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CONTENTS

How Competitive is the NGO-MFI Market? Evidence from Two Districts of Bangladesh

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Abstract

The microfinance institutions in Bangladesh have evolved over time in terms of coverage, product design, pricing and also source of finance. This study asks if the competition among Microfinance Institutes (MFIs) has any role in the evolution of this sector. Using branch level information of the MFIs in two districts — Rangpur and Lalmonirhat, we show that there are indications for competition in all three spaces — location, product and price. Estimation results indicate that as the number of MFIs increases in a union (and also in the bordering unions), an MFI tends to i) locate their branch in a union where greater number of MFIs already exist, ii) offer higher number of products and iii) lower prices. This gives a borrower wider range of products to choose from a larger number of MFIs with lower nominal price and more lenient terms and conditions. Therefore, while crafting policies or regulations for microfinance industry one should be aware of the competitiveness of this market (or lack thereof) and its impact on prices and products and thus the welfare of the borrowers.

1 Introduction

Over the last two decades the growth of NGO-MFIs in Bangladesh has outpaced the growth of any other institution, be it Government or Non-Government. The NGO-MFIs initially started their operations in response to crises such as cyclone in 1970 and the Independence War where rehabilitation and relief were the prime goals. However, over the last four decades they have evolved substantially in terms of coverage, product design, pricing and also source of finance. NGO-MFIs are now covering new regions and reaching new clients who were once left outside their program. NGO-MFIs are designing new financial (e.g., targeted customized credit products, micro-insurance, micro-leasing, remittance service, etc.) and non-financial products (e.g., health, education, specialized training, advocacy, etc.) and tying them up to create complex packages of credit and non-credit (e.g., tying credit with insurance), and financial and non-financial (tying credit with training) products. Prices of these products have also gone through substantial downward revisions. Though the nominal price (interest rate) has gone down substantially, effective interest rates of these products may not have decreased much due to other hidden costs (e.g., various upfront deductions and fees).

This study aims at answering whether competition among MFIs has any role in the evolution of the micro-credit industry in terms of new products, choice of branch location and pricing. While there is a huge literature on the impact of microcredit in developing countries on a myriad of income and non-income issues, research on the supply side of the story is very limited. Also there is a large empirical literature on the strategic behavior of firms (see Kalnins 2003, Levinson 1996, Sarmiento and Wilson 2005), but no empirical work has been done studying the role of competition and cooperation between not-for-profit organizations such as MFIs. Like firms, MFIs also make strategic decisions in choosing the location of a branch, size of the branch in terms of employees and coverage, diversifying products and also setting its price.

Conceptually, higher competition ensures better products and lower prices with a wider range of options. It is argued that the effects of competition hinges on the maturity of the market — the effect in a new nascent market will not be the same as in a matured saturated market. There are three phases of market development: pioneer, take-off and consolidation and the level and scope of competition vary with each phase. In the initial stage of market development, MFIs may compete more in choosing geographical location than in product and price. In the later phases of a saturated market, competition over product and price may dominate. However, this observation is not based on any rigorous empirical study.

MFIs may differentiate products to obtain a compet-

itive edge over their competitors. Product differentiation may take various forms such as flexible terms, improved services, product add-ons, inter-locking contracts, etc. Note that similar products across MFIs may vary with length of grace period, waiting-period for a new member to get loan, collateral, loan processing fees, application fees, compulsory saving against the credit product, interest rate on this saving, insurance against the credit, etc. Though microcredit is known for its collateral free credit, in most cases a minimum savings is required to qualify for borrowing. Sometimes it requires a co-signer, permanent or temporary assets as collateral to obtain credit. As the competition among the MFIs gets fierce, these terms and conditions may get relaxed over time for a product with similar price.

Sometimes MFIs also add products, both financial and non-financial, that come with the existing ones. For example, access to some credit products may give access to other financial services such as saving facilities, credit insurances, life insurance, emergency funds, etc. and also to non-financial services such as basic health care, training, etc., creating some complex contracts. Once committed to such contracts, it may be difficult for the clients to switch to other MFIs, even if there are other better options.

Current literature shows that the number of MFIs in a region has grown substantially indicating that MFIs may compete for geographical location. Mahmoud, Khalily and Wadood (2009) found that as many as 40 MFIs operated in Pathrail union of Tangail district in 2009 of which 32 of them were small MFIs. This study argues that there is competition between national level large MFIs and the local smaller ones for market share. There was evidence of market segmentation offering two types of products — smaller loans with lower interest rates and larger loans with higher interest rates.

"Overlapping" of microcredit borrowers — where one borrower borrows from several MFIs — is a salient feature of this industry; it is also an indication of high MFI penetration. However, the literature does not find a positive correlation between overlapping loans and lower repayment rate, which the theoretical literature predicts as one of the adverse consequences of greater competition.

Our study adds to the current body of empirical literature on the market of MFIs. To the best of our knowledge, this is the first study which uses historical administrative data on program placement, products and prices to study the competition in this market. This study collects information on the MFIs in two districts of North Bengal — Rangpur and Lalmonirhat to test the presence and effects of competition. We argue that if competition among MFIs exists, the following four things should be manifested: i) higher penetration of MFIs, ii) larger number of products and greater diversification, iii) more relaxed terms and conditions of the products and iv) lower prices (service charges).

As there is higher penetration of MFIs, we ask whether an MFI locates a branch closer to another MFI because there are both costs and benefits of doing so. Or, do they avoid a region where the number of incumbents is very high? Estimation results show that MFIs tend to locate a branch where the penetration is already high. Since greater numbers of MFIs signals the potential market for microfinance, new MFIs decides to locate their branch in the crowded region. We also test if greater competition leads to higher number of products and lower prices offered by the MFIs. In line with the descriptive statistics, estimation results also indicate that as the number of MFIs increases, MFIs tend to offer more products with lower prices.

Data show that there are evidences of all these four elements. There are greater number of MFIs and branches in a union and they are now offering more products than before. The MFIs have relaxed the waiting-period to get loans, and are offering higher interest rates on saving. Nominal service charges for most of the products have also declined significantly over time.

The rest of the paper is organized by the following sections: the relevant literatures description of the data collection procedure and the sample used for this study; descriptive statistics; empirical tests of hypotheses, and conclusions.

2 Literature Review

Literature on competition of NGO-MFIs is very limited. In this section we survey the prominent theoretical literature to predict the outcome of competition based on MFIs' objectives as well as a few empirical studies relevant for our paper.

Though competition is argued to lower prices with a wider range of better products, the impact of competition among MFIs, especially price competition, is not unambiguous. Competition may generate perverse effects which may make all the micro borrowers worse off. McIntosh and Wydick (2005) show that client maximizing objective of MFIs leads to cross subsidizing among the borrowers — the poorer unprofitable borrowers and the richer profitable borrowers. Competition may lead to shrinking rent from profitable borrowers with elimination or reduction of subsidy. That is, as price competition intensifies, MFIs may drop poorer borrowers or the programs targeting only poorer people, or the backward poorer regions.

This paper also shows that the type of source of fund can play an important role in promoting/dampening competition. Donor-funded client-maximizing MFIs can always undercut non-donor funded MFIs to capture the mar-

ket. Paolo Casini (2008) also shows that the motives of the incumbent and the new entrant are pivotal in understanding the impact of competition among MFIs. The presence of altruistic MFIs in the market makes all the borrowers better off in terms of lower rationing and higher borrowers' rent. It also provides incentives for the potential entrants to enter the market.

Following the above arguments, it is essential to ask — what does an MFI maximize? Ideally and also according to the stated mission, the MFI's are not profit maximizers; they maximize the impact on poverty subject to budget constraints and good repayment rates. The literature considers MFIs maximizing a wide range of objective functions — borrower's welfare, poverty impact, coverage, number of client — depending on the questions the study intends to answer. Since borrowers' welfare and poverty impact are not readily observable/verifiable to the principal (e.g., PKSF, donors), one can argue that MFIs focus more on expanding coverage and the number of clients. One can think of MFIs objective function as simple as maximizing coverage subject to high repayment rates.

There is a literature on determinants of choice of branch location which sheds light on the objective of NGO-MFIs. Gauri and Fruttero (2003), using a pooled cross section data, showed that the net change in NGO programs in a particular community was not tied to the community needs and the NGOs were keen on establishing programs where they themselves had no previous operation, but they were not concerned with duplicating the efforts of other NGOs working in the same community. In a very closely related paper, Zeller, Sharma, Ahmed, and Rashid (2001) using cross section data tried to identify the determinants of branch placement for group-based lending institutions, without addressing the endogeneity of placement choices. Ravallion and Wodon (2000) using cross-section data compared the geographic branch location choices of Grameen Bank and traditional government banks as a function of the potential gain from non-farm rural activities. Their findings indicate that Grameen bank chose bank locations so that more gains accrue to the poor who switch to more profitable non-farm activities. The other banks located in the same area are biased towards the gains realized by the non-poor.

The most cited empirical paper on uncovering MFI's objective is written by Salim (2010). This study, using the strategic branch location, choices of the two largest MFIs in Bangladesh — Grameen and BRAC, tries to reveal their motives: whether they are maximizing profit or poverty impact. The study suggests that profit maximization alone can not explain branch placement patterns for the two largest MFIs in Bangladesh and that their deviations from pure-profit are in the direction of poverty alleviation. If Grameen Bank targets one higher standard deviation of poverty head-count, it costs them 35.2% of its potential profits and the corresponding figure is 51.4% for BRAC. Since branch placement depends on whether the MFIs are for-profit or not-for-profit, this study sheds light on the debate on efficient institutional arrangement to impact poverty.

