How Does Competition Affect the Performance of MFIs?

Evidence from Bangladesh

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April 2013

Abstract

Over the past 20 years, Bangladesh has witnessed strong competition among microfinance institutions. Using program-level panel data from 2005-2010, this paper studies the microfinance institutions' recent competitive roles in their pricing of products, targeting strategies and portfolio shifts, as well as their ability to recover loans. The findings do not support the view that newer microfinance institutions are less risk-averse in their targeting, or that increased borrowing among households due to microfinance institution competition has lowered

recovery rates. There is also a considerable urban-rural distinction; although newer microfinance institutions tend to attract riskier clients in urban areas, the opposite is true in rural areas. Loan recovery rates are also the highest among the newest microfinance institutions for women in rural areas, suggesting that microfinance institutions may offer distinct products in these areas to attract better-risk clients. The portfolio of newer microfinance institutions also has a greater share of lending for agriculture, and fewer savings products.

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Key words: G21; G28;

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How Does Competition Affect the Performance of MFIs?

Evidence from Bangladesh

1. The rapid expansion and changing nature of microfinance in Bangladesh

Microfinance programs have been running in Bangladesh for more than two decades, primarily with the goal of enhancing the non-farm incomes of the rural poor.² By 2008, microfinance institutions (MFIs) such as the Grameen Bank and Bangladesh Rural Action Committee (BRAC) reached more than 10 million households in Bangladesh, nearly half the rural population, and the annual disbursement of microfinance programs was close to US\$1.8 billion with an outstanding balance of US\$1.5 billion. More than 90 percent of microcredit borrowers in Bangladesh are women. Palli Karma Shahayak Foundation (PKSF), the country's wholesale microfinance lending facility, has orchestrated microfinance penetration through a wide network of small but highly competitive partner organizations.

The past 20 years of microfinance expansion in Bangladesh can be divided into three phases. The first phase (roughly before 1994) had limited expansion with a focus more on rural nonfarm activities via mobilizing group savings and lending. The second phase (roughly 1995-2004) witnessed a rapid expansion of microfinance with PKSF emerging as the wholesale funding agency, and a large number of small NGOs entering the market with access to institutional funds for their own lending (as opposed to relying on the savings of borrowers). The third phase (i.e., post 2004) witnessed fierce competition among the microfinance institutions. During this phase, a variety of microfinance and other non-credit products (such as skill-based training and marketing assistance) were developed to meet the specific needs of the clients, including programs for the ultra-poor. Urban areas were also increasingly targeted, and newer MFIs emerged that placed a greater emphasis on profitability.

² Microfinance can be provided through different institutions. In 2006, about 50% of annual microcredit disbursements in Bangladesh were provided through NGOs, about 30% through the Grameen Bank, and the rest through state-owned and private banks (Credit and Development Forum, 2006).

To help temper risky borrowing and lending during this expansion, the Bangladesh government passed legislation in 2006 that included requiring all MFIs to be licensed, and establishing a Microcredit Regulatory Authority (MRA) to monitor MFI activities and targeting. In 2011, the MRA also set a ceiling on interest rates for loans at 27 percent.

Given the phenomenal growth and diversification of microfinance programs in Bangladesh over the years, as well as recent policy attempts to regulate this growth, an obvious question that arises is: what direction microfinance is taking with respect to its original socially-motivated outlook? Microfinance can have short-run effects on augmenting income for poor households, and smoothing consumption amid seasonality and other shocks. At the same time, this system of lending created innovations such as group liability contracts and dynamic incentives, showing that many of the poor, including vulnerable groups such as women, could be profitable clients for financial institutions. In that sense, microfinance has become a broad-based policy instrument in developing countries to assist the poor.³ These advantages have also drawn profit-motivated lending institutions into microfinance markets. But as microfinance becomes more widespread, profit-seeking increases, and household borrowing rises rapidly across different groups, policymakers need to understand whether these benefits sustain in the long run – not only in terms of the benefits that borrowers receive, but also whether MFIs are able to recover loans in a timely manner as their client base expands and diversifies.

Although several policy claims and institution-specific studies have argued that MFIs are increasingly targeting risky borrowers and that competition induces wider problems of overlapping household debt across MFIs, little nationally-representative evidence has been presented on the supply-side decisions and performance of MFIs over the last several years.⁴ Using newly available

³ This is not to say that the evidence on poverty reduction is not mixed. Some studies have shown significant and positive impacts of microfinance on income, consumption and schooling (see, e.g., Pitt and Khandker 1998; Khandker, 1998; 2005). Other studies have not found significant impacts of microfinance on average consumption (Karlan and Zinman, 2010), but that it does tend to enhance incomes of households that already have their own businesses (Banerjee et. al., 2010), or are self-employed in agriculture (Crepon et. al., 2011).

⁴ Studies on the long-term demand-side dynamics of microcredit borrowing are underway, however, as part of a World Bank research program in collaboration with Institute of Microfinance (inM) in Bangladesh.

panel data from Bangladesh on supply-side issues facing MFIs from 2005-2010, this study examines MFIs' recent roles in credit markets amid increased competition, including trends in their pricing of products, targeting strategies and portfolio shifts in recent years, as well as their ability to recover loans from their borrowers. By focusing on a country context with one of the broadest expansions of MFIs in recent years, we hope to shed light on the role of public policies in supporting sustainable microfinance markets.

The paper is structured as follows. Section 2 discusses the mechanisms by which competition can affect MFI targeting and performance, including the recent cross-country literature examining this topic. Section 3 provides a brief discussion of how MFI strategies can evolve over time depending on timing of entry. Section 4 discusses the data, and Section 5 the empirical methodology. Section 6 discusses the results, and Section 7 concludes.

2. How can competition affect MFI performance?

Much scrutiny has followed the rapid expansion and the broadening of the range of players in microfinance markets, with many arguing that many MFIs are increasingly generating cycles of indebtedness by charging prohibitive interest rates and targeting households that lack the means to repay.⁵ As a result, many policymakers have questioned whether MFIs can continue to sustainably serve the needs of the poor. To examine these concerns, we first need to examine carefully how MFIs' decision-making strategies have actually changed over time with entry of new groups, including how newer MFIs are different from older ones in terms of targeting as well as designing newer products and services. We can then examine the channels by which increased entry affects MFI performance, including MFIs' abilities to attract clients and ensure loan recovery. Also we will

⁵ In 2010, for instance, the Indian state of Andhra Pradesh decided to rein in microlenders after a string of suicides by indebted borrowers. Bangladesh's ruling party also set up a political committee in early 2011 to critically review the interest rates Grameen Bank was charging to loan participants and ultimately led MRA to set a ceiling on interest rates for loans provided by MFIs at 27 percent.. Similar issues have emerged in Latin America (as in the convergence of economic crisis and public backlash against microfinance lenders in 2001 in Bolivia), and in Africa (including the 2003 Usury Act in South Africa that led to the establishment of the Microfinance Regulatory Council, which was to provide for effective consumer protection amid widespread concern about high interest rates and abusive practices in the unregulated micro-lending market that boomed during the mid-1990s).

examine the role of a microfinance regulatory authority in facilitating the growth and performance of MFIs.

Only a handful of studies have examined recent trends in MFI strategies and performance as microfinance markets have grown more saturated. Cull, Demirguc-Kunt and Morduch (2009) provide an interesting overview of MFI profitability and incentives over time, contrasting the early characteristics of MFIs across the world in the 1970s (government-run, with highly subsidized interest rates and relaxed loan recovery), 1980s (where MFIs increasingly targeted nonfarm enterprises over farmers), and 1990s (where MFI profitability began taking on more importance, with rising interest rates). They conclude that microfinance is likely to take multiple paths going forward, as commercial investment in microfinance seeks a different clientele from the more socially-oriented institutions that are currently serving poorer customers.

There are multiple mechanisms potentially at work. A competitive environment may lower transaction costs and induce MFIs to offer more attractive options for borrowers, including lower interest rates and penalties for non-repayment. On one hand, this can improve outreach and access to credit for poor households that are constrained by the availability of credit. At the same time, easier borrowing terms will draw in a larger pool of borrowers, including potentially risky clients that may borrow across multiple MFIs and have high rates of default. de Janvry, McIntosh, and Sadoulet (2005), for example, use data on Uganda between 1998 and 2002 (at a time when MFI competition was on the rise) to find that increased competition has some detrimental effects on repayment and retention rates, as well as reduced savings of the borrower group of the incumbent lender. They argue that this indicates that borrowers are increasingly engaged in borrowing from multiple lenders. Vogelgsang (2003) also finds that increased availability of microloans and increased competition among microlenders in Bolivia has led to overlapping borrowing, with higher default rates, but this also depends on the initial indebtedness of clients.

