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Competition and wide outreach of Microfinance Institutions

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Abstract

While the theoretical literature has found that intense competition leads to the poorest borrowers dropping out of the microfinance market, we do not possess sufficient research accumulated for empirical analysis in this field. This paper examines the empirical relationship between competition and wide outreach—which measures how poor-borrower microfinance institutions (MFIs) provide loans—and its accompanying effect, the impact of competition on financial self-sufficiency (FSS), using abundant financial data for socially-motivated MFIs between 2003 and 2006. We provide the first detailed econometric analysis in this regard focusing on socially-motivated MFIs in developing countries around the world. This paper finds that intense competition worsens the wide outreach, showing that the poorest borrowers are dropped from the microfinance lending portfolio. Moreover, the empirical result indicates that the adverse effect of competition on wide outreach declines as MFIs gain experience. Furthermore, this paper confirms that competition does not worsen financial self-sufficiency (FSS) and hence does not raise subsidy dependence.

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1. Introduction

Microfinance plays an active role as a financial service for the poor in developing countries, and is considered a powerful tool in the battle to reduce poverty. Most microfinance institutions (MFIs) are socially motivated, and attempt to provide loans to the poor (wide outreach) and maximize the number of customers (length outreach). Achieving wide outreach in particular can be considered especially important for poverty reduction, since credit constraints on the poor is one of the reasons for the deteriorating conditions in developing countries. Wide outreach measures how poor-borrower MFIs provide loans, and it is a core indicator that recent studies have analyzed. In order to increase wide outreach, socially-motivated MFIs take advantage of external subsidies and cross-subsidies. Cross-subsidy is the use of gains from profitable borrowers to subsidize loans to unprofitable borrowers (McIntosh and Wydick, 2004). Here, we suppose that the profitability of clients differs based on their initial wealth, and that the widest outreach (loans to the poorest) is the least profitable. The poor tend to have higher default rates since they are more susceptible to external shocks. On the other hand, the wealthy generally take larger loans, which is more profitable for MFIs through scale economies. Therefore, we can conclude that socially-motivated MFIs use the gains from wealthier borrowers to subsidize loans to poorer borrowers. Thus, cross-subsidies and external subsidies from donors enable socially-motivated MFIs to lend to unprofitable poorer borrowers, thereby increasing their wide outreach.

Recently, however, MFIs have faced difficulties achieving wide outreach. One reason is that now, there are many MFIs in the market and competition among MFIs is fierce; this affects the cross-subsidization and profitability of MFIs adversely. According to McIntosh and Wydick (2004), competition in Bangladesh, East Africa, and Latin America is particularly severe. Normally, incumbent MFIs tend to be socially motivated, while many newcomers to the MFI market are profit motivated—they attempt to maximize profit by entering the market (McIntosh, de Janvry, and Sadoulet, 2005; Navajas, Conning, and Gonzales-Vega, 2003). Profit-motivated MFIs are willing to enter the market where socially-motivated MFIs are already present. This is because they want to take advantage of the effect of training and screening already conducted on clients by the incumbent lenders. McIntosh, de Janvry, and Sadoulet (2005) show a clustering effect and point out that newcomers are willing to enter the market where preexisting MFI penetration is high. These recent market entries have affected wide outreach adversely.

Various theoretical analyses have shown that competition has a negative impact on financial performance of socially-motivated MFIs and that competition leads to poorer borrowers dropping out of the market. However, a conclusive agreement is yet to be reached from an empirical perspective.

Theoretical studies show that intense competition brings (1) a decrease in dynamic incentive, (2) a withdrawal of productive borrowers, and (3) a drop in interest rates, which deteriorates the profitability and cross-subsidy of MFIs. First, when there are numerous MFIs in the market, clients are willing to borrow from multiple uncollateralized lenders, and accordingly, the dynamic incentives do not function well (Hoff and Stiglitz, 1998), raising the default rate. Dynamic incentive is a useful tool for MFIs to let their clients pay back loans, since future loan access is available only if the borrowers pay back their original loans. However, if clients can get future loans from other lenders, their incentive to pay would fall. Due to a lack of sufficient information sharing on clients between MFIs in developing countries, borrowers attempt to borrow from multiple sources confidently, causing a rise in the default rate. McIntosh and

Wydick (2004) claim that if the competition raises asymmetric information on clients' profiles between MFIs, impatient clients would contract multiple loans and increase the total debt excessively, which can further deteriorate the total default rates of MFIs. It can be argued that intense competition increases the default rate, which gives rise to a decline in the profitability and cross-subsidies of MFIs.

