ which is lower than the interest moneylender charges without being part of the coalition, given by (24). So, it is optimal for the moneylender to not join the coalition, which is consistent with assumption we made at the outset.

4.2 Competition between the Coalition and a Forgiving Moneylender

So far we had assumed that the moneylender refuses to lend to a borrower who defaults on a loan made by the moneylender. However, given that lending is profitable for the moneylender, there is no reason to assume that he would not want to lend again to a defaulting borrower. Notice that the borrower would never default voluntarily against the moneylender given his enforcement

technology. This suggests that moneylender may in fact continue to offer loans to the borrower even after repeated defaults.

If the moneylender is able to offer an interest rate that leads the borrower to borrow from him first, the coalition will effectively never have an opportunity to lend. So, the coalition will be willing to lend first as long as it can offer an interest rate that covers its cost of making the loan, *i.e.*,

$$1 + r_2^1 \geq 1 + r^0(c^1).$$

The maximum borrower surplus in this case is

$$\frac{R - \{1 + r^0(c^1)\}}{r^p}. \tag{25}$$

Now consider the moneylender's incentives to lend first rather than wait until the borrower defaults on coalition loan. Let $X_\infty(r^M, c^M)$ denote the present value of the profits made by a lender charging an interest rate of r^M and transaction cost c^M. Then,

$$X_\infty(r^M, c^M) = -(1 + c^M) + \frac{p\{(1 + r^M) + X_\infty(r^M, c^M)\} + (1 - p)X_\infty(r^M, c^M)}{1 + r^f}.$$

Solving for $X_\infty(r^M, c^M)$, we get

$$X_\infty(r^M, c^M) = \frac{(1 + r^M) - [1 + r^0(c^M)]}{r^f/p}. \tag{26}$$

On the other hand, if the moneylender lends after the borrower has defaulted on coalition loan, the present value of his profits are:

$$\theta \frac{\left[R - \{1 + r^0(c^M)\}\right]}{r^f/p}. \tag{27}$$

From (26) and (27), it follows that the moneylender would prefer to lend before the coalition if:

$$1 + r^M \geq \theta R + (1 - \theta)[1 + r^0(c^M)]. \tag{28}$$

The borrower surplus in this case is

$$\frac{R - (1 + r^M)}{r^f/p}. \tag{29}$$

The borrower would prefer to borrow from the moneylender if the moneylender charges r^M such that (29) exceeds (25) which after simplifying implies:

$$1 + r^M \leq \theta R + (1 - \theta)\{1 + r^0(c^1)\}. \tag{30}$$

Notice that if $c^1 < c^M$, (30) and (28) cannot hold simultaneously. In this case, the borrower will borrow first from the coalition and go to the moneylender only after defaulting on the coalition loan. The moneylender, of course, extracts all surplus from the borrower indefinitely.

If, on the other hand, $c^M < c^1$ setting (30) as an equality also satisfies (28) and thus it is feasible for the moneylender to offer an interest rate that forces the coalition to wait indefinitely. We thus get the following proposition.

Proposition 5 *If $c^M < c^1$, the borrower repeatedly borrows only from the moneylender.*

The result in Proposition 5 is pessimistic yet remarkable because it suggests that when the moneylender is the cheapest producer of loans, the local capitalists cannot out-compete the moneylender even if they form a coalition. So while the threat such a coalition might pose could be useful in inducing the moneylender to drop his interest rate, the fact that such a coalition would never have an opportunity to lend may hinder the emergence of such a coalition in the first place. One might therefore wonder if local capitalists' cost disadvantage vis-a-vis the moneylender could be ameliorated.

We analyze this issue by explicitly modeling an institutional mechanism that may allow borrowers to form such a coalition and possibly out-compete the moneylender by lowering costs of making loans. One potential mechanism for lowering costs might be sharing of borrower information amongst the coalition members. For instance, a potential lender would want to know if the borrower already has a loan outstanding with a coalition member. If information about borrower's existing indebtedness is not centrally available, a potential lender from the coalition may have to incur the cost of acquiring this information from multiple coalition members. Thus, creating a centralized information system that records data on borrowers' existing loans would be efficient. It could lower a coalition member's transaction cost sufficiently to enable him to out-compete the moneylender.

However, setting up such an information system might require significant set-up costs. Ensuring that all coalition members share these set-up costs is unlikely because of a free-rider problem. This is because it is in the interest of each coalition lender to make information about the loan known to other potential lenders in the coalition, whether or not they contribute to the costs of setting up the information system. Internalizing such a free-rider problem might require imposing a fee. This

leads us to our discussion of Franchising.