One of the main difficulties, from a policy perspective, is that MFIs need to balance their social objectives with ability to recoup costs. External changes to the market for lending (such as

increased competition) will affect this balance. Among a set of potential microfinance borrowers, there will be more entrepreneurial clients that borrow larger amounts and are better able to repay, as well as supply-constrained but more vulnerable individuals like the extreme poor and women. As with credit markets in general, there is asymmetric information so some of these characteristics are not observed, leading to the joint liability structure of most microfinance groups. McIntosh and Wydick (2005) show that MFIs tend to cross-subsidize across clients so that they use higher returns on more profitable borrowers to subsidize their costs of lending to poorer borrowers. However, when new MFIs enter the market, they create competition for more profitable borrowers, reducing these rents. As a result, less profitable borrowers may end up being dropped. Their study also argues that competition can aggravate existing asymmetric information problems, as information on borrowers is diluted across a larger group of lenders (also see Hoff and Stiglitz, 1998). This worsens the terms of loan contracts to borrowers such as the interest rate on the loan. Borrowers with a greater demand for credit then begin to obtain multiple loans, creating overlapping debt problems that further deteriorate the terms of loan contracts for all borrowers.

The policy implications of these trends also vary. On one hand, as asymmetric information problems compound with a greater number of lenders in the microfinance market, better monitoring agencies and centralized coordination across MFIs may help in addressing problems of overlapping debt and growing default rates.⁶ However, greater regulation may actually limit MFI outreach to poorer individuals. Cull, Demirguc-Kunt and Morduch (2011) examine effects of financial regulation on MFI targeting and performance, using data from the Microfinance Information eXchange (MIX) on about 350 leading microfinance institutions across 67 countries in 2003/04.⁷ They find that

⁶ de Janvry, McIntosh and Sadoulet (2010), for example, consider a lender in Guatemala who started using credit bureaus gradually across its branches without informing borrowers. One year later, the authors ran an experiment by informing the borrowers about this use of credit bureau by the lender. The timing of the two experiments allows them to identify the supply and demand side effect. They find that there is an increase in the ejection rate, but that borrowers are better and receive larger loans. Once borrowers become aware of the bureau, their performances improve modestly, but some worse-performing members are ejected and women are also more likely to lose access to credit.

⁷ MIX is a nonprofit private organization focused on promoting information exchange in the microfinance industry.

regulation of MFIs might help control the problem of adverse selection of borrowers, but may also lower social welfare as more profit-oriented MFIs work to sustain their profit rates while limiting access to groups that are more costly to reach, such as women and the poor. Older and less profit-oriented MFIs may not limit their outreach, but may see their profit rates fall with greater regulation. Tracking the targeting strategies and performance of older versus newer MFIs is therefore important in understanding the direction that microfinance is taking, and as a result what policies are appropriate in managing the growth and development of these groups.⁸

Certainly MFIs' targeting strategies are also at issue here, since microfinance participants self-select. But whether these recent perceptions of MFIs actually hold is important to understand, not just on a program-by-program basis but across a representative sample of MFIs in a particular country or region. Ahlin, Lin and Maio (2011), for example, show using MIX data that country context is a big determinant of MFI performance — MFIs are more likely to cover costs, for example, where economic growth is stronger; and MFIs in financially deeper economies have lower default and operating costs, and charge lower interest rates. Certain longstanding NGOs within countries may also not necessarily change their objective function over time - Salim (2011), using Method of Simulation Moments (MSM), structurally estimates the branch placement decisions of BRAC and the Grameen Bank within Bangladesh, showing that the actual branch placement decisions of these institutions is inconsistent with a profit-motivated objective function. If microfinance targeting and performance is indeed diversifying, say, by age of the MFI or other initial factors, then policy should distinguish different categories of MFIs.

In this study, we focus on supply-side issues in Bangladesh related to the performance of MFIs, including their ability to recover on loans in rural and urban areas, as well as how their portfolio across different lending and savings products has changed over the period. Bangladesh provides a very interesting context to examine these issues, where MFI coverage has been both extensive and intensive. More than 60 percent of rural households are microfinance members, and

⁸ Gonzales (2007), for example, finds using MIX data between 1999 and 2006 that the three main drivers of MFIs' operating expenses are age, relative loan sizes, and scale.

more than 90 percent of rural villages now have access to at least one registered microfinance program – the number of which has increased from 50 to about 1,000 between 1985 and 2005 (Credit and Development Forum, 2006).

Bangladesh's group based microfinance program has also been restructuring over time in different ways. For example, Grameen Bank's group-based lending with a strict weekly loan repayment schedule has been relaxed with more flexible schemes after 1998. Similar restructuring is taking place for other lenders such as BRAC, ASA, and PKSF. Are program benefits changing over time because of changing structures of micro-credit programs? Given increased competition among a large number of MFIs in rural Bangladesh, terms and conditions are being eased in ways that may allow a single borrower to secure multiple loans from multiple sources at the same time. Is this a reflection of supply constraints on borrowers from a single source? Has it led to rising indebtedness with lower loan repayments? We examine data on the performance and targeting decisions of microfinance NGOs in Bangladesh between 2005 and 2010, spanning a highly competitive period of market entry as well as the period before and after microfinance regulation was introduced by the government in 2006-07. Although we do not have direct data on the extent of competition MFIs were facing throughout this period, we do have data on MFIs' timing of entry. We use information on the age of each MFI (by whether they began operations (1) before 1990, (2) 1991-1995, (3) 1996-2000, and (4) after 2001) as a proxy for the extent of competition they were faced with when they began operations. As we discuss in our empirical analysis below, we examine the effects of initial decision making (including timing of entry) on changes in performance indicators of MFIs in Bangladesh.

3. The evolution of MFIs' objective functions over time

Following the discussion above, MFIs can follow different strategies over time. Depending on the ease of entry, MFI strategies are broadly a combination of two sets of priorities: (1) maximizing social welfare, and (2) maximizing profits (Figure 1). MFIs that began decades ago in the

early phase of microfinance development tended to be purely socially-oriented at the outset, and received most of their support from donors and the government to recoup costs. The Thai Village Fund, which is the second-largest microcredit scheme in the world and operates in every village in Thailand, is one example of this. Village Funds make small to medium-sized loans to rural households, and are purely publicly funded by the government. With little competitive entry of other microfinance groups, the Thai Village Funds are social rather than financial intermediaries, and have little incentive to take risks or to innovate, which explains why Village Fund lending has not kept pace with the growth of the Thai economy (Boonperm, Haughton, Khandker and Rukumnuaykit, 2012). Grameen Bank and BRAC are other examples in Bangladesh that received donor support at the outset for program design, expansion and implementation, and thus, are socially oriented (Khandker 1998).

With free market entry, MFIs gradually begin to adopt strategies that allow them to compete sustainably with new entrants (Figure 1). As we have seen in practice, older MFIs can, for example, cross-subsidize their initial socially-oriented focus (s) with more financially competitive practices (p) (so that profitability $p(t)$ is higher than $p(0)$, and $s(t)$ is lower than $s(0)$). This has happened in the case of Bangladesh, where older MFIs such as Grameen Bank and BRAC have had to relax their lending standards in recent years, potentially exposing them to adverse selection of borrowers. Newer MFIs with later entry, however, already have to compete with several players in the microfinance market. As a result they may adjust their relative emphasis slightly across profit-seeking and social welfare so that $s(t_1)$ is greater than or lower than $s(t_2)$, and/or $p(t_1)$ is greater than or lower than $p(t_2)$. Timing of entry can therefore be instrumental in determining the path that MFIs take, as well as other initial decisions (such as targeting and location) MFIs make when entering the market. There is also a range of potential strategies that older and newer MFIs can take in the face of increased competition, which depend on other local characteristics of the market as well as policy changes that occur over the period. We examine this issue further in the empirical strategy discussed below.

4. Data

We use an MFI-level panel from the 2005-2010 rounds of the Bangladesh Credit and Development Forum (CDF) survey, to examine the effects of initial local and MFI characteristics including age of MFI on MFI performance. We also use a number of indicators measuring the extent of MFI competition on the performance indicators of MFIs. Our sample is focused on 117 nonprofit MFIs that were surveyed consistently over the six-year period. The CDF survey focuses on nonprofit NGO-MFIs; as a result MFI-banks like the Grameen Bank are technically not included in the survey. However, several Grameen-named NGOs such as the Grameen Social and Economic Advancement (GSEA) and the Grameen Prosar Society are included in the survey.⁹ The three largest non-governmental microfinance organizations in Bangladesh – BRAC, ASA, and Proshika, which are all NGOs — are in the survey sample. The CDF survey focuses on supply-side information on credit-based NGOs, including their portfolios, return rates, and other decisions related to their location, targeting and expansion.

As mentioned earlier, 2005-2010 was a particularly competitive period for microfinance organizations in Bangladesh. New policies were also introduced during this period to address rapid market entry, the most important being in 2006 when the government established regulations that called for all MFIs to be licensed, as well as the Microcredit Regulatory Agency (MRA) to monitor and guide MFI strategies.¹⁰

As mentioned above, while the CDF survey does not have direct indicators of competition each MFI was facing over the period, it does contain data on the timing of inception of each MFI, which can affect their strategies in a competitive environment. In the analysis below, we categorize MFIs by whether they began operations (1) before 1990, (2) in 1991-1995, (3) in 1996-2000, and (4) after 2001. We use this categorization as a proxy for the extent of competition each MFI was facing when it began, which likely affects their strategies at the outset as well. The CDF data also elicited a number of interesting indicators of how MFIs were performing over the period. In addition to

⁹ Note that these NGOs are not subsidiary of Grameen Bank.