Second, competition may cause the withdrawal of productive borrowers from incumbent MFIs, which reduces their profitability. Profit-motivated newcomer MFIs, who target wealthier clients and offer larger loans, enter the market where incumbent socially-motivated MFIs, who supply smaller loans, are present. In such a competitive environment, profitable borrowers of incumbent socially-motivated MFIs shift to newcomer profit-motivated MFIs and ask for larger loans and higher net returns (Navajas, Conning, and Gonzales-Vega, 2003). Navajas, Conning, and Gonzales-Vega (2003) examined two predominant MFIs in Bolivia: Banco Sol (socially-motivated MFI) and Caja Los Andes (profit-motivated MFI) and describe the competition model in which Caja Los Andes entered the market where Banco Sol already existed. Their empirical results show that profitable, wealthier clients of Banco Sol switched to Caja Los Andes. They also indicate that this shift of profitable clients worsens the quality of the portfolio of incumbent socially-motivated MFIs. Thus, it can be concluded that competition causes a withdrawal of productive clients of socially-motivated MFIs, leading to a decline in their profitability and cross-subsidization.

Finally, if newcomers enter the market, Bertrand competitions may intensify, leading to a decline in interest-rate income. McIntosh and Wydick (2004) show that although a drop in interest rates makes wealthier borrowers better off, it gives rise to a decline in the cross-subsidy of socially-motivated MFIs. From the abovementioned theoretical analyses, we could sum up that competition has an adverse impact on cross-subsidization and the profit of socially-motivated MFIs. It can be deduced that in order to satisfy budget constraints, socially-motivated MFIs need to lessen profitability (financial self-sufficiency[1]) or limit their wide outreach in competitive markets.

Although the abovementioned theoretical analyses show the negative impact of competition on wide outreach, there are few empirical analyses and their results are controversial. For example, McIntosh, de Janvry, and Sadoulet (2005) used the biggest MFI's data (Village Bank) in Uganda from Dec 1998 to Aug 2002 and examined how competition affects the behavior of borrowers of incumbent village-bank MFIs. Their empirical results prove that competition does not have a significant impact on the wide outreach. Further, Hartarska and Nadolnyak (2007) used the panel data of 114 MFIs in 62 countries and demonstrated that there is a significant positive correlation between competition and length outreach. However, they did not consider wide outreach. Moreover, Olivares-Polanco (2005) used cross-sectional data of 28 MFIs in Latin America and demonstrated that competition affects wide outreach adversely. However, his OLS empirical result is not convincing, since his empirical model includes ROA (return on asset) and length outreach as independent variables without considering the endogeneity. Thus, we lack sufficient research information on empirical analyses in this field, and the effect of competition on wide outreach is controversial from an empirical

[1] According to The Microfinance Information eXchange, Inc (MIX), FSS(financial self-sufficiency) is adjusted financial revenue divided by the sum of adjusted financial expense, adjusted impairment losses on loan, and adjusted operating expense. Adjustment measurement including inflation adjustment, external subsidy adjustment, and loan loss provisioning adjustment is to ensure a comparison among MFIs. It shows MFIs' ability to operate without external subsidy (Cull, Demirguc-Kunt, and Morduch, 2007). Further detail can be found at http://www.themix.org/.

perspective.

Regarding the possibility that competition may have led to poorer borrowers dropping out of the market, there is need for a more detailed empirical analysis. Therefore, this paper will mainly analyze the impact of competition on wide outreach and its accompanying effect—the impact of competition on FSS (financial self-sufficiency). FSS has frequently been used as an indicator of financial performance of MFIs in previous literature (Cull, Demirguc-Kunt, and Morduch, 2007), and it measures MFIs' ability to cover their costs through their operating revenue without external subsidy from donors. From the abovementioned theoretical analyses, it can be argued that MFIs will deteriorate their wide outreach or FSS to satisfy budget constraints as the competition intensifies. With regard to FSS, there has been no empirical analysis on the link between FSS and competition.