3 Data

3.1 Study Area

We selected only two districts — Rangpur and Lalmonirhat for this study. Note that it was a pilot project of the Institute of Microfinance (InM) and these two districts provide ideal setup in terms of logistic support and knowledge about these two districts to conduct the survey.

3.2 MFIs and Branch Level Data

We use two modules of questionnaires: i) NGO-MFIs Module and ii) Branch Module to collect the data. The first module contains detailed information on the NGO-MFI: its birth, growth, products, and price while branch module has information on branch location, union coverage, description of credit and non-credit products. We collected historical information on number of borrowers, number of employee, interest rate, credit disbursement, credit outstanding, credit overdue, insurance or emergency fund.

We used Microfinance Regulatory Authority's (MRA) list of MFIs who already received licenses and also who have applied for the registration to collect the name and contact details of the NGO-MFIs operating in these two districts. Initially we selected 19 Partner Organizations (PO) of Palli Karma Shahayak Foundation (PKSF) and 52 Non-POs. However, some of them were later referred to share information with us. Having identified the MFIs in these two districts, we collected their annual reports for most of the years starting from the year of inception of credit program. These reports helped us to understand their credit and non-credit products and also their delivery mechanisms to serve as background materials to develop the questionnaires.

We sent the questionnaires to 467 branches of 71 NGO-MFIs and asked their staff to fill it out with a monetary incentive of 700 Taka for each branch module and 1,000 Taka for an NGO-MFI module. The type of data we asked for was not readily available at the branch or local offices as these are historical data. It took us about six months to collect the completed questionnaire.

A majority of the small Non-POs refused to send back the questionnaires. Most of them have a very small credit portfolio and operate without Microfinance Regulatory

Authority's license. Though we assured them that their information would be used only for research purposes, their responses were not satisfactory. Among the big NGO-MFIs, Grameen Bank did not respond to our request though they received our questionnaire. During that time, the tension was running high between the Government and Grameen Bank over ownership and management issues. Grameen Bank has 61 branches in two districts and this was a big setback for our study. BRAC provided us with the branch level information of product and borrowers, but not the location of branches over time. As a result, we ended up with 346 branches of 25 MFIs (Table 1).

3.3 Union Level Secondary Data

We collected two types of union level secondary data: information on adjacent union and union level characteristics. There are 42 unions in Lalmonirhat and 83 unions in Rangpur district. We listed the name of the bordering unions for each union. This information was collected from the maps found on the internet and also from the maps of Bangladesh Bureau of Statistics (BBS) Community Series Maps of Lalmonirhat and Rangpur districts. For example, Monishkhocha is one of the unions in Lalmonirhat district which shares the same borders with Palashi and Bhadai union. These three unions are located in the same upazila, Aditmary. But, all the unions are not necessarily from the same upazila; one union may share a boundary with another union which may be from a different upazila, or a different district.

4 Competition Among MFIs

Identifying the incidence and extent of competition, or lack thereof, is basically testing the prediction of the outcomes of competition that the theoretical literature makes. The most obvious and easily verifiable one is the number of MFIs and their branches. One can easily document the incidence of the entry and exit of MFIs in a particular region but its impact on the incumbents and on the entrants in terms of price, product and location choice is less obvious. In this section, we check with some descriptive statistics if higher degree of penetration of MFIs has led to greater product diversification, more relaxed terms and conditions, and lower prices.

4.1 Higher Degree of Penetration of MFIs and Their Branches

The number of MFIs and their branches saw a substantial growth over the last ten years in these two districts. Since we could not cover all the MFIs in these two districts, the absolute number gives only a partial picture of the growth of MFIs. In the year 2000, the number of reported MFIs was below five in both districts. In ten years, the reported numbers grew significantly to 14 MFIs in Rangpur and 8 MFIs in Lalmonirhat (Figure 1). In the year 2000, the reported number of branches in Rangpur and Lalmonirhat were 60 and 40 respectively but in the latter half of the decade, the growth of branches in Rangpur outpaced the growth in Lalmonirhat (Figure 2). In 2009, Rangpur and Lalmonirhat had 182 and 101 branches respectively.

However, though the number of branches has increased significantly over the last 10 years, the number of branches per MFI in these two districts has been moderately stable (Figure 3). It indicates that growth of branches is due to entry of new MFIs in these two districts. In Rangpur, on an average, each MFI has about 40 branches and in Lalmonirhat it is about 25, though it dipped around the year 2004.

On an average, the number of borrowers or the amount of credit disbursed per MFI has also seen dramatic increases after 2002, with MFIs in Rangpur having a higher number of borrowers than the MFIs in Lalmonirhat (Figure 4). This is also reflected in the growth of credit in these two districts (Figure 5).

It is interesting to note that the number of branches per MFI in both districts has not increased much. However, the number of borrowers and the amount of credit each MFI has disbursed increased significantly. The number of employees per branch has not increased as well. In fact, it decreased for Lalmonirhat. It indicates that efficiency of the MFIs and their branches has improved over time in delivering credit. This can be regarded as an outcome of higher competition.

4.2 Higher Number of Products and Greater Diversification

The number of credit products offered from each branch, on an average, has also increased significantly. In the year 2000, on an average, a branch would offer about 2 credit products but the number had increased significantly in 2004–06 (Figure 6). After 2006, the number decreased slightly for both districts. In 2009, a branch in Rangpur and Lalmonirhat districts offered about 3.5 and 3 credit products respectively. Data show that there are branches that offer as many as eight credit products simultaneously (e.g., Bhelabari Branch, RDRS). These products are RMC, UMC, UP, Flexible loan, Seasonal loan, Agricultural loan, Micro Enterprise (ME) loan, and Emergency loan.

It is important to note that a branch does not make only decision on how many credit products it would offer. This decision is made at the regional or central level of the MFIs. Sometimes new branches are opened just to offer a single or multiple new products through some projects (e.g., PRIME project of Palli Karma Shahayak Foundation (PKSF)).

Table 1: Name of NGO-MFIs and number of branches

Name	Number of Branches
ASA	106
BEES (Bangladesh Extension Education Service)	2
BRAC	81
Center for Mass Education IN Science (CMES)	1
Dustho Unnayan Sangstha (DUS)	10
Heed Bangladesh	2
MSS (Manobik Shahojjo Sangstha)	3
NAJIR (Natun Jibon Rochi)	1
PMUK (PadakhepManobikUnnayan Kendra)	6
POPI (Peoples Oriented Program Implementation)	10
RDRS	27
SKS Foundation (Samaj Kallayan Sangstha)	11
Sonali Unnoyan Foundation	3
SSS (Sociey for Social Service)	5
TMSS (Thengamara Mohila Sabuj Sangha)	30
UDDIPON	14
UDPS (Uttara Development Program Society)	5
OVA (Own Village Advancement)	4
SERWTCI (Self-Employment for Rural Destitute Women Through Cottage Industries)	5
PROSHIKA	4
ESDO (Eco Social Development Organization)	12
Development Organization of Rural People (DORP)	1
Palli Sampad Shamannoy Kendra (PSSK)	1
ARANYA (Alokito Manobadhiker and Unnayan Sangstha)	1
Manoshika	1
Total 25 NGO-MFIs	346

The average size of the standard credit products such as Rural Microcredit (RMC), Urban Microcredit (UMC) and Flexible credit has not changed much over the last 10 years (Figure 7). Average sizes of these credit products have hovered around 3,000–6,000 Taka. However, in real terms the average size has declined. The average size of Micro enterprise (ME) loan has increased sharply after 2003 and in 2009, the average size reached to about 60,000 Taka. Interestingly, the average size of UMC has also increased in 2007, making it a different credit product from RMC.

Two standard credit products — Rural Microcredit and Urban Microcredit have dominated both in terms of share of credit and also the share of borrowers in Rangpur district. In 2002, both RMC and UMC together accounted for about 53 percent of total credit portfolio of the MFIs and this share remained same also in 2009. The share of flexible loan made up about 42 percent in 2002 has declined in 2009 to about 16 percentage point. This is due to significant rise in the share of ME loan over time. The share of Micro Enterprise loan (ME) has increased from about 3 percent in 2002 to about 12 percent in 2009. The share of credit for the Ultra Poor (UP) has also increased over the years. The distribution of credit corresponds well to the distribution of borrowers in Rangpur.

However, in case of Lalmonirhat district, there were only two major products — RMC and ME where RMC's share was about 94 percent. However, over time, the share of other products such as UMC, Flexible, UP has also increased. Share of ME doubled in 8 years in Lalmonirhat district.

In short, branches are offering more products to larger number of borrowers than before. Branches are allocating greater share of their portfolio to new non-standard products such as ME of much bigger loan size. Greater competition may have forced the branches of MFIs to introduce new products and also venture into a different segment of the market (e.g., richer borrowers).