¹⁰ In 2011, for example, the MRA capped the interest rate on loans that MFIs could charge at 27 percent.

scope and coverage of MFIs across urban and rural areas, including policies such as interest rates on savings and loans, the survey also examined different measures of borrower riskiness; the share of members without loans; the extent of savings products in MFIs' portfolios; and recovery rates across men/women as well as different types of loans (across agricultural and non-agricultural sectors).

Figures 2.1-2.9, which present some trends in outcomes in the data over the survey period, reveal some interesting differences by age of MFI. While newer MFIs tend to be headquartered in primarily rural areas, they tend to have a much greater share of urban members compared to older MFIs (Figure 2.1). Interest rates on savings have tended to decline gradually for most MFIs over the period, but rates remain slightly higher by 2009-10 for the newest group of MFIs (Figure 2.2). Interest rates on loans also tend to be 1-2 percentage points higher for newer MFIs (Figure 2.3). There is clearly a lower trend in both lending and savings rates for all cohorts of MFIs after 2006, when the Bangladesh Bank (the central bank) established a microfinance regulatory authority (MRA) to regulate the MFIs. Whether these declines are a result of MRA establishment and its regulation remains to be seen.¹¹

Except for the oldest MFIs where the trend has been fairly flat, the share of active members without loans has appeared to increase across newer MFIs over the period, particularly in rural areas (Figures 2.4-2.5). And interestingly, while the newest MFIs offered a much greater share of savings products in their portfolio in 2005, this declined substantially and converged towards other older MFIs by 2010 (Figures 2.6-2.7). Newer MFIs also do not necessarily have higher shares of risky borrowers – Figures 2.8 and 2.9 show that while MFIs that began between 1996 and 2000 did exhibit increases in overdue/default rates, the oldest MFIs experienced the highest surge in rural and urban areas. For MFIs that began after 2000, default rates either fell (in rural areas) or rose at a more gradual pace compared to other groups (in urban areas). However, for all MFIs, the surge in defaults started in 2008 in urban areas, while the surges in loan defaults started in rural areas from 2007.

¹¹ Note that the first regulation of MRA in 2006 was to ask every NGO to get license to perform as an MFI under certain conditions such as membership and equity. However, the MRA did not set an interest rate ceiling until 2011. The possible consequence of this interest ceiling is beyond the scope of our study, as the data does not cover beyond 2010.

5. Empirical strategy

We are primarily interested in how certain initial decisions MFIs make (specifically the timing of their inception, as well as other initial characteristics of areas where they locate) affect the path of their subsequent targeting and performance. We therefore focus specifically on the initial characteristics of these MFIs to see how initial decision-making affects the path of their outcomes. We also would like to determine how MFI competition (measured in certain ways) affects the performances of MFIs over time.

To account for potential endogeneity stemming from unobserved heterogeneity at the MFI level, we can estimate a panel fixed-effects model (interacting initial conditions with year) and accounting for MFI unobserved effects as follows:

$$y_{it} = \alpha_i + \gamma(c_{it} * t) + \beta(d_{it} * t) + \delta(m_{it} * t) + \varepsilon_{it} \quad (1)$$

Above, α_i is an unobserved MFI fixed effect, y_{it} are performance-related indicators for MFI i at time t ; c_{it} is a vector of dummies categorizing the year of MFI inception; d_{it} is a vector of initial-period characteristics of the district where the MFI is headquartered (to account for geographic factors associated with MFI location); m_{it} represents initial-period characteristics of the MFI itself; t represents a time dummy for year; and ε_{it} are randomly-distributed unobserved factors that affect outcomes. We describe the specific variables we use in more detail below.

Outcomes of interest

Table 1 presents summary statistics on outcomes of particular interest over the period. Are interest rates indeed declining (or terms of loans easing) because of competition among lenders? Interest rates on savings fell slightly over the period, while interest rates on loans remained fairly flat (trends in these variables did vary by age of MFI, however, as discussed below). Loan coverage appears to have expanded over the period, as reflected by trends in average share of net savings to loans disbursed, as well as a decline in the share of active members without a loan. The share of borrowers at risk or overdue, however, also increased rapidly over the period, from about 6 to 10 percent in rural areas, and about 5 to 12 percent in urban areas. Loan recovery rates did increase, although again the growth was flatter in urban compared to rural areas. Loans for agrifinance increased the most over the period compared to small business and housing loans, and recovery rates in this area also accelerated over the period.

Explanatory variables: Initial conditions

We controlled for a range of initial characteristics of the MFI as well as the district where the MFI was headquartered. As discussed above, we were particularly interested in when the MFI began as a proxy for competitiveness of the MFI, to assess whether priorities have shifted over time between older and more recent groups. We broke down the sample into four categories by when they began: before 1990 (16 percent of the sample), 1990-95 (about 32 percent), 1996-2000 (37 percent), and 2001-05 (15 percent).

In addition to the age of the MFI, we also control for a number of characteristics of these institutions from the 2005 CDF round. These include the number of established branches in rural and urban areas, the number of employees and districts covered, the share of female employees in 2005, and whether the MFI head is a woman. In the regressions, we also interact these variables with whether the MFI was initiated after 1998, to see whether initial factors vary significantly for more recent MFIs.

Initial characteristics of the district headquarters were taken from 2001 Bangladesh Census data. We included some population statistics that might be correlated with MFI targeting, such as average yearly population growth between 1991 and 2001 in the district, male and female literacy rates, and share of households in rural areas. We also included a range of characteristics on access to facilities, such as banks, cooperatives, markets, and metalled roads. We also controlled for some agroclimatic characteristics, including share of district land under river, and the hydrological region of the district which is highly correlated with rainfall, temperature, elevation, soil potential, and other determinants of access to infrastructure and agricultural potential.

Table 2 presents summary statistics on these initial conditions by age of MFI. Interestingly, it appears that the headquarters of newer MFIs are in poorer and more remote areas (although as discussed below, this does not mean that the set of targeted members across the country are primarily from rural areas). The average share of rural households in the district headquarters is about 75-80 percent among MFIs created after 1996, compared to 50-60 percent for older MFIs. Literacy rates and access to facilities such as banks, markets and better infrastructure are also higher in areas where older MFIs are headquartered. As for specific MFI characteristics, the number of branches and employees are lower among newer MFIs.¹² The major difference appears to be that newer MFIs tend to have a much larger proportion of female employees compared to their older predecessors.

6. Overview of results

The panel fixed-effects results are presented in Tables 3-8.¹³ Looking first at how age of the MFI has made a difference, the observed decline in savings interest rates is significant for newer MFIs (Table 3). There is no significant effect of age on loan interest rates, except that newer MFIs with more employees in 2005 tended to have significantly lower loan service charges. Newer MFIs

¹² Note that we only consider entry of MFIs in this paper, not of traditional/commercial banks.

¹³ We controlled for agroclimatic zones, but have suppressed the estimates since they had very little effect. Dropping these variables also did not change the results substantially.

also tended to have significantly lower share of net savings to loans disbursed in rural areas (Table 4, columns 1 and 2), but they were more successful in providing loans (Table 4, columns 3 and 4).¹⁴

Looking at actual riskiness of members, Table 5 shows that newer MFIs were actually more likely to have riskier or overdue urban members compared to older groups, but this pattern was reversed in rural areas (particularly for those started after 2000). Newer MFIs were also particularly successful compared with older MFIs in securing higher loan recovery rates for women borrowers, particularly in rural areas (Table 6).

As for the types of loans across agricultural/non-agricultural sectors (Tables 7 and 8), newer MFIs tended to be involved more in agrifinance loans compared with loans for small business and housing. Recovery rates tended not to be significantly different across newer/older MFIs overall, except again that newer MFIs with more urban branches tended to have lower recovery rates for agricultural and small business loans.

The effects of other initial district and MFI characteristics were also interesting. MFIs headquartered in districts with better access to markets and roads, as well as higher literacy among men, tended to have higher savings interest rates (Table 3). A greater number of cooperatives, however, tended to suppress savings rates. Loan interest rates, on the other hand, were higher in areas with more banks, and where MFIs had more rural branches and female employees. More NGOs in the headquarter district tended to lower loan interest rates, perhaps because of competition. Access to better infrastructure and markets also led to lower loan interest rates, and an increase in the share of active members with loans in urban areas (Table 4).