This paper will provide a detailed empirical analysis of 450 socially-motivated MFIs in 71 countries, coping with the problem of endogeneity. Most studies conducted empirical analysis of both profit-motivated MFIs and socially-motivated MFIs at the same time. These analyses are not appropriate for examining the effect of competition on the poorest borrowers of socially-motivated MFIs, since profit-motivated MFIs who attempt to provide loans to wealthier borrowers are quite different from socially-motivated MFIs. Given that there has been controversy surrounding the effect of competition on wide outreach, econometric analysis solely on socially-motivated MFIs has not been conducted, and since there has not been any global empirical analysis in this regard, this research would be extremely insightful.

2. Model

To assess the relationship between competition, FSS, and wide outreach in socially-motivated MFIs, we used the panel data regression methodology following the recent empirical literature, such as Cull, Demirguc-Kunt, and Morduch (2007) and Hartarska and Nadolnyak (2007). Here, considering FSS and wide outreach are believed to be determined simultaneously, I have used the reduced form of regression. The empirical analysis is based on unbalanced panel data between 2003 and 2006 for 450 socially-motivated MFIs in 71 countries, and the empirical specifications are as follows:

Model 1 $$F_{it} = \alpha + \beta COM_i + \psi C_{it} + \mu_i + e_{it}, \quad (1)$$

Model 2 $$F_{it} = \alpha + \beta COM_i + \gamma (COM_i * A_{it}) + \psi C_{it} + \mu_i + e_{it}, \quad (2)$$

Model 3 $$AL_{it} = \alpha + \beta COM_i + \psi C_{it} + \mu_i + e_{it}, \quad (3)$$

Model 4 $$AL_{it} = \alpha + \beta COM_i + \gamma (COM_i * A_{it}) + \psi C_{it} + \mu_i + e_{it}, \quad (4)$$

where F_{it} denotes FSS; AL_{it}, the loan-size per borrower as a proxy of wide-outreach; COM_i, the measure of competition intensity; A_{it}, the MFI age; C_{it}, a vector of control variables; μ_i, the MFI fixed effect; and e_{it}, the random disturbance (i: MFI, t: time).

Model 1 examines the effects of competition on FSS. In model 2, the interaction terms between competition intensity and MFI age are added to model 1 in order to examine the compound effect of competition and MFI age on FSS. Model 3 analyzes the effects of

competition on wide outreach. In model 4, the interaction terms between competition intensity and MFI age are added to model 3 in order to examine the compound effect of competition and MFI age on wide outreach.

FSS indicates MFIs' ability to cover their costs through their operating revenue without external subsidy such as grants and soft loan. It can be concluded that the higher FSS is, the lower the subsidy dependence is. Moreover, I have employed average loan size per borrower as an indicator of wide outreach, following literature such as Cull, Demirguc-Kunt, and Morduch (2007) and Olivares-Polanco (2005). Here, the larger the loan size is, the lower wide outreach is.

A measure of competition intensity is included to assess the impact of competition on FSS and wide outreach. Hartarska and Nadolnyak (2007) use the number of MFIs in the country as a measure of competition intensity, which does not consider the scale difference of microfinance markets among countries. Therefore I have used the following variable as a measure of competition intensity: the number of MFIs times the average number of clients divided by the number of potential borrowers in the country. I have used the female population aged 15–64 years as a proxy for potential borrowers, since most microfinance clients are women. On the basis of literature such as McIntosh and Wydick (2004) and Navajas, Conning, and Gonzales-Vega (2003), we can expect greater competition to be associated with lower FSS and lower wide outreach.

The interaction term between competition and MFI age is included to determine if the competition-elasticity depends on MFI age. MFIs with longer experience are more likely to have a stable management through technology progress and market power, thus leading to less vulnerability to external shocks. We assume that the adverse effect of competition declines as MFIs increase in experience.

Furthermore, the analysis includes control variables such as the cost and technology factors of MFIs and the macro environmental factors. First, the wages of MFI employees and the capital price of MFIs are included as cost factors. Since higher wages and capital price raises the costs of MFIs, MFIs need to reduce wide outreach or FSS to satisfy the budget constraint. The analysis expects a higher level of these cost factors to be correlated with lower wide outreach and lower FSS.