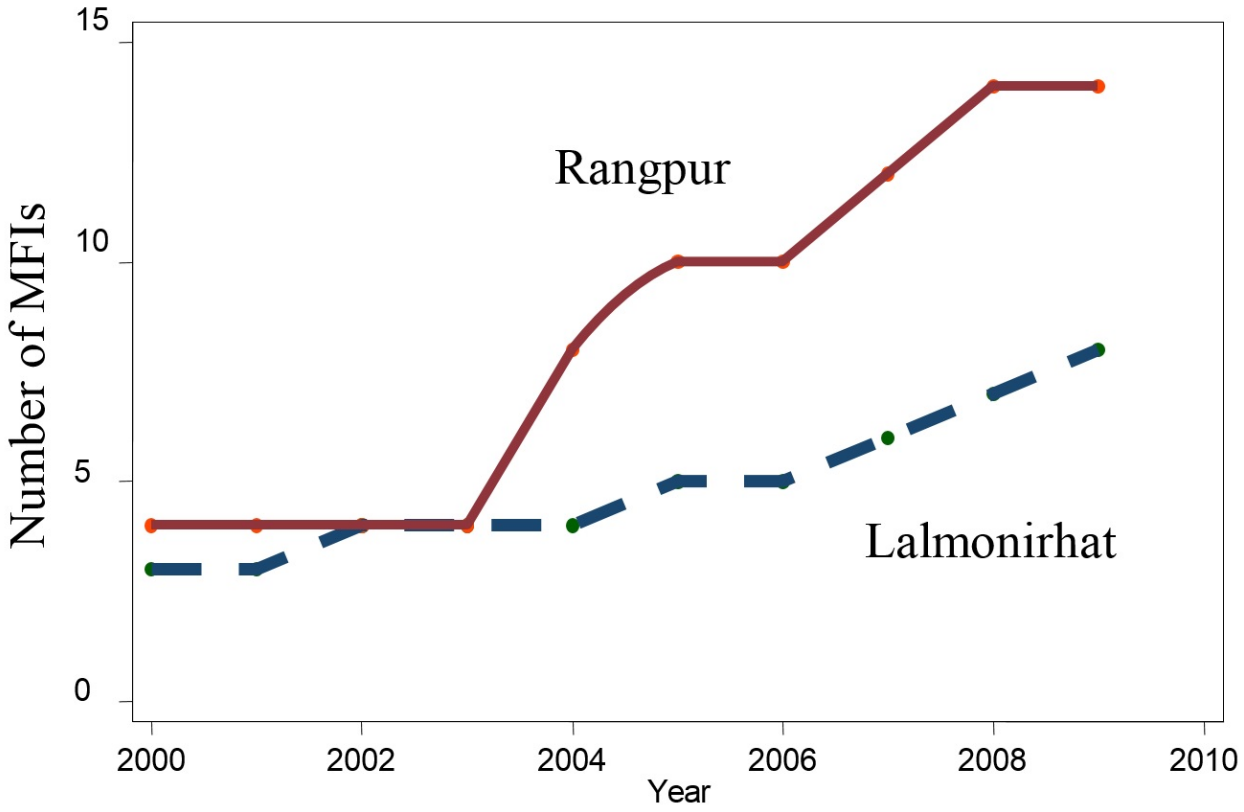

Figure 1: Growth of number of MFIs in two districts 2000–2009

4.3 Softer Terms and Conditions of the Products

Greater competition may also result in relaxed terms and conditions of the credit products. We found that waiting-period to get loan has decreased for RMC, UMC and ME (Figure 8). For example, a potential borrower had to wait about 6 weeks to get RMC in 2000 but in 2009 one had to wait about 4.5 weeks, on an average. Waiting-period for ME has also decreased from about 4 weeks in 2003 to 2 weeks in 2009.

Grace period for RMC has not changed much, remaining stable at around 2 weeks. But for ME, the grace period has declined significantly from about 6 weeks in 2000 to about 2 weeks in 2009 (Figure 9). Application fees for the standard RMC and UMC have not changed much over the years. The nominal application fees have remained stable at around 15 Taka (Figure 10), though in real terms it has declined. Loan processing fees have increased for RMC but remained same for UMC (Figure 11). Nominal interests on savings for both RMC and UP have increased substantially by about 1.5–2.0 percentage points over the last 8 years or so (Figure 12).

In short, the time series data on the terms and conditions and some upfront costs such as application fees, processing fees, grace period, waiting-period shows that most of them have been relaxed over time. Competition among MFIs appears to have induced MFIs to soften these terms and conditions, to make their product more competitive. Competing MFIs are now offering better interest on savings as well attracting new borrowers and keeping the existing ones.

The fact that nominal costs have not changed over time but non-monetary costs (e.g., waiting-period) have changed indicates competition first forces MFIs to reduce non-monetary costs in order to get an edge over their competitors. When competition gets fierce, it may exert downward pressure on the upfront deductions and other hidden monetary costs of borrowing.

4.4 Lower Prices (Service Charges)

Service charges for all major products have declined over the last ten years. Flat rates have been converted to the rates based on declining methods using number of installment and size of the loan. For example, the service charges for RMC, ME and UP were about 15 percent in 2000 (Figure 13). Now the charges for RMC and ME have fallen to about 13 percent and that of UP has de-