4.3 Franchising

We consider a mechanism, called Franchising, that requires an initial set-up cost of $F > 0$ incurred by a Franchisor. Any lender can become a Franchisee by agreeing to the terms of the Franchise. The franchisee must agree not to lend to any borrower who has verifiably defaulted against a fellow franchisee. Franchisor allows franchisees to continue lending to its own defaulting borrower if they so desire. Local capitalists, of course, will not continue to lend to their defaulting borrowers to dissuade their other borrowers from defaulting. At the same time, it will be in their interest to self-report their defaulting borrowers to the franchisor to ensure that the defaulting borrower is prevented from obtaining further loans from other franchisees. Moneylenders, however, may or may not report the defaulting borrower because their enforcement ability is sufficient to deter voluntary default by borrowers.

The franchisor charges a fee f for each \$1 loan required to fund a project. The franchisor uses the set-up cost to maintain an information system that records borrowers' credit history. Each franchisee will have access to the credit history of any borrower who approaches him for a loan. This will lower the screening and monitoring costs c^i that a local capitalist must incur.[5] Of course, a moneylender may also choose to become a franchisee. However, given that his need to screen and monitor were lower to begin with, he may not obtain cost reduction to the same extent. Without loss of generality, we normalize moneylenders' cost reduction from joining the franchise to zero.

We assume that there is perfect competition among potential franchisors. If potential franchisors, possibly banks, differed in the set-up costs

$$F^1 < F^2 < \ldots < F^N,$$

then the franchisor with the smallest cost F^1 will charge a fee

$$f = \frac{F^2}{Z},$$

where Z represents the aggregate size of loans made by franchisees.[6] This will dissuade all other

[5] Pagano and Jappelli (1993) and Jappelli and Pagano (2002) demonstrate the role of credit bureaus in making information sharing cost-effective.

[6] We have assumed for simplicity, but without loss of generality, that there are no variable costs per loan incurred by the franchisor.

potential franchisors from offering a competing franchise.[7] For notational simplicity, we will use F to denote F^2. Let

$$\Delta = c^1 - c^M$$

denote the moneylender's initial cost advantage (disadvantage if Δ is negative) over the local capitalist with the smallest transaction cost of lending. Let δ denote the local capitalists reduction in transaction cost.[8]

As before, lending by local capitalists is feasible only if all of them join the franchise. Let c_f^i denote local capitalist i's net transaction cost of lending after joining the franchise:

$$c_f^i = c^i - (\delta - f).$$

Let us first consider the case in which

$$c^M < c_f^1.$$

In other words, the net cost reduction $\delta - f$ is not sufficient to overcome moneylender's cost advantage. Assume that the moneylender chooses not to join the franchise. We have seen in Proposition 5 that in this case, the borrower will repeatedly borrow only from the moneylender and thus local capitalists will get no opportunity to make loans. This implies that there is no finite fee f that a franchisor can charge that will recoup the set-up costs. Since franchising will inevitably fail, no franchisor will be willing to offer a franchise. The moneylender will extract the entire surplus by charging R in this case. Clearly, the moneylender has no incentive to join the franchise himself, which is what we assumed to begin with.

Now consider the case in which the net cost reduction more than outweighs the moneylender's initial cost advantage, *i.e.*,

$$c_f^1 < c^M. \tag{31}$$

[7] In case of two franchisors with the smallest cost F^1, one of them will be able attract all potential franchisees. The reason for this is that one of them can spread the fixed set-up costs over a larger number of loans. The role of volume in lending in Pagano and Jappelli (1993) in reducing information sharing costs is also driven by amelioration of adverse selection problem when number of borrowers is large.

[8] This cost reduction may be different across local capitalists. As long as the local capitalist with the smallest transaction cost continues to have the smallest cost after joining the franchise, the results we derive will remain unchanged.

Suppose that the moneylender chooses not to join the franchise. As discussed before, in this case, the borrower will first borrow from the franchisee with the smallest transaction cost c_f^1 of lending to her. Only after defaulting on the franchisee does the borrower go to the moneylender who charges R and extracts all the surplus. Though the moneylender has to wait to lend, he cannot do better by joining the franchise. If he were to join the franchise,

$$c_f^1 < c_f^M = c^M + f,$$

the local capitalist franchisee would still out-compete the moneylender. The moneylender as a franchisee would be unable to make any loans at all after the borrower defaults on the local capitalist's loan. Therefore the moneylender does not have an incentive to join the franchise.