Next, MFI size in terms of total assets, MFI age, and a capital-to-asset ratio are included as technology factors. Large-scale MFIs have a lower cost structure through scale economy, which enables them to improve wide outreach and FSS. On the other hand, since large-scale MFIs with higher financing ability can issue larger loans and attract wealthier borrowers, the analysis also expects larger MFI size to be associated with larger loan size per borrower. Moreover, it is assumed that MFIs with more experience have a lower cost structure through high information production and technology progress, which enables them to improve FSS or wide outreach. We can assume that wide outreach and FSS ascend as MFI age increases. However, it can be argued that clients can grow, and the average loan size can get larger as an MFI increases its experience, which lets the analysis expect larger loan size per borrower to be correlated with higher MFI age. Furthermore, since MFIs with a higher capital-to-asset ratio attempt to improve their financial performance for investors, we expect a higher capital-to-asset ratio to be associated with higher FSS.

The analysis also includes population density and financial depth in terms of M2-to-GDP ratio as macro environmental factors. We assume that FSS and wide outreach will improve with higher population density because higher population density makes MFI operation easier and thus creates a lower cost structure. Moreover, since financial deepening eases credit constraints on the poor (World Bank, 2001; Jalilian and Kirkpatrick, 2002; Kai and Hamori, 2009), we expect financial depth to be correlated

with higher wide outreach.

3. Empirical Methodology

The Hausman test is conducted to select an empirical model. The test result indicates that individual effects are correlated with regressors, leading us to choose the fixed effect model over the random effect model. However, since the measure of competition intensity is only available for 2006, we apply a Hausman and Taylor (1981) approach to deal with the correlation between individual effects and the regressors following the previous literature such as Hartarska and Nadolnyak (2007).

Time-variant exogenous variables that are not found to be correlated with unobserved effects are wage, capital price, and financial depth, while the time-invariant exogenous variable is population density. It should be considered that population density fluctuation over four years from 2003 to 2006 substantially depends on the birth rate in developing countries and is not likely to affect MFIs' performance fluctuation. Rather, FSS and wide outreach are more likely to be affected by cross-country comparison than fluctuation over the years, owing to which I employed population density as a time-invariant variable. Time-variant endogenous variables that are found to be correlated with the unobserved effect are MFI size, MFI age, and a capital-to-asset ratio. Furthermore, competition intensity is a time-invariant endogenous variable identified to be correlated with the observed effect. Newcomer MFIs attempt to enter the market on the basis of location characteristics such as high preexisting MFI penetration, and their entry location is considered as endogenous (McIntosh, de Janvry, and Sadoulet, 2005). It can be argued that profit-motivated MFIs enter the market where there are superior MFIs and the clients are already well trained and screened. Therefore, competition intensity is considered to be correlated with individual effects.

4. Data

The data for the analysis comprises unbalanced panel data for 450 socially-motivated MFIs from 71 countries from 2003 to 2006, obtained from The Microfinance Information eXchange, Inc (MIX). MIX provides the largest amount of high-quality MFI financial data. The analysis uses its highest quality rank data. Moreover, the data on the number of MFIs in the country is obtained from The Microcredit Summit Campaign[2]. Furthermore, the female population (aged 15–64 years) and population density data that I employ is from 2006, and it is obtained from the World Development Indicators published by the World Bank. The definition and summary statistics are shown in Table 1.

5. Empirical Results

Table 2 shows the regression results of models 1 and 2. The first column displays the result of model 1, and the second column shows the result of model 2. The results indicate that the competition intensity measures are not significant in columns (a) and (b). These results are not consistent with our prediction that MFIs will reduce FSS as competition intensifies. Moreover, the result shows that the coefficient on the interaction

[2] Because of the availability of data, the number of MFI in the country is from 2007.

between competition and MFI age is not significant, indicating that the competition-elasticity of FSS does not depend on MFI age.

With regard to control variables, capital price and capital-to-asset ratio are significant in both column (a) and (b), and MFI age is significant in column (a), which is consistent with our prediction. It is observed that MFIs with more experience create higher FSS by taking advantage of technological progress. The results also indicate that a higher capital-to-asset ratio leads to higher FSS. It can be argued that MFIs with a higher capital-to-asset ratio improve FSS for investors.

Next, Table 3 displays the regression results of models 3 and 4. The first column displays the result of model 3, and the second column shows the result of model 4. The results show