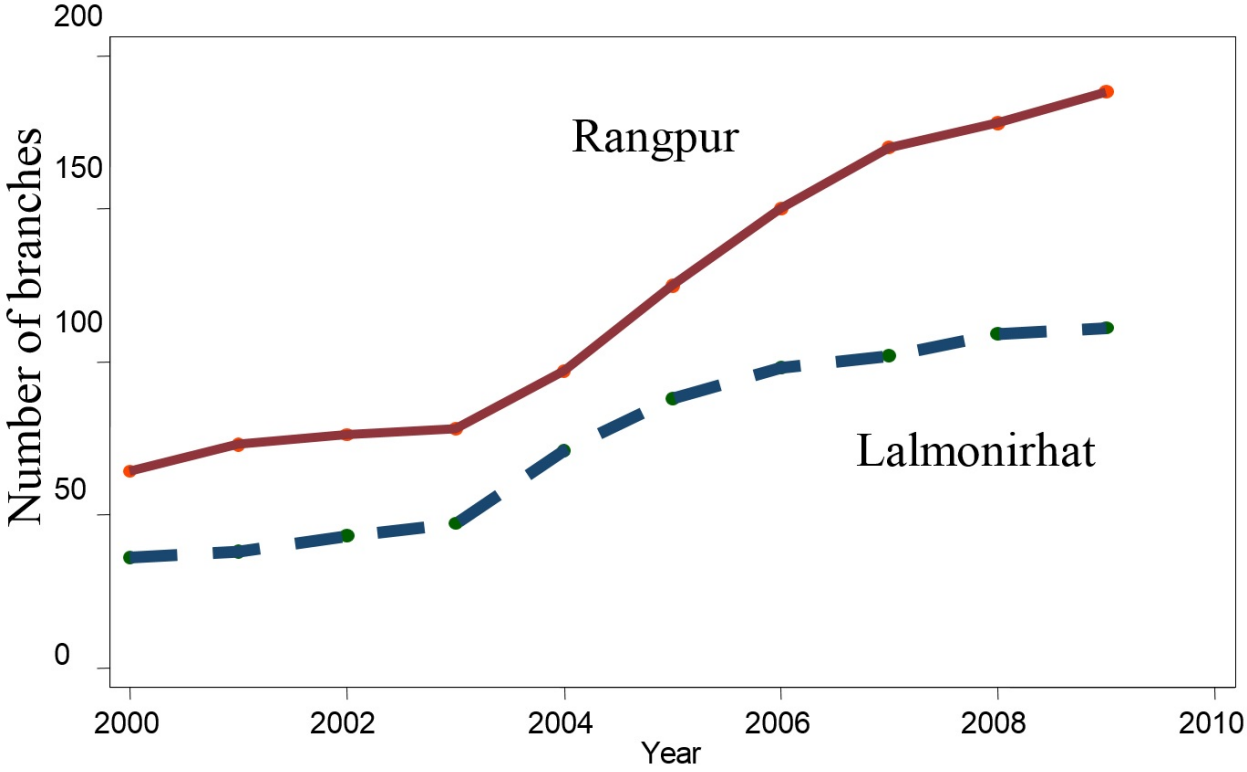

Figure 2: Growth of branches in two districts 2000–2009

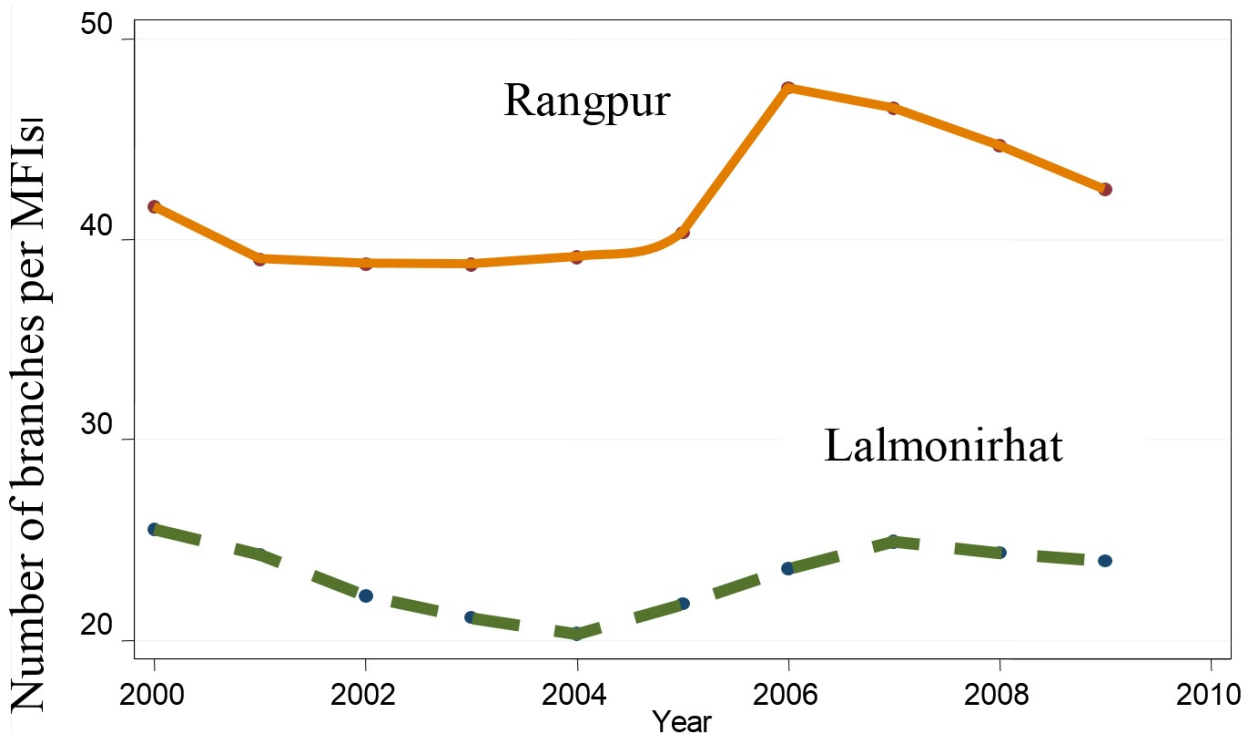

Figure 3: Growth of branches per MFI in two districts 2000–2009

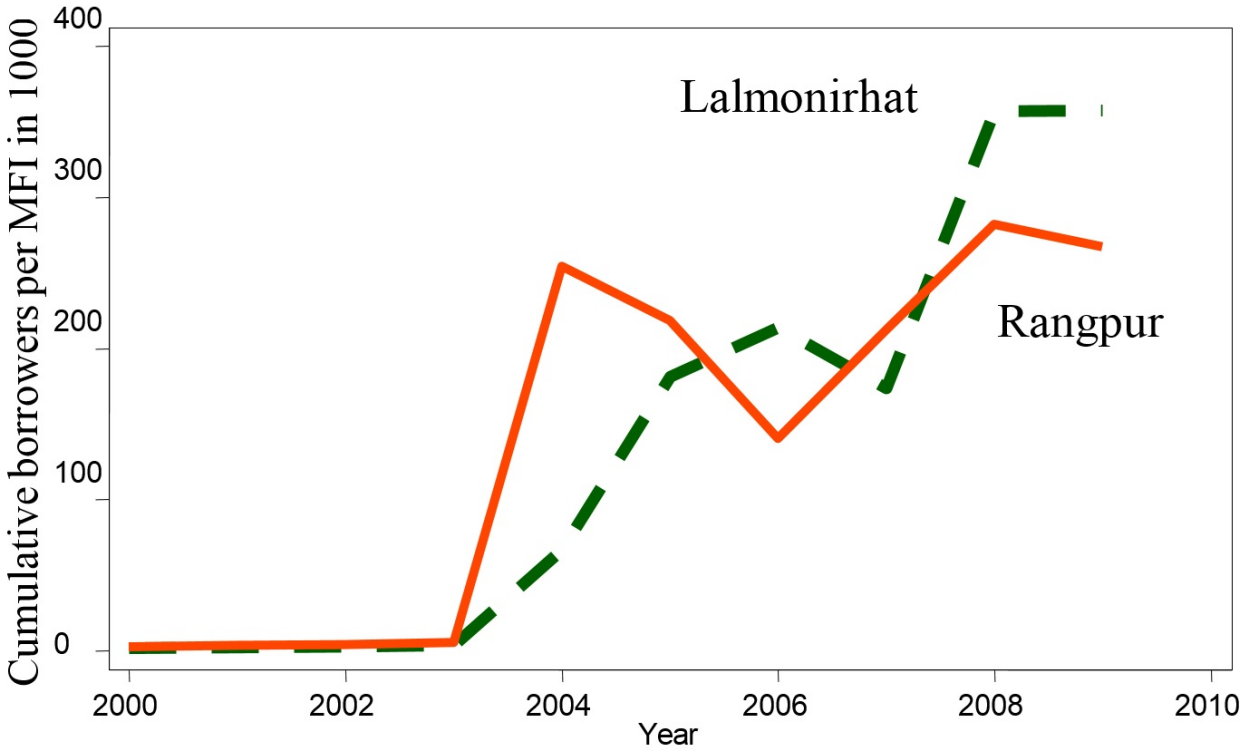

Figure 4: Growth of the number of borrowers per MFI

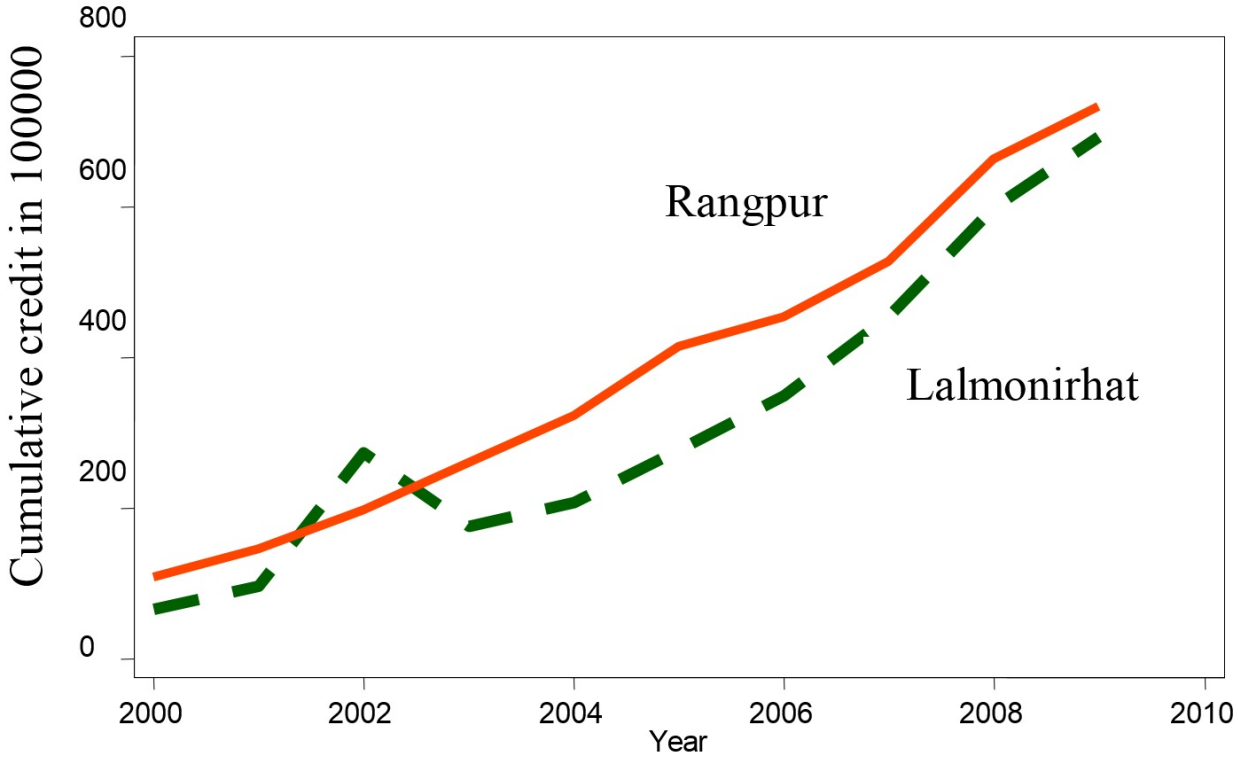

Figure 5: Growth of credit per MFI in two districts

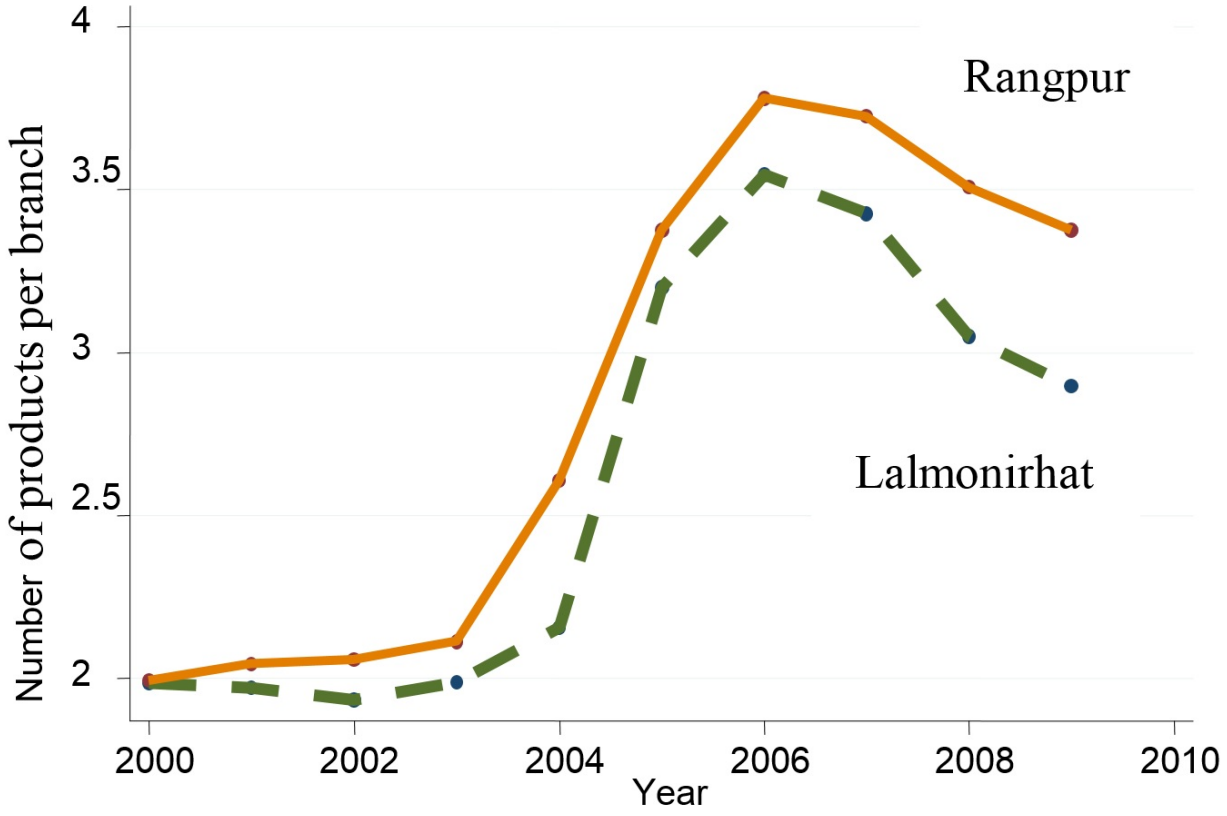

Figure 6: Growth of number of products per branch

clined more to about 11 percent. The service charges are pure nominal charges and not the effective rates.

The Figure 14 shows the changes in nominal effective APR which takes into account the methods of periodic payments, declining balances and upfront costs and deductions. It shows that effective rates have declined for RMC and ME and has increased a little for UMC.

It is to be noted that the nominal service charge for UMC has been constant over time and the effective rate has increased. This is due to the deductions and upfront costs. Also, though the effective rate has increased, it is still below the effective rates of RMC and ME. The effective rates were not very different from each other in 2009 — effective rate for UMC, RMC and ME were around 27, 28 and 28 percent respectively.

5 Some Testable Hypotheses

5.1 Competition Over Program Placement

The research question we are interested is: Does an MFI locate a branch closer to another MFI? There are both benefits and cost for locating a branch in an area where there are other MFIs. While the information about the market for credit is not publicly available, incumbents provide a signal about the market. MFIs can exploit marketing externalities, i.e. the new entrant can benefit from the incumbent's investment in marketing/advertising microcredit. When an incumbent helps discipline the borrowers in repayment and establishing some norms in the locality, the new entrant can also take advantage of it. On the other hand, there are costs from competition — lower coverage will lead to higher operating cost per loan staff. Even if there is demand for multiple loans, marginal cost of selling credit to a person who had borrowed from another source may be higher than selling it to a new borrower. A loan officer may need to invest more in information gathering about the former.