As for the share of members that are at risk or overdue (Table 5), MFIs headquartered in districts with more NGOs tend to have higher rates of delinquency among borrowers, whereas greater presence of commercial banks tends to improve delinquency rates. Agroclimatic characteristics (as measured by the share of land under river) tended to have the strongest effect on borrower riskiness in rural areas (Table 5) as well as loan recovery rates overall (Tables 6 and 8). A

¹⁴ However, share of active members without loan may be simply a function of time – members who have been with an MFI for longer may also be more likely to go without a loan for some period of time.

greater proportion of land below river, for example, had a strong negative impact on loan recovery rates across the board.

We also ran separate regressions with year dummies, to examine whether the MRA regulation in 2006 had an effect on performance indicators. We did not find that there was a significant effect of time dummies over and above the other variables controlled for in the estimation, and controlling for time dummies also did not change the existing results. A more refined measure of the MRA regulation might be needed to test for this effect, however, since MFIs were not all licensed at the same point in time. We plan to revisit this question in assessing the impacts of regulation on the competitive behavior of MFIs.

7. Conclusions

At the outset (in the early 1990s for example), there were very few microfinance institutions in Bangladesh, which had substantial government and donor support and were focused primarily on poverty alleviation. In recent years, however, MFIs in Bangladesh have been experiencing more competition and something close to market saturation in lending. Incentives for MFIs may therefore be changing to adapt to these new circumstances - to compete with other lending groups, MFIs may have to expand more rapidly and thereby lower their costs. Karlan and Zinman (2011) argue that as microlending organizations compete and evolve into their “second generation,” they can often end up looking more like traditional retail or small-business lending, i.e. for-profit lenders extending individual-liability credit in increasingly urban and competitive settings.

There may be significant implications for the poor from these shifts. If, for example, the poor or ultra-poor are not being adequately targeted through microfinance, the subsidization, grant funds and institutional perquisites may be substituted over to other, more efficient means of poverty alleviation. Competition among MFIs may also center on better-off or more profitable borrowers, so that poorer borrowers are left behind (McIntosh and Wydick, 2005).

In this paper, we examine the effect of timing of entry into the Bangladesh microfinance market on subsequent performance in a competitive environment. Competition among MFIs has increased rapidly in Bangladesh over the last decade, with a surge in new MFIs and increased borrowing across different MFIs by poor clients. However, we find evidence somewhat counter to policy claims that newer MFIs are less risk-averse in their targeting, or that increased borrowing among households due to MFI competition has led to lower recovery rates. There is also a considerable urban-rural distinction; even though newer MFIs tend to attract riskier clients in urban areas, the opposite is true in rural areas. Loan recovery rates are also the highest among the newest MFIs for women in rural areas, suggesting that there may be distinct products offered by MFIs in these areas to attract better risk clients.

We also find that the portfolio has changed in unexpected ways for newer MFIs. Agricultural credit has increased for newer MFIs, but savings products have declined over the period, with loan activity rising among these groups relative to older MFIs. Other initial conditions also affect outcomes. Better initial access to infrastructure and education in the MFI's district headquarters (such as better access to markets and roads, as well as higher literacy among men) do lead to higher savings interest rates, for example. Loan interest rates, on the other hand, were higher in areas with more banks, and more NGOs in the headquartered district tended to lower loan interest rates. One reason for this could be that microcredit-providing NGOs tend to locate in areas that are not as well served by commercial banks, so interest rates tend to be lower in areas with more microcredit NGOs/less commercial banks. We do not expect commercial banks and MFIs traditionally to be in direct competition, since the poor rarely have the collateral to borrow from commercial institutions; rather the main effects come from competition between NGOs themselves.

Access to better infrastructure and markets also led to lower loan interest rates. And agroclimatic characteristics tended to have the strongest effect on borrower riskiness in rural areas as well as loan recovery rates overall. A greater proportion of land below river, for example, had a strong negative impact on loan recovery rates across the board. We also plan to examine the

potential role of public policy in affecting MFI performance over this period; using time dummies, we do not find a significant effect of the 2006 regulation that created a more structured monitoring system for MFIs, but this may require a more refined measure of the policy change since not all MFIs responded to the regulation at the same time.

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Figure 1. Profitability versus social welfare maximizing potential of older and newer MFIs

Figure 2. Trends in MFI characteristics by year MFI began, 2005-2010

Figure 2.1

Share of members in urban areas

Figure 2.2

Interest rate on savings

Figure 2.3

Annual interest rate on loans: flat method

Figure 2.4
Share of active rural members without loan

Figure 2.5
Share of active urban members without loan

Figure 2.6
Share of net savings to loans disbursed, rural areas

Figure 2.7
Share of net savings to loans disbursed, urban areas

Table 1. Summary statistics on outcomes

	2005	2006	2007	2008	2009	2010
Interest rate on savings	5.70 [1.7]	5.66 [1.06]	5.47 [1.03]	5.35 [0.97]	5.27 [0.94]	5.37 [0.75]
Interest rate on loans	13.45 [3.74]	14.08 [2.03]	13.41 [2.92]	13.21 [3.15]	13.43 [2.64]	13.87 [1.89]
Share of net savings to loans disbursed, rural areas	0.09 [0.09]	0.09 [0.07]	0.07 [0.06]	0.06 [0.04]	0.06 [0.06]	0.05 [0.03]
Share of net savings to loans disbursed, urban areas	0.09 [0.06]	0.09 [0.07]	0.07 [0.06]	0.07 [0.05]	0.1 [0.3]	0.06 [0.06]
Share of active members without loan, rural areas	0.11 [0.19]	0.08 [0.15]	0.06 [0.10]	0.06 [0.11]	0.06 [0.09]	0.07 [0.13]
Share of active members without loan, urban areas	0.12 [0.26]	0.07 [0.10]	0.06 [0.09]	0.07 [0.12]	0.06 [0.11]	0.08 [0.15]
Share of borrowers at risk, rural areas	0.06 [0.13]	0.05 [0.09]	0.05 [0.09]	0.08 [0.13]	0.08 [0.13]	0.1 [0.15]
Share of borrowers at risk, urban areas	0.03 [0.08]	0.03 [0.05]	0.04 [0.06]	0.08 [0.11]	0.12 [0.18]	0.12 [0.18]
Share of rural borrowers overdue	0.06 [0.12]	0.07 [0.11]	0.06 [0.1]	0.08 [0.13]	0.08 [0.13]	0.1 [0.15]
Share of urban borrowers overdue	0.05 [0.07]	0.07 [0.16]	0.06 [0.1]	0.08 [0.11]	0.12 [0.18]	0.12 [0.18]
Loan recovery rate, rural women borrowers	83.30 [35.75]	85.82 [33.13]	86.68 [32.15]	83.28 [35.71]	85.79 [32.05]	87.1 [31.09]
Loan recovery rate, urban women borrowers	49.80 [49.61]	49.65 [49.47]	51.41 [49.5]	48.18 [49]	55.72 [48.44]	54.06 [48.69]
Loan recovery rate, rural men borrowers	44.36 [48.33]	46.77 [49.08]	53.34 [48.83]	56.74 [48.49]	58.7 [47.78]	56.52 [48.29]
Loan recovery rate, urban men borrowers	31.13 [45.99]	- [-]	34.61 [47.02]	35.73 [47.14]	39.28 [47.58]	39.61 [47.81]
Share of loans disbursed for agr. crops	0.16 [0.15]	0.17 [0.18]	0.18 [0.17]	0.2 [0.17]	0.22 [0.19]	0.2 [0.17]
Share of loans disbursed for small business	0.46 [0.24]	0.45 [0.25]	0.47 [0.24]	0.48 [0.24]	0.48 [0.25]	0.48 [0.26]
Share of loans disbursed for housing	0.03 [0.05]	0.03 [0.05]	0.03 [0.05]	0.05 [0.09]	0.05 [0.09]	0.05 [0.09]
Loan recovery rate, agr. crop loans	52.98 [48.88]	58.59 [48.45]	73.51 [42.81]	68.71 [45.13]	73.36 [41.75]	78.28 [39.17]
Loan recovery rate, small business loans	61.41 [47.6]	67.65 [45.83]	83.5 [35.16]	76.61 [41.18]	79.79 [37.68]	86.59 [31.06]
Loan recovery rate, housing loans	34.51 [46.15]	42.04 [48.35]	45.64 [48.32]	32.96 [46.54]	33.24 [46.38]	32.66 [46.42]

Notes:

(1) Standard deviations in brackets. Interest rates and loan recovery rates reflect percentages.