The conditions under which (31) holds can be expressed as:

$$c_f^1 = c^1 - (\delta - f) < c^M \tag{32}$$

which is equivalent to

$$\delta > \Delta + \frac{F}{Z}.$$

Intuitively, the transaction cost reduction obtained by the local capitalist must exceed the moneylender's initial cost advantage by more than the franchising fee $f = \frac{F}{Z}$ per loan. This is more likely to occur when franchising set-up cost F is low or when the number of loans Z made by the franchisees is high. When Δ is negative, *i.e.*, the moneylender has an initial cost disadvantage, clearly franchising outcome is more likely.

The most interesting case, however, occurs when $\Delta > 0$, *i.e.*, when the moneylender has an initial cost advantage. We now analyze this case in greater detail. In particular, we derive conditions under which the transaction cost reduction, δ, obtained by the local capitalist will be sufficiently high for franchising outcome to obtain.

Assume that the transaction cost of making loans depends on two factors, distance from the borrower, d, and intensity of required screening, s. As discussed before, screening may require ascertaining borrower's current indebtedness and whether alternative sources of credit are available to the borrower. Closer the lender is to the borrower, less costly it is to do the required screening. A simple way to write this formally is to assume that $c = ds + f$ with franchising fee $f = 0$ if the lender is not a franchisee.

Given moneylender's superior enforcement ability, his required intensity of screening, s^M, is likely to be much lower than that of a local capitalist, s^i. Joining the franchise reduces local capitalists' intensity of screening because information such as borrower indebtedness is now available to franchisees, *i.e.*, $s_f^i < s^i$. The moneylender's required intensity of screening, however, will continue to be lower because his enforcement ability is so potent.[9] Formally,

$$s^M < s_f^1.$$

Therefore, it follows that for (32) to hold

$$d^1 s_f^1 < d^M s^M$$

which implies that

$$\frac{d^1}{d^M} < \frac{s^M}{s_f^1} < 1.$$

This suggests that unless some local capitalist has a distance advantage over the moneylender, franchising outcome will not obtain.

Proposition 6

1. *If moneylender's distance from the borrower is less than the distance of any local capitalist from the borrower, franchising will not obtain.*

2. *If a franchise is formed, all local capitalists become franchisees; moneylender never joins the franchise.*

If a franchise is not formed, the borrower surplus remains zero. If a franchise is formed, the borrower welfare is substantially improved because she is able to borrow at attractive rates from the franchisees until a default occurs after which her surplus goes to zero. Franchising is more likely to obtain the lower the initial franchising set-up costs, the larger the aggregate number of loans made by franchisees, and the smaller the local capitalist's distance from the borrower, relative to that of the moneylender.

[9] This tradeoff between *ex post* enforcement ability and *ex ante* selection ability is analyzed in Jappelli and Pagano (2002) and Djankov, McLiesh and Shleifer (2007).

Franchising has two roles in our model. It allows local capitalists to act as a single coalition. Second, superior information sharing reduces their screening costs relative to that of the moneylender. As we discussed before, there are economies of scale in information sharing technology because a potential lender can check the records about the borrower's existing indebtedness by just using the Franchise's centralized information system instead of having to obtain this information from each coalition member separately. In addition, a franchising arrangement may confer further benefits arising from standardization, improved risk-management techniques, etc. that are often associated with franchising which we have not modeled. We would like to point out that if benefits such as standardization were the only features of the franchising arrangement, a moneylender could benefit from these *just as much* as the local capitalists. We have seen that without a *differential* benefit in screening costs, franchising with local capitalists is unlikely to obtain (Proposition 6). Thus the two roles of franchising that we have modeled are necessary features of this arrangement whereas the additional benefits such as standardization may further help local capitalist franchisees relative to moneylenders who choose not to join the franchise.

Some of the features of franchising that we have identified are present in varying degrees across existing MFIs. For instance, BASIX in India appears to rely to a large extent on local information in its lending decisions. However, individuals who possess local information are not principals but agents of BASIX. Thus, it does not exploit competition between local capitalists that is central to our notion of franchising.

Some cost-efficiency features of franchising are present in the operations of many MFIs. For instance, ACCION International provides technical assistance to improve operations and efficiency. SKS Microfinance uses sophisticated management information systems, innovative delivery solutions, and technology such as Smartcards, which have increased operational efficiency and reduced transaction costs. We have shown, however, that such cost-efficiencies may not be sufficient to put the local capitalists at a relative advantage over the moneylender.