Regression Model:

$$\begin{aligned} L_{i,j,t} = \beta_0 &+ \beta_1 \text{ MFI}_{-i,j,t-1} \\ &+ \beta_2 \text{ BU\_MFI}_{-i,t-1} \\ &+ \beta_3 \, E_{i,t} \\ &+ \beta_4 \, R_t \\ &+ u_{i,j,t} \end{aligned}$$

The dependent variable $L_{i,j,t}$ is a binary variable which assumes a value of 1 when an MFI/NGO i has a program

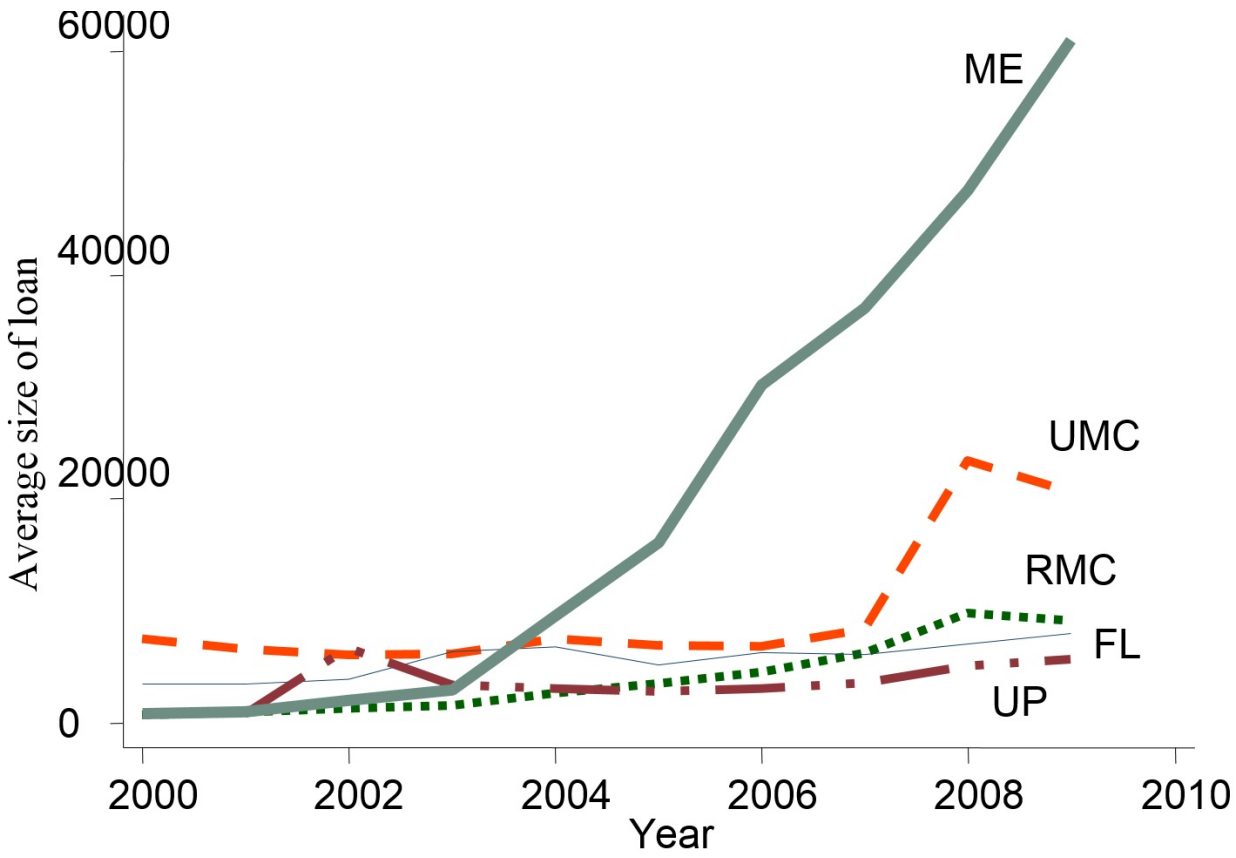

Figure 7: Trend in average size of loan by products

in union j in the period t, zero otherwise. An NGO/MFI i's branch location and the actual program area can be different. One branch typically manages program that covers multiple unions. $\text{MFI}_{-i,j,t-1}$ implies the number of other MFIs in union j in the period $(t-1)$. $\text{BU\_MFI}_{-i,t-1}$ is the number of other MFIs in the bordering unions in period $(t-1)$. $E_{i,t}$ denotes basic characteristics of the new entrant such as the number of borrowers, whether it is a national, regional or local MFI, whether it is a partner organization of PKSF. R_t denotes union level characteristics

The marginal effects of the Probit model are presented in Table 2. The results indicate that as the number of incumbent MFIs increases in a union, the probability of locating a branch of a potential entrant increases. The results are not very strong as when we include the characteristics of the MFIs and the union in the model. We categorize MFIs into national, regional and local and include dummy variables of the first two. None of these coefficients are significant.

5.2 Competition over Product

We have already seen in section 4 that the average number of products a branch offers has increased over time. Here we test if this is due to higher competition among MFIs. That is, we particularly test the hypothesis that as competition increases whether the greater number of MFIs and branches leads to higher number of products.

Regression Model:

$$\begin{aligned} P_{i,j,t} = \beta_0 &+ \beta_1 \text{ MFI}_{-i,j,t-1} \\ &+ \beta_2 \text{ BU\_MFI}_{-i,t-1} \\ &+ \beta_3 \, E_{i,t} \\ &+ \beta_4 \, R_t \\ &+ u_{i,j,t} \end{aligned}$$

The dependent variable $P_{i,j,t}$ is a count variable which counts the number of credit product a branch of MFI i offers in union j in the year t. Since the dependent variable is a count variable, we run Poisson regression model.