Table 2. Initial district and institutional characteristics, by age of MFI

	Inception date of MFI			
	Before	Between	Between	Between
	1990	1990-95	1996-2000	2001-05
<u>Characteristics of district HQ (2001 Census)</u>				
Male-female sex ratio	115.58 [9.17]	111.3 [9.22]	105.39 [2.79]	106.24 [5.58]
Avg literacy, men (%)	0.6 [0.11]	0.57 [0.11]	0.48 [0.07]	0.49 [0.09]
Avg literacy, women (%)	0.5 [0.1]	0.47 [0.1]	0.41 [0.07]	0.42 [0.08]
Yearly population growth rate, 1991-2001	0.03 [0.02]	0.03 [0.02]	0.01 [-]	0.02 [0.01]
Share of HH in rural areas, 2001	0.5 [0.35]	0.6 [0.31]	0.81 [0.13]	0.75 [0.23]
Share of land under river	0.05 [0.04]	0.04 [0.03]	0.05 [0.05]	0.05 [0.05]
Banks per sq km	0.24 [0.19]	0.16 [0.17]	0.05 [0.02]	0.07 [0.09]
NGO per sq km	0.28 [0.22]	0.2 [0.21]	0.05 [0.04]	0.07 [0.11]
Cooperatives per sq km	1.55 [0.7]	1.39 [0.61]	1.00 [0.36]	0.97 [0.45]
Hat per sq km	0.09 [0.04]	0.09 [0.04]	0.08 [0.03]	0.09 [0.03]
Share of roads that are metalled	0.27 [0.15]	0.24 [0.14]	0.15 [0.07]	0.16 [0.1]
<u>MFI initial characteristics in 2005</u>				
Number of branches in rural areas	135.84 [315.59]	74.32 [331.85]	1.34 [1.94]	0.59 [0.71]
Number of branches in urban areas	11.79 [14.92]	12.08 [44.33]	0.52 [1.44]	0.41 [0.8]
Total number of employees	3396.53 [8399.0]	713.3 [2429.33]	32.64 [48.48]	9.76 [9.41]
Average number of borrowers per employee	114.8 [90.3]	127.0 [134.3]	81.5 [53.0]	106.6 [65.1]
Total number of districts covered	17.37 [19.98]	6.73 [12.31]	1.18 [0.76]	0.94 [0.66]
Share of employees that are women	0.37 [0.2]	0.31 [0.19]	0.4 [0.24]	0.51 [0.32]
Head of MFI is a woman (Y=1, N=0)	0.89 [0.32]	0.76 [0.43]	0.75 [0.44]	0.82 [0.39]
Number of MFIs	19	37	44	17

Notes:

(1) Standard deviations in brackets.

Table 3. Panel FE regressions, interest rates on savings and loans

	Log interest rate on savings		Log interest rate on loans	
	[1a]	[1b]	[2a]	[2b]
Age of MFI				
MFI began between 1990-95	-0.008 [-0.73]	-0.007 [-0.69]	0.15 [1.53]	0.134 [1.43]
MFI began 1996-2000	-0.031* [-1.74]	-0.030* [-1.75]	0.175 [1.15]	0.165 [1.11]
MFI began 2001-05	-0.035* [-1.75]	-0.034* [-1.72]	0.247 [1.41]	0.252 [1.45]
District initial conditions				
male-female sex ratio	-0.002 [-0.77]	-0.001 [-1.15]	0.018 [0.64]	-0.005 [-0.70]
avg literacy, men (%)	0.243* [1.84]	0.235* [1.75]	-0.917 [-0.82]	-0.741 [-0.67]
avg literacy, women (%)	-0.096 [-0.72]	-0.094 [-0.69]	0.78 [0.74]	0.718 [0.70]
yearly pop growth rate, 1991-2001	1.176 [0.90]	0.941 [0.68]	1.749 [0.12]	7.951 [0.72]
share of HH in rural areas, 2001	0.008 [0.13]	0.01 [0.17]	0.684 [1.57]	0.62 [1.41]
share of land under river	0.153 [1.33]	0.155 [1.44]	-1.018 [-0.82]	-1.169 [-0.93]
banks per sq km	-0.206 [-1.25]	-0.232 [-1.44]	4.024* [1.86]	4.491** [2.00]
ngo per sq km	0.032 [0.48]	0.037 [0.53]	-2.531** [-1.99]	-2.571* [-1.95]
cooperatives per sq km	-0.047*** [-2.65]	-0.048*** [-2.69]	0.141 [0.84]	0.161 [0.96]
hat per sq km	0.357** [2.08]	0.371** [2.12]	-3.999** [-2.42]	-4.125** [-2.50]
share of roads that are metalled	0.220*** [3.52]	0.219*** [3.44]	-0.952* [-1.72]	-0.941 [-1.64]
MFI initial conditions				
log branches in rural areas, 2005	-0.001 [-0.48]	-0.001 [-0.63]	0.033*** [3.01]	0.035*** [2.90]
log branches in urban areas, 2005	0 [0.03]	0 [0.08]	-0.009 [-0.65]	-0.008 [-0.61]
log employees, 2005	-0.007* [-1.72]	-0.007 [-1.62]	-0.027 [-0.70]	-0.031 [-0.83]
log districts covered, 2005	0.006 [0.72]	0.005 [0.63]	0.087 [0.98]	0.082 [0.90]
share of female employees in 2005	-0.013 [-0.72]	-0.012 [-0.67]	0.506*** [3.00]	0.514*** [2.90]
MFI head is woman	0.01 [0.97]	0.01 [0.97]	-0.019 [-0.20]	-0.027 [-0.26]
Initial MFI characteristics* whether NGO began after 1998				
log branches in rural areas, 2005		-0.004 [-0.91]		0.048 [1.49]
log branches in urban areas, 2005		0.003 [0.50]		0.004 [0.17]
log employees, 2005		0.005 [0.40]		-0.172* [-1.68]
log districts covered, 2005		-0.003 [-0.12]		0.201 [1.03]
share of female employees in 2005		0.003 [0.04]		0.664 [1.25]
MFI head is woman		-0.002 [-0.09]		0.032 [0.16]
Year	0.102 [0.38]		-2.399 [-0.81]	
Observations	694	694	702	702
R-squared	0.099	0.101	0.082	0.085

Notes: (1) t-statistics adjusted for clustering in brackets, *** p<0.01, ** p<0.05, * p<0.1. (2) Excluded category for age of MFI is "before 1990"

Table 4. Panel FE regressions, distribution of savings and loans products

	Share of net savings to loans disbursed, rural		Share of net savings to loans disbursed, urban		Share of active members without loan, rural		Share of active members without loan, urban	
	[1a]	[1b]	[2a]	[2b]	[3a]	[3b]	[4a]	[4b]
Age of MFI								
MFI began between 1990-95	-0.001 [-0.40]	-0.001 [-0.21]	0.014 [1.27]	0.011 [1.09]	-0.008 [-0.81]	-0.008 [-0.92]	0 [-0.02]	-0.002 [-0.34]
MFI began 1996-2000	-0.004 [-0.80]	-0.004 [-0.73]	0.001 [0.14]	0.001 [0.14]	-0.028** [-2.34]	-0.029** [-2.48]	-0.024** [-2.45]	-0.026** [-2.56]
MFI began 2001-05	-0.022* [-1.87]	-0.025* [-1.93]	0.005 [0.30]	-0.001 [-0.06]	-0.048*** [-3.04]	-0.049*** [-2.89]	-0.026 [-1.56]	-0.030* [-1.73]
District initial conditions								
male-female sex ratio	-0.001 [-0.68]	0 [-0.14]	0.005 [1.54]	-0.001 [-0.76]	0.003 [1.21]	0.002 [1.60]	0.006* [1.84]	0.003** [2.63]
avg literacy, men (%)	0.033 [0.51]	0.007 [0.10]	-0.19 [-1.28]	-0.018 [-0.20]	-0.144 [-1.22]	-0.141 [-1.17]	-0.694*** [-4.05]	-0.618*** [-4.05]
avg literacy, women (%)	0.002 [0.04]	0.024 [0.41]	0.236 [1.40]	0.139 [0.94]	-0.084 [-0.79]	-0.097 [-0.91]	0.369*** [2.93]	0.348*** [2.73]
yearly pop growth rate, 1991-2001	0.066 [0.09]	-0.279 [-0.38]	-0.045 [-0.05]	1.836 [1.55]	0.327 [0.31]	0.575 [0.62]	-1.057 [-0.88]	-0.178 [-0.20]
share of HH in rural areas, 2001	-0.012 [-0.49]	-0.008 [-0.31]	0.132 [1.30]	0.103 [1.09]	-0.064 [-1.05]	-0.072 [-1.16]	-0.094 [-1.46]	-0.105 [-1.55]
share of land under river	0.054 [0.94]	0.055 [0.90]	-0.111 [-0.76]	-0.16 [-0.93]	0.011 [0.11]	0.013 [0.13]	0.069 [0.52]	0.062 [0.47]
banks per sq km	0.096 [0.76]	0.083 [0.78]	-0.436* [-1.84]	-0.403* [-1.78]	-0.109 [-0.64]	-0.06 [-0.38]	-0.278 [-1.52]	-0.227 [-1.30]
ngo per sq km	-0.063 [-0.85]	-0.063 [-0.81]	0.404* [1.73]	0.454* [1.80]	-0.024 [-0.36]	-0.029 [-0.45]	0.075 [1.23]	0.079 [1.37]
cooperatives per sq km	0.005 [0.64]	0.004 [0.54]	-0.023 [-1.02]	-0.037 [-1.32]	0 [0.01]	0.002 [0.13]	0.063*** [3.94]	0.057*** [3.88]
hat per sq km	-0.037 [-0.43]	-0.041 [-0.47]	-0.017 [-0.13]	0.1 [0.67]	0 [-0.00]	-0.02 [-0.13]	-0.228 [-1.50]	-0.181 [-1.12]
share of roads that are metalled	-0.032 [-1.14]	-0.034 [-1.15]	0.099 [1.05]	0.091 [0.92]	-0.105 [-1.45]	-0.11 [-1.49]	-0.212** [-2.53]	-0.208** [-2.38]
MFI initial conditions								
log branches in rural areas, 2005	0 [-0.18]	0 [-0.27]	0 [0.30]	0 [0.30]	0 [0.23]	0.001 [0.40]	0.002 [1.26]	0.002 [1.29]
log branches in urban areas, 2005	-0.001** [-2.23]	-0.001** [-2.24]	-0.001 [-0.65]	0 [-0.34]	0 [0.61]	0 [0.49]	0 [0.04]	0 [0.11]
log employees, 2005	0 [-0.23]	0 [-0.13]	0 [0.12]	0.002 [0.63]	-0.008* [-1.69]	-0.009* [-1.85]	-0.008** [-2.41]	-0.009*** [-2.67]
log districts covered, 2005	0.006 [1.52]	0.006 [1.45]	-0.009 [-0.66]	-0.015 [-1.10]	0.016 [1.13]	0.017 [1.20]	0.007 [1.19]	0.009 [1.43]
share of female employees in 2005	-0.001 [-0.19]	-0.002 [-0.23]	-0.01 [-0.66]	-0.009 [-0.58]	0.008 [0.44]	0.011 [0.63]	-0.008 [-0.42]	-0.007 [-0.37]
MFI head is woman	-0.003 [-1.10]	-0.004 [-1.21]	-0.005 [-1.06]	-0.006 [-1.00]	0.016* [1.85]	0.017* [1.86]	0.009 [1.11]	0.01 [1.19]
Initial MFI characteristics*								
whether NGO began after 1998								
log branches in rural areas, 2005		-0.002 [-1.41]		0.013** [2.38]		0.003 [0.74]		-0.007* [-1.83]
log branches in urban areas, 2005		-0.004* [-1.70]		-0.008** [-2.14]		-0.005 [-1.19]		-0.002 [-0.57]
log employees, 2005		0.010* [1.86]		-0.031*** [-2.87]		-0.006 [-0.36]		0.025** [2.29]
log districts covered, 2005		0.003 [0.24]		0.065*** [3.94]		-0.031 [-0.95]		-0.049*** [-3.46]
share of female employees in 2005		-0.049* [-1.80]		-0.022 [-1.48]		0.088* [1.87]		0.015 [0.65]
MFI head is woman		-0.055*** [-3.00]		-0.017 [-1.02]		0.021 [1.00]		-0.015 [-0.85]
Year								
	0.118 [0.63]		-0.584 [-1.60]		-0.145 [-0.64]		-0.302 [-1.06]	
Observations	645	645	409	409	643	643	405	405
R-squared	0.168	0.192	0.072	0.08	0.074	0.083	0.071	0.075