We argue that franchising needs to incorporates all the elements – individuals with local information as *principals* who act as a single coalition and cost-efficiencies from information sharing that are large enough to out-compete the low cost moneylender. When cost-efficiencies obtained from franchising are not enough to out-compete the moneylender, a subsidy by government or socially-conscious institutions or investors may be necessary to make franchising viable.

5 Extending the Model

5.1 Introducing Borrower Moral Hazard in Project Choice

In the simple model that we analyzed, we assumed that the borrower's project choice was limited to one positive NPV project with probability of success p and payoff of R when the project is successful. In this framework, since incentive compatibility conditions ensure that borrower will choose not to default voluntarily, only involuntary default occurs with probability $1-p$ and lenders choose contractual repayment rates accordingly. One could extend the model by allowing borrowers to choose from a continuum of projects with different levels of payoff R in successful states such that the probability of success is smaller for projects with larger R. To model borrowers' moral hazard in project choice, the NPV of the projects could be ranked such that riskier projects have smaller expected payoffs, pR, and consequently smaller, possibly negative, NPVs. If project choice is unobservable by lenders, the borrower now may have an incentive to shift to riskier projects after the lender sets the contractual rate. However, higher failure probability and the resulting inability to borrow again from the lender would serve to contain the borrower's incentives for choosing riskier projects. Qualitatively, this leads to same results as the ones we obtain from our simpler model.

Alternatively, we could further generalize the model to allow for *some* positive payoff - as opposed to zero in our simple model - in states in which the borrower is forced to default. Since the moneylender is assumed to have a stronger enforcement technology - the moneylender makes sure the borrower consumes nothing in states of default whereas local capitalists can only make sure that the borrower does not get to invest the proceeds in projects - the moral hazard problem is better contained by the moneylender than by local capitalists. Similarly, allowing the moneylender to better observe the borrower's project choice will give him additional competitive advantage. This will make the likelihood of the coalition providing a credible competitive threat to the moneylender even more remote suggesting that a cost-reduction function of franchising would be even more critical.

5.2 Introducing Borrowers with Different Risks

Our simple model assumed a single borrower type defined by the positive NPV project with probability of success p and project payoff of R when the project is successful. In this framework,

since incentive compatibility conditions ensure that borrower will choose not to default voluntarily, the involuntary default, which happens with probability $1 - p$ conveys no information about the riskiness of the borrower which is common knowledge. In a more general model, one could model a continuum of borrower types defined by project success probability p - riskier borrower will have projects with smaller probability of success and smaller, possibly negative, NPV projects. When borrower type is unobservable (and *ex ante* signaling and selection possibilities are ruled out), a pooling equilibrium may initially be feasible. The incidence of (involuntary) default, however, will contain useful information about borrower type. If an incidence of (involuntary) default is sufficient to separate good borrower types (with positive NPV projects) from bad borrower types (with negative NPV projects), we may not need any institutional mechanism that allows local capitalists to collude in denying credit to a defaulter because a good borrower type will have no incentive to default *voluntarily* lest she may be pooled with bad borrower types after defaulting. If that were the case, we should observe competitive financial intermediation by local capitalists already without any need for mechanisms such as the one we are suggesting in the paper. The fact that we do not see such competitive intermediation to a large extent, except for a limited presence of moneylenders who appear to be charging usurious rate, suggests that learning about borrower type and borrower reputation is not enough to sustain an equilibrium in which poor borrowers without collateral are able to borrow at competitive rates.

6 Concluding Remarks

With growing recognition of the economic importance of those at the bottom of the pyramid, formal financial institutions need to identify effective mechanisms for participation in that sector. In this paper, we allow for the co-existence of formal and informal lenders in addressing the problem of microfinance. Local individuals are repositories of information and could serve an important role as on-lenders in this financial intermediation process. We show that using these competing individuals for on-lending may be ineffective due to borrowers' incentive for strategic default when there exist many opportunities for borrowing. We offer franchising as one possible mechanism which would allow banks to simultaneously use local capitalists and address the market failure resulting from the risk of strategic default. It is equally important that information sharing role of franchising

makes the smallest transaction cost local capitalist sufficiently cost-effective to out-compete the moneylender.

We see one welfare-enhancing role that subsidies could play. We noted that high franchising set-up costs deter entry by potential franchisors allowing moneylenders to charge usurious rates. If governments or socially-conscious institutions or investors were to offer to subsidize the initial set-up costs substantially, it would make the threat of franchising more credible. This may induce the moneylender to offer lower interest rates improving borrower welfare even when no franchise is formed.

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