Table 3 presents results of the Poisson regression model. Though none of the coefficients of the variable MFI are significant, all of them are positive. Interestingly the coefficients of the variable BU_MFI (total number of branch of the adjacent unions of the other MFIs — excluding that one — in that union in the previous year) are positive and statistically significant. If we combine these two

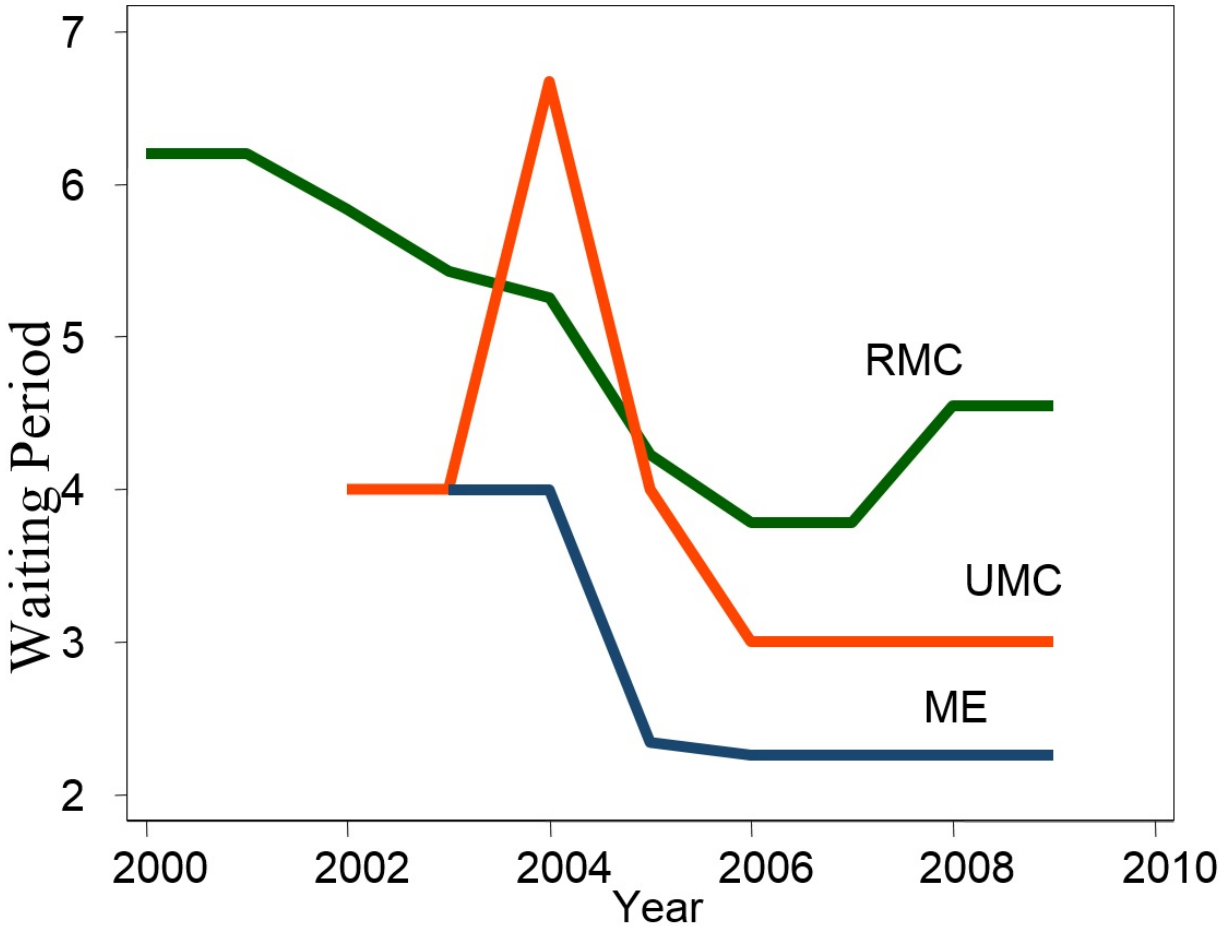

Figure 8: Change in waiting-period by products

variables, that is the number of branches in a union and the nearby bordering unions, the coefficient becomes positive and significant (this result is not presented here). Therefore, the results indicate that greater number of MFIs in a market, defined by a union and its bordering union, is associated with higher number of credit products.

5.3 Competition over Price

Section 4 indicates that the nominal service charges as well as the APR have declined for most of the products over time. In this section we test if competition among MFIs has anything to do with it. More specifically, as the number of MFIs and branches increases, does it force an MFI to lower its service charge?

Regression Model

$$\begin{aligned}\text{PRICE}_{i,j,t} = \beta_0 &+ \beta_1\ \text{MFI}_{-i,j,t-1} \\ &+ \beta_2\ \text{BU\_MFI}_{-i,t-1} \\ &+ \beta_3\ E_{i,t} \\ &+ \beta_4\ R_t \\ &+ u_{i,j,t}\end{aligned}$$

The dependent variable $PRICE_{i,j,t}$ is the weighted average of the price of the products. The weights are given according to the share of a product in the total credit portfolio. We use service charge of all products of an MFI i in union j in the year t.

Table 4 presents results for price competition. OLS results show that as the number of MFIs increases in a union, the service charges decline. Service charges of Partner Organizations (POs) are lower than the non POs. Interestingly service charges are lower for local MFIs than national and regional ones.

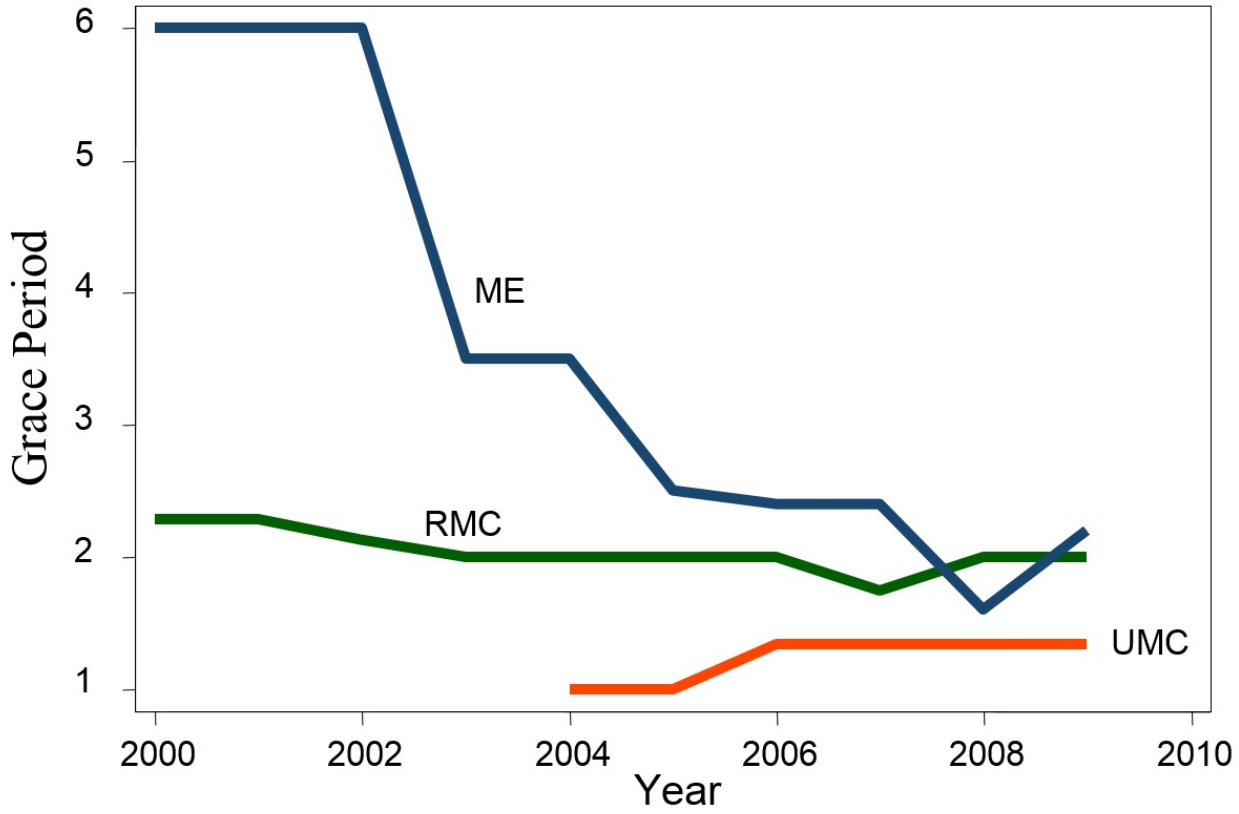

Figure 9: Change in grace period by product

Table 2: Probit Estimation: Dependent Variable L

Variable	1		2		3	
	Value	p-value	Value	p-value	Value	p-value
MFI	0.0820^a	(0.000)	0.0740^b	(0.022)	0.0390^c	(0.053)
BU_MFI	0.0154	(0.233)	−0.0038	(0.218)	0.0022	(0.104)
Partner Organization of PKSF	-0.2446^c	(0.081)	0.3320	(0.252)	0.4667	(0.358)
National MFI	−0.4332	(0.128)	0.5640	(0.141)	0.8660	(0.177)
Regional MFI	−0.3240	(0.141)	0.4430	(0.490)	0.4890	(0.556)
Number of borrowers	—	—	-0.0004^b	(0.020)	-0.0003^b	(0.039)
Population density	—	—	—	—	−0.0773	(0.280)
Share of literate population	—	—	—	—	0.0408^b	(0.050)
Whether the union has electricity	—	—	—	—	0.0189	(0.258)
N	1,025		1,025		1,025	