Notes: (1) t-statistics adjusted for clustering in brackets, *** p<0.01, ** p<0.05, * p<0.1. (2) Excluded category for age of MFI is "before 1990"

Table 5. Panel FE regressions, delinquency among members

	Share of rural borrowers at risk		Share of urban borrowers at risk		Share of rural borrowers overdue		Share of urban borrowers overdue	
	[1a]	[1b]	[2a]	[2b]	[3a]	[3b]	[4a]	[4b]
Age of MFI								
MFI began between 1990-95	-0.019 [-1.21]	-0.022 [-1.45]	-0.002 [-0.27]	0.004 [0.43]	-0.02 [-1.27]	-0.023 [-1.46]	0.004 [0.42]	0.012 [1.15]
MFI began 1996-2000	-0.002 [-0.09]	-0.006 [-0.39]	0.045** [2.25]	0.043** [2.36]	-0.01 [-0.59]	-0.013 [-0.77]	0.055** [2.48]	0.053** [2.59]
MFI began 2001-05	-0.028 [-1.61]	-0.030* [-1.70]	0.041* [1.96]	0.041** [2.12]	-0.033* [-1.88]	-0.033* [-1.91]	0.058** [2.46]	0.060*** [2.67]
District initial conditions								
male-female sex ratio	0.004 [1.61]	-0.001 [-0.65]	-0.011** [-2.16]	-0.002 [-0.98]	0.004 [1.36]	-0.001 [-0.46]	-0.014** [-2.55]	-0.002 [-1.25]
avg literacy, men (%)	0.257 [1.46]	0.295 [1.45]	0.556* [1.86]	0.319 [1.33]	0.268 [1.55]	0.293 [1.48]	0.649* [1.83]	0.34 [1.22]
avg literacy, women (%)	-0.129 [-1.28]	-0.143 [-1.29]	-0.251 [-1.29]	-0.162 [-0.93]	-0.16 [-1.59]	-0.173 [-1.66]	-0.292 [-1.17]	-0.169 [-0.75]
yearly pop growth rate, 1991-2001	0.937 [0.47]	2.359 [0.89]	1.299 [0.64]	-0.919 [-0.63]	1.531 [0.79]	2.608 [1.01]	3.778* [1.68]	0.825 [0.47]
share of HH in rural areas, 2001	-0.013 [-0.16]	-0.026 [-0.35]	-0.056 [-0.54]	-0.013 [-0.12]	-0.058 [-0.73]	-0.072 [-0.96]	0.002 [0.01]	0.052 [0.44]
share of land under river	-0.121 [-0.83]	-0.14 [-0.94]	-0.053 [-0.32]	0.025 [0.14]	-0.089 [-0.60]	-0.107 [-0.71]	-0.09 [-0.49]	0.006 [0.03]
banks per sq km	-0.702** [-2.01]	-0.583* [-1.71]	-0.329 [-1.38]	-0.410* [-1.70]	-0.801** [-2.45]	-0.700** [-2.22]	-0.174 [-0.64]	-0.29 [-1.04]
ngo per sq km	0.169 [1.57]	0.159 [1.55]	0.329*** [3.07]	0.274** [2.54]	0.162** [2.04]	0.155** [2.06]	0.302** [2.46]	0.240* [1.93]
cooperatives per sq km	-0.011 [-0.65]	-0.007 [-0.42]	-0.014 [-0.43]	0.002 [0.09]	-0.014 [-0.86]	-0.011 [-0.73]	-0.038 [-1.09]	-0.016 [-0.52]
hat per sq km	0.198 [0.75]	0.181 [0.67]	0.442** [2.33]	0.296 [1.65]	0.27 [1.07]	0.253 [0.99]	0.413 [1.63]	0.226 [1.00]
share of roads that are metalled	0.079 [0.99]	0.077 [0.90]	0.18 [1.52]	0.166 [1.32]	0.08 [0.96]	0.077 [0.88]	0.182 [1.42]	0.168 [1.22]
MFI initial conditions								
log branches in rural areas, 2005	-0.001 [-1.02]	-0.001 [-1.02]	-0.002 [-1.32]	-0.002 [-1.37]	-0.001 [-0.78]	-0.001 [-0.70]	-0.002 [-1.28]	-0.002 [-1.36]
log branches in urban areas, 2005	0 [-0.25]	0 [-0.10]	0.001 [0.44]	0 [0.04]	-0.001 [-0.49]	-0.001 [-0.39]	0.001 [0.76]	0 [0.26]
log employees, 2005	0.007* [1.76]	0.006 [1.33]	0.011* [1.85]	0.012* [1.89]	0.006 [1.40]	0.005 [1.09]	0.016** [2.47]	0.017** [2.50]
log districts covered, 2005	-0.019* [-1.89]	-0.017 [-1.61]	-0.009 [-0.85]	-0.009 [-0.79]	-0.012 [-1.10]	-0.011 [-0.96]	-0.015 [-1.49]	-0.014 [-1.35]
share of female employees in 2005	-0.016 [-1.03]	-0.015 [-0.97]	0.016 [0.62]	0.02 [0.79]	-0.012 [-0.74]	-0.01 [-0.62]	-0.002 [-0.06]	0.002 [0.07]
MFI head is woman	0.017** [2.26]	0.015* [1.87]	0.015 [1.35]	0.016 [1.23]	0.011* [1.67]	0.01 [1.37]	0.016 [1.61]	0.016 [1.48]
Initial MFI characteristics*								
whether NGO began after 1998								
log branches in rural areas, 2005		-0.001 [-0.43]		0 [-0.10]		0 [0.13]		-0.001 [-0.27]
log branches in urban areas, 2005		0.005* [1.66]		0.005 [0.97]		0.002 [0.65]		0.004 [0.70]
log employees, 2005		-0.011 [-0.80]		-0.033 [-1.52]		-0.001 [-0.13]		-0.032 [-1.47]
log districts covered, 2005		-0.005 [-0.14]		0.019 [0.86]		-0.019 [-0.56]		0.019 [0.82]
share of female employees in 2005		0.103 [1.61]		0.077** [2.14]		0.115* [1.93]		0.048 [1.02]
MFI head is woman		0.023 [0.75]		-0.009 [-0.32]		0.014 [0.46]		-0.008 [-0.26]
Year	-0.563 [-1.59]		0.868** [2.13]		-0.456 [-1.29]		1.106** [2.48]	
Observations	643	643	405	405	643	643	405	405
R-squared	0.184	0.186	0.413	0.442	0.152	0.155	0.257	0.267