Notes:
[a] Statistical significance at 1%
[b] Statistical significance at 5%
[c] Statistical significance at 10%
(.) p-values are in parenthesis
$N = 1,025$

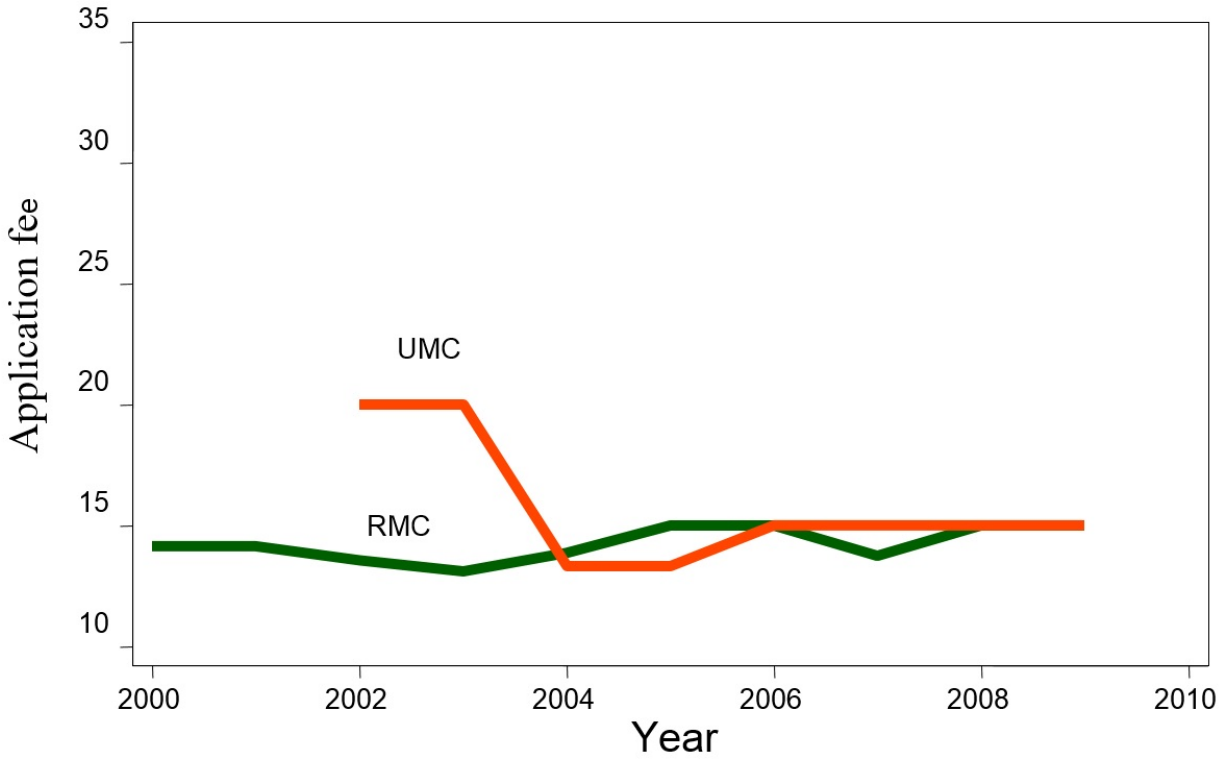

Figure 10: Change in application fees by product

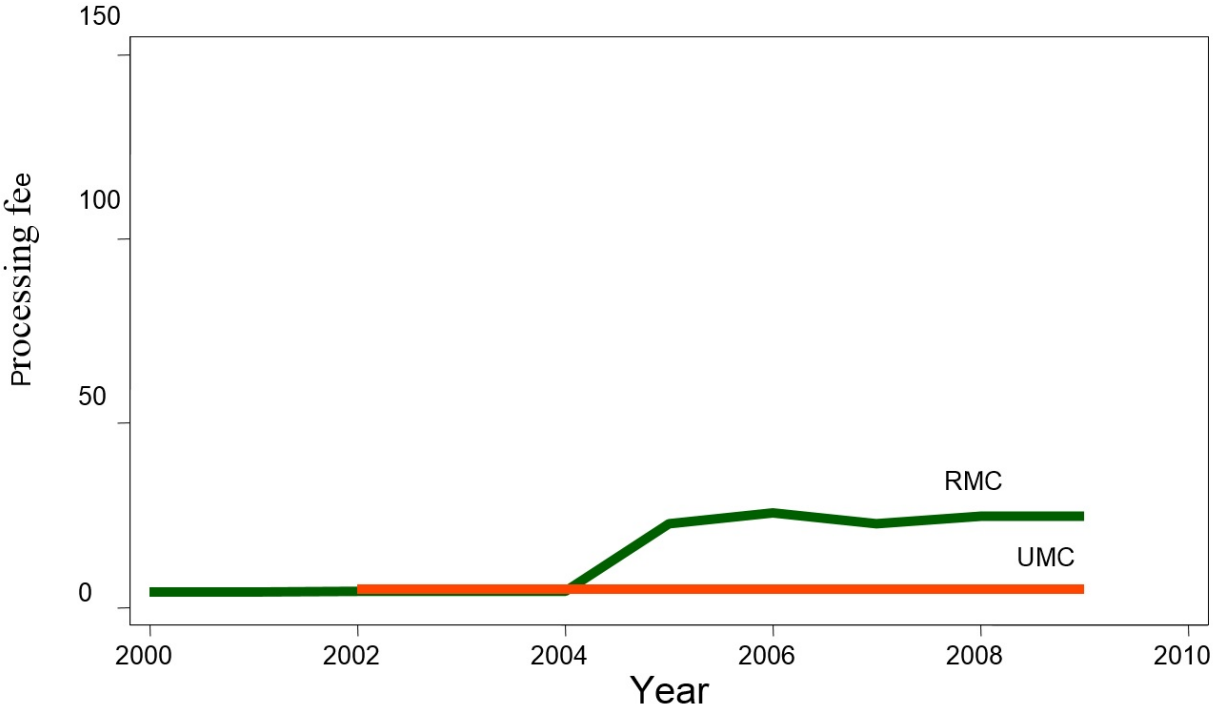

Figure 11: Change in processing fees over time by product

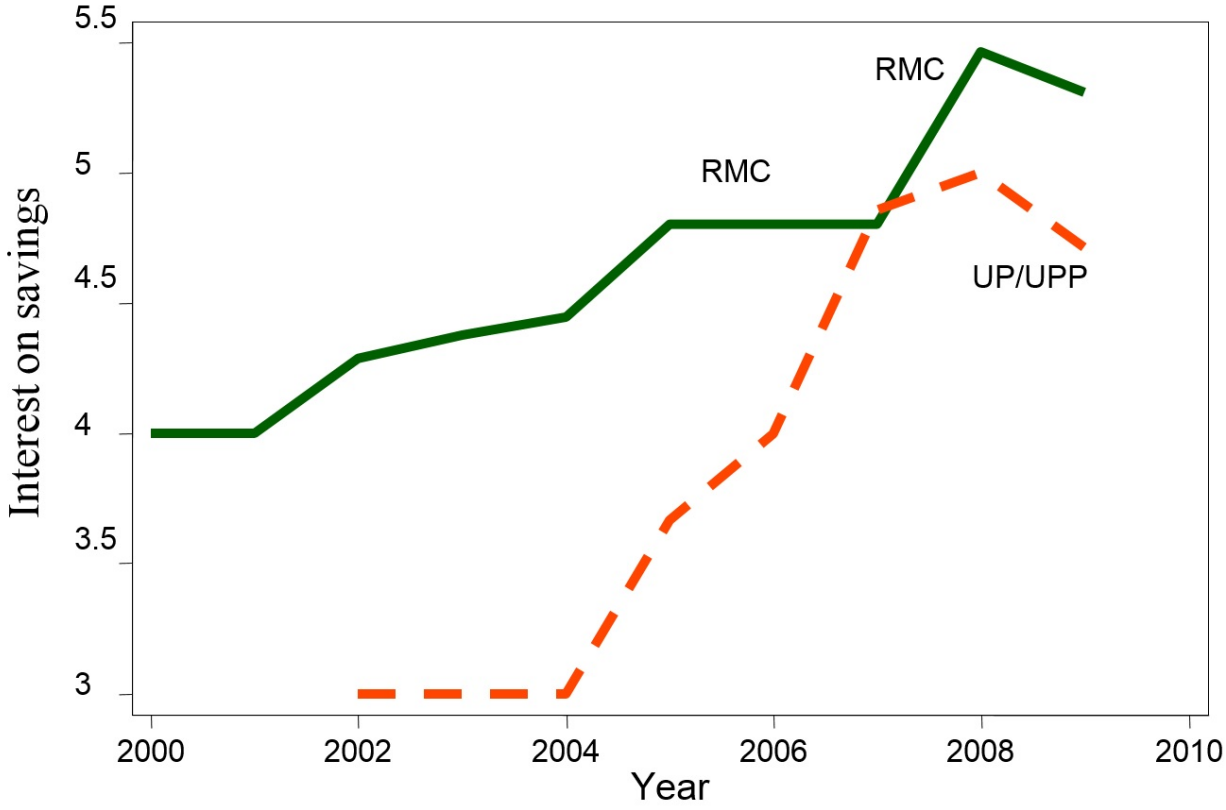

Figure 12: Change in interest rates on saving by product

Table 3: Poisson Regression: Dependent Variable is P

Variable	1		2		3	
	Value	p-value	Value	p-value	Value	p-value
MFI	0.0110	(0.368)	0.0130	(0.277)	0.0180	(0.177)
BU_MFI	0.0058^a	(0.010)	0.0047^b	(0.036)	0.0062^a	(0.010)
Partner Organization of PKSF	1.1040^a	(0.000)	0.9000^a	(0.000)	0.8980^a	(0.000)
National MFI	−0.1143	(0.588)	−0.0834	(0.693)	−0.0690	(0.772)
Regional MFI	−0.2950	(0.175)	−0.2403	(0.269)	−0.2446	(0.323)
Number of borrowers	—	—	0.0001^a	(0.000)	0.0001^a	(0.000)
Population density	—	—	—	—	-0.0731^a	(0.000)
Share of literate population	—	—	—	—	0.0052^b	(0.036)
Whether the union has electricity	—	—	—	—	0.0028	(0.165)
N	1,008		1,008		1,008	

Notes:
[a] Statistical significance at 1%
[b] Statistical significance at 5%
[c] Statistical significance at 10%
(.) p-values are in parenthesis
$N = 1,008$

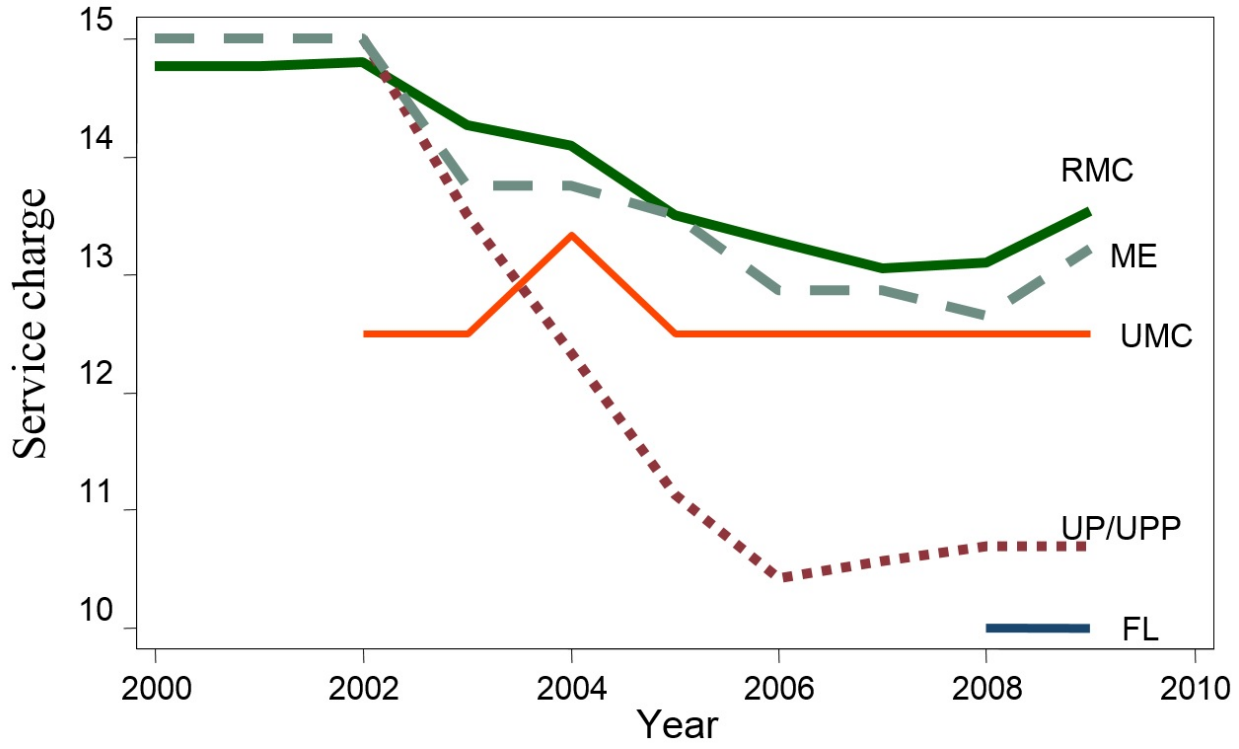

Figure 13: Changes in nominal service charges

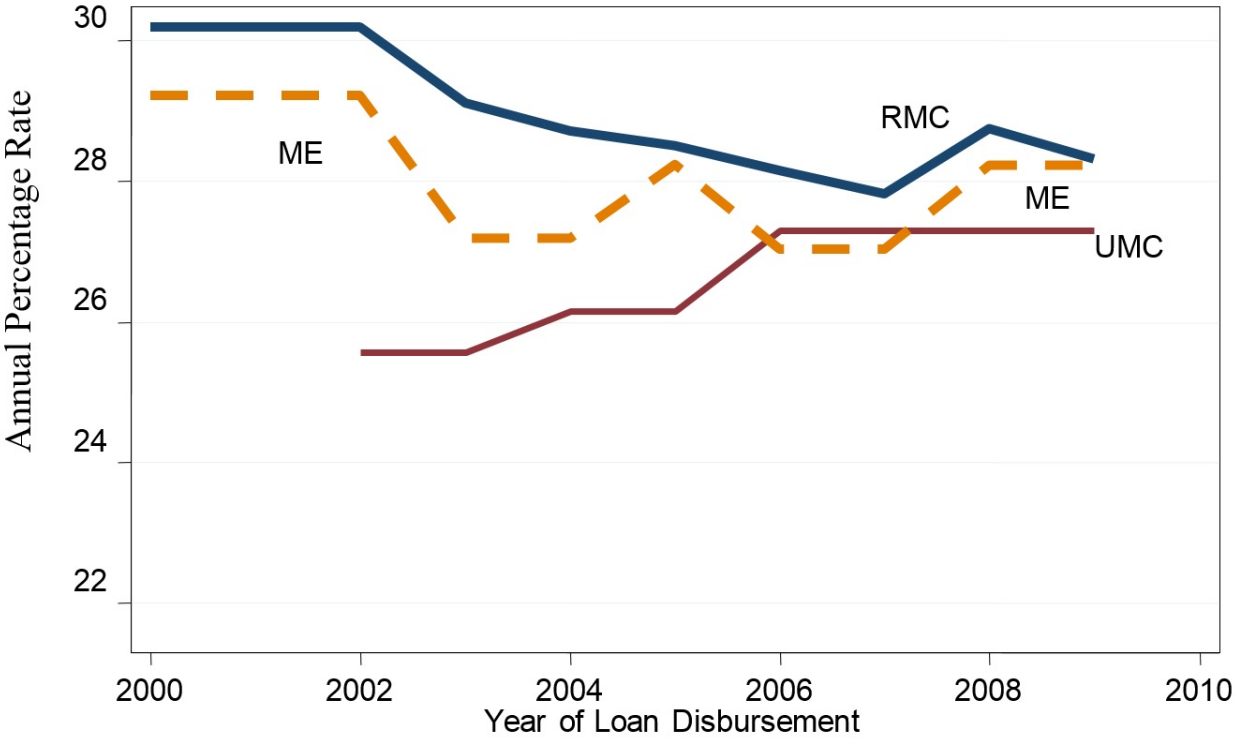

Figure 14: Changes in nominal APR

Table 4: OLS estimation: Dependent Variable: Service charge

Variable	1		2		3	
	Value	p-value	Value	p-value	Value	p-value
MFI	-0.085^a	(0.000)	-0.097^c	(0.084)	-0.081^c	(0.100)
BU-MFI	0.002	(0.302)	0.002	(0.401)	0.001	(0.445)
Partner Organization of PKSF	-1.860^a	(0.000)	-1.981^a	(0.001)	-1.887^a	(0.001)
National MFI	10.771^a	(0.000)	11.007^b	(0.000)	12.997^a	(0.000)
Regional MFI	5.123^a	(0.000)	5.778^a	(0.000)	7.932^a	(0.000)
Number of borrowers	—	—	0.000	(0.802)	0.000	(0.900)
Population density	—	—	—	—	0.236	(0.189)
Share of literate population	—	—	—	—	-0.045	(0.245)
Whether the union has electricity	—	—	—	—	-0.022	(0.127)
N	754		754		754	

Notes:
[a] Statistical significance at 1%
[b] Statistical significance at 5%
[c] Statistical significance at 10%
(.) p-values are in parenthesis
$N = 754$

6 Potential Econometric Problems

The main challenge for identification is the common unobserved characteristics of the unions. The entry or exit decision of MFI may be a response to the other MFIs or to common factors in a given union. Since we are studying a MFIs' behavior over time, the estimates might suffer from serial correlation in the error term. Even after controlling for various characteristics of the entrant MFI, and other geographical features, our estimates might suffer from omitted variable bias.

7 Conclusion

This study aims at understanding the nature and impact of competition among MFIs in choice of branch location, product and price. Higher penetration of MFIs, greater number of products, softer terms and conditions, and lower prices indicate the presence of competition. Estimation results also indicate that MFIs tend to locate their branches where other MFIs already exist. That is, MFIs want to avoid virgin territories. One policy implication is that Government's intervention (e.g., subsidy) is required to have MFIs open their branch in remote economically backward areas. Estimation results are also indicative of the presence of competition in product and price spaces — greater number of MFIs in a union leads to higher number of products and lowers prices. Therefore, any policy or regulation that weakens the competitiveness of the microfinance industry might have perverse effect on the number of products and interest rates.

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