Notes: (1) t-statistics adjusted for clustering in brackets, *** p<0.01, ** p<0.05, * p<0.1. (2) Excluded category for age of MFI is "before 1990"

Table 6. Panel FE regressions, loan recovery rates

	Log loan recovery rate, rural women		Log loan recovery rate, urban women		Log loan recovery rate, rural men		Log loan recovery rate, urban men	
	[1a]	[1b]	[2a]	[2b]	[3a]	[3b]	[4a]	[4b]
Age of MFI								
MFI began between 1990-95	0.445*	0.457**	0.694**	0.582*	0.063	0.106	0.551	0.511
	[1.97]	[2.06]	[2.14]	[1.85]	[0.14]	[0.24]	[1.44]	[1.36]
MFI began 1996-2000	0.417*	0.409*	0.515	0.41	-0.193	-0.223	0.37	0.319
	[1.92]	[1.91]	[1.53]	[1.26]	[-0.31]	[-0.36]	[0.81]	[0.70]
MFI began 2001-05	0.625**	0.690**	0.574	0.402	-0.119	-0.165	0.043	-0.075
	[2.25]	[2.45]	[1.37]	[0.96]	[-0.16]	[-0.22]	[0.08]	[-0.14]
District initial conditions								
male-female sex ratio	-0.041	-0.018	0.217***	0.065***	-0.069	-0.003	0.133	0.076**
	[-1.13]	[-1.06]	[2.64]	[3.03]	[-0.64]	[-0.10]	[1.64]	[2.41]
avg literacy, men (%)	2.166	2.022	-5.588	-4.421	-2.894	-3.584	-4.607	-4.401
	[1.06]	[0.98]	[-1.49]	[-1.20]	[-0.62]	[-0.78]	[-1.16]	[-1.07]
avg literacy, women (%)	-1.402	-1.459	-4.31	-4.462	2.33	2.596	-3.139	-2.972
	[-0.87]	[-0.87]	[-1.01]	[-0.94]	[0.51]	[0.56]	[-0.77]	[-0.72]
yearly pop growth rate, 1991-2001	18.446	14.568	-60.308*	-20.466	11.091	-4.236	-24.692	-8.862
	[1.10]	[1.00]	[-1.74]	[-0.81]	[0.23]	[-0.12]	[-0.53]	[-0.19]
share of HH in rural areas, 2001	1.332	1.409	-3.474**	-3.957**	1.484	1.758	-5.560***	-5.672***
	[1.14]	[1.21]	[-2.10]	[-2.48]	[0.72]	[0.84]	[-2.97]	[-3.04]
share of land under river	-3.962**	-3.949**	-6.898**	-7.405**	-8.920**	-8.533**	-10.929***	-11.089***
	[-2.29]	[-2.43]	[-2.12]	[-2.00]	[-2.03]	[-1.99]	[-3.30]	[-3.28]
banks per sq km	3.417	2.724	-3.188	-0.633	7.02	5.83	-8.028	-6.761
	[1.11]	[0.85]	[-0.81]	[-0.15]	[1.23]	[1.05]	[-1.28]	[-1.11]
ngo per sq km	-0.636	-0.491	1.318	1.199	-2.533	-2.453	2.567	2.352
	[-0.47]	[-0.36]	[0.75]	[0.76]	[-0.85]	[-0.80]	[1.43]	[1.32]
cooperatives per sq km	-0.259	-0.287	-0.346	-0.214	0.394	0.337	0.027	0.095
	[-1.15]	[-1.27]	[-0.92]	[-0.53]	[0.69]	[0.60]	[0.07]	[0.23]
hat per sq km	-1.607	-1.157	-1.738	-2.517	-0.06	0.386	-4.694	-5.23
	[-0.57]	[-0.40]	[-0.34]	[-0.43]	[-0.01]	[0.06]	[-0.75]	[-0.81]
share of roads that are metalled	0.635	0.635	-3.437**	-3.289**	0.286	0.225	-4.888***	-4.913***
	[0.63]	[0.64]	[-2.39]	[-2.43]	[0.10]	[0.08]	[-2.72]	[-2.69]
MFI initial conditions								
log branches in rural areas, 2005	0.017	0.012	0.006	0.007	-0.011	-0.022	-0.034	-0.031
	[1.48]	[0.88]	[0.21]	[0.24]	[-0.25]	[-0.52]	[-0.82]	[-0.76]
log branches in urban areas, 2005	-0.01	-0.008	-0.048*	-0.051**	0.018	0.02	-0.039	-0.04
	[-0.70]	[-0.52]	[-1.93]	[-2.05]	[0.55]	[0.59]	[-1.18]	[-1.20]
log employees, 2005	0.016	0.025	0.041	0.007	0.03	0.038	0.088	0.065
	[0.25]	[0.38]	[0.43]	[0.07]	[0.20]	[0.25]	[0.73]	[0.56]
log districts covered, 2005	0.028	-0.007	0.06	0.134	-0.014	-0.012	0.027	0.076
	[0.17]	[-0.04]	[0.27]	[0.57]	[-0.04]	[-0.03]	[0.08]	[0.23]
share of female employees in 2005	0.262	0.322	0.467	0.301	0.215	0.261	-0.13	-0.164
	[1.39]	[1.59]	[1.19]	[0.77]	[0.38]	[0.47]	[-0.24]	[-0.31]
MFI head is woman	-0.069	-0.06	0.428**	0.398*	0.39	0.406	0.664**	0.643**
	[-0.70]	[-0.60]	[2.07]	[1.97]	[1.43]	[1.49]	[2.57]	[2.49]
Initial MFI characteristics* whether NGO began after 1998								
log branches in rural areas, 2005		-0.054		-0.053		-0.200*		-0.014
		[-0.52]		[-0.69]		[-1.72]		[-0.15]
log branches in urban areas, 2005		0.127		-0.192**		0.035		-0.192*
		[0.68]		[-2.00]		[0.23]		[-1.78]
log employees, 2005		-0.422		0.335		0.02		0.276
		[-1.49]		[1.27]		[0.06]		[0.93]
log districts covered, 2005		0.598		-0.822*		-0.221		-0.736
		[0.95]		[-1.69]		[-0.47]		[-1.47]
share of female employees in 2005		1.326		-1.524		-0.333		-0.572
		[1.23]		[-1.17]		[-0.21]		[-0.41]
MFI head is woman		0.277		-0.157		-0.312		-0.832
		[0.28]		[-0.22]		[-0.44]		[-1.40]
Year	2.285		-15.457*		6.712		-5.843	
	[0.70]		[-1.91]		[0.67]		[-0.66]	
Observations	702	702	702	702	702	702	585	585
R-squared	0.038	0.055	0.116	0.117	0.083	0.089	0.142	0.151

Notes: (1) t-statistics adjusted for clustering in brackets, *** p<0.01, ** p<0.05, * p<0.1. (2) Excluded category for age of MFI is "before 1990"

Table 7. Panel FE regressions, types of loans disbursed

	Share of loans disbursed for agr. crops		Share of loans disbursed for small business		Share of loans disbursed for housing	
	[1a]	[1b]	[2a]	[2b]	[3a]	[3b]
Age of MFI						
MFI began between 1990-95	0.021*	0.017*	0.017	0.019	-0.015	-0.013
	[1.92]	[1.68]	[0.98]	[1.10]	[-1.30]	[-1.13]
MFI began 1996-2000	0.034**	0.032**	0.009	0.008	-0.021	-0.019
	[2.48]	[2.40]	[0.36]	[0.31]	[-1.53]	[-1.38]
MFI began 2001-05	0.033**	0.031**	0.044	0.039	-0.035**	-0.032**
	[2.20]	[2.05]	[1.48]	[1.35]	[-2.19]	[-2.08]
District initial conditions						
male-female sex ratio	0.006**	0	-0.003	0	-0.003	0.001
	[2.24]	[0.45]	[-0.50]	[-0.23]	[-1.64]	[0.89]
avg literacy, men (%)	-0.217	-0.138	0.031	-0.051	0.077	0.04
	[-1.35]	[-0.85]	[0.15]	[-0.25]	[1.11]	[0.58]
avg literacy, women (%)	0.085	0.055	-0.034	0.043	-0.074	-0.06
	[0.54]	[0.31]	[-0.14]	[0.16]	[-1.44]	[-1.10]
yearly pop growth rate, 1991-2001	-2.599**	-0.841	-0.652	-1.301	0.152	-0.84
	[-2.36]	[-0.78]	[-0.28]	[-0.73]	[0.23]	[-1.19]
share of HH in rural areas, 2001	0.004	-0.008	0.017	0.036	-0.005	0.001
	[0.06]	[-0.13]	[0.17]	[0.34]	[-0.13]	[0.02]
share of land under river	0.055	0.036	0.088	0.078	-0.078	-0.067
	[0.41]	[0.24]	[0.36]	[0.32]	[-1.13]	[-1.01]
banks per sq km	-0.007	0.048	0.295	0.311	0.229*	0.19
	[-0.03]	[0.24]	[0.86]	[0.86]	[1.93]	[1.59]
ngo per sq km	-0.025	-0.005	0.134	0.118	-0.046	-0.054
	[-0.20]	[-0.04]	[0.64]	[0.54]	[-1.05]	[-1.13]
cooperatives per sq km	0.03	0.035*	-0.034	-0.038	-0.014	-0.017
	[1.58]	[1.90]	[-1.24]	[-1.37]	[-1.40]	[-1.57]
hat per sq km	-0.324	-0.354	-0.01	-0.02	-0.003	0.008
	[-1.38]	[-1.40]	[-0.02]	[-0.04]	[-0.03]	[0.08]
share of roads that are metalled	-0.074	-0.057	-0.055	-0.072	-0.002	-0.008
	[-0.96]	[-0.71]	[-0.45]	[-0.59]	[-0.05]	[-0.20]
MFI initial conditions						
log branches in rural areas, 2005	-0.002	-0.001	0	0	0	0
	[-1.45]	[-1.04]	[0.18]	[0.08]	[0.19]	[-0.08]
log branches in urban areas, 2005	0.001	0.001	0	0	0.001	0.001
	[1.03]	[0.94]	[-0.24]	[-0.17]	[1.01]	[0.93]
log employees, 2005	0.007*	0.005	-0.003	-0.002	-0.001	0
	[1.71]	[1.21]	[-0.49]	[-0.30]	[-0.48]	[-0.12]
log districts covered, 2005	-0.004	-0.002	0.004	0.001	-0.001	-0.002
	[-0.46]	[-0.21]	[0.29]	[0.07]	[-0.15]	[-0.27]
share of female employees in 2005	-0.004	-0.009	0.026	0.034	-0.013	-0.013
	[-0.21]	[-0.53]	[0.97]	[1.19]	[-0.98]	[-0.97]
MFI head is woman	0	-0.002	-0.003	-0.005	0	0.001
	[0.04]	[-0.20]	[-0.20]	[-0.33]	[-0.03]	[0.18]
Initial MFI characteristics* whether NGO began after 1998						
log branches in rural areas, 2005		0.004		-0.002		-0.001
		[1.20]		[-0.39]		[-0.63]
log branches in urban areas, 2005		-0.003		-0.004		0.001
		[-1.15]		[-0.53]		[0.58]
log employees, 2005		-0.012		0.008		0.006
		[-1.02]		[0.45]		[1.32]
log districts covered, 2005		0.015		-0.01		0.005
		[0.95]		[-0.43]		[0.48]
share of female employees in 2005		-0.03		0.063		-0.035
		[-0.61]		[0.88]		[-1.56]
MFI head is woman		0.012		-0.089*		-0.002
		[0.59]		[-1.72]		[-0.17]
Year	-0.593**		0.245		0.329*	
	[-2.03]		[0.49]		[1.94]	
Observations	584	584	585	585	584	584
R-squared	0.096	0.093	0.071	0.083	0.164	0.162

Notes: (1) t-statistics adjusted for clustering in brackets, *** p<0.01, ** p<0.05, * p<0.1. (2) Excluded category for age of MFI is "before 1990"

Table 8. Panel FE regressions, recovery rates among types of loans

	Log recovery rate, agr. crop loans		Log recovery rate, small business loans		Log recovery rate, housing loans	
	[1a]	[1b]	[2a]	[2b]	[3a]	[3b]
Age of MFI						
MFI began between 1990-95	-0.348 [-1.17]	-0.36 [-1.27]	-0.204 [-0.68]	-0.233 [-0.82]	0.011 [0.03]	0.123 [0.31]
MFI began 1996-2000	0.295 [0.78]	0.315 [0.84]	0.124 [0.37]	0.128 [0.38]	-0.292 [-0.56]	-0.145 [-0.28]
MFI began 2001-05	-0.665 [-1.52]	-0.516 [-1.20]	-0.608 [-1.41]	-0.497 [-1.15]	-0.574 [-0.87]	-0.429 [-0.67]
District initial conditions						
male-female sex ratio	0.087 [1.29]	0.062*** [3.03]	0.078 [0.75]	0.045 [1.41]	-0.108 [-1.16]	0.035 [1.15]
avg literacy, men (%)	-5.584 [-1.54]	-5.135 [-1.34]	-3.795 [-0.82]	-3.562 [-0.80]	-1.141 [-0.29]	-3.349 [-0.88]
avg literacy, women (%)	-0.223 [-0.06]	-0.855 [-0.22]	-2.234 [-0.53]	-2.422 [-0.54]	0.229 [0.07]	1.466 [0.46]
yearly pop growth rate, 1991-2001	-15.109 [-0.52]	-5.846 [-0.25]	-6.917 [-0.15]	2.956 [0.09]	10.208 [0.23]	-32.181 [-0.81]
share of HH in rural areas, 2001	-1.839 [-1.30]	-2.163 [-1.54]	-1.569 [-0.76]	-1.874 [-0.92]	-1.972 [-1.15]	-1.767 [-1.05]
share of land under river	-12.086*** [-4.04]	-11.830*** [-3.95]	-4.955 [-1.27]	-4.915 [-1.22]	-5.012 [-1.18]	-4.776 [-1.20]
banks per sq km	2.07 [0.52]	1.464 [0.38]	-2.552 [-0.53]	-3.051 [-0.63]	0.624 [0.10]	-1.967 [-0.33]
ngo per sq km	-1.566 [-0.91]	-1.062 [-0.58]	0.827 [0.38]	1.448 [0.68]	4.034* [1.68]	4.741* [1.92]
cooperatives per sq km	0.105 [0.30]	0.101 [0.28]	0.286 [0.79]	0.281 [0.73]	0.26 [0.48]	0.072 [0.13]
hat per sq km	-7.296* [-1.67]	-6.949 [-1.56]	-5.43 [-1.01]	-5.091 [-0.91]	-6.338 [-1.00]	-5.445 [-0.88]
share of roads that are metalled	-2.216 [-1.32]	-2.055 [-1.20]	-0.963 [-0.47]	-0.764 [-0.38]	-2.135 [-0.90]	-2.288 [-0.95]
MFI initial conditions						
log branches in rural areas, 2005	0.017 [0.58]	0.014 [0.48]	-0.014 [-0.29]	-0.019 [-0.40]	0.056 [1.26]	0.044 [1.00]
log branches in urban areas, 2005	-0.022 [-1.04]	-0.029 [-1.31]	-0.016 [-0.58]	-0.022 [-0.78]	-0.071* [-1.67]	-0.076* [-1.81]
log employees, 2005	-0.098 [-1.14]	-0.107 [-1.23]	-0.151 [-1.53]	-0.149 [-1.48]	-0.098 [-0.72]	-0.028 [-0.20]
log districts covered, 2005	-0.078 [-0.30]	-0.051 [-0.19]	0.069 [0.25]	0.055 [0.19]	0.182 [0.45]	0.064 [0.15]
share of female employees in 2005	-0.517 [-1.54]	-0.505 [-1.49]	-0.596 [-1.27]	-0.64 [-1.39]	-0.611 [-0.95]	-0.511 [-0.81]
MFI head is woman	0.292 [1.60]	0.352* [1.86]	0.245 [0.95]	0.268 [1.08]	0.387 [1.26]	0.389 [1.30]
Initial MFI characteristics* whether NGO began after 1998						
log branches in rural areas, 2005		0.011 [0.11]		-0.059 [-0.62]		-0.227** [-2.25]
log branches in urban areas, 2005		-0.238** [-2.03]		-0.220** [-2.34]		-0.261 [-1.64]
log employees, 2005		-0.261 [-0.53]		-0.194 [-0.48]		1.456*** [4.44]
log districts covered, 2005		-0.382 [-0.45]		0.227 [0.36]		-0.783 [-1.31]
share of female employees in 2005		0.798 [0.56]		-0.516 [-0.45]		-1.098 [-0.89]
MFI head is woman		1.225 [1.09]		0.106 [0.13]		-3.436*** [-3.98]
Year						
	-2.588 [-0.36]		-3.386 [-0.36]		14.149 [1.49]	
Observations	699	699	699	699	698	698
R-squared	0.185	0.216	0.217	0.246	0.096	0.124

Notes: (1) t-statistics adjusted for clustering in brackets, *** p<0.01, ** p<0.05, * p<0.1. (2) Excluded category for age of MFI is "before 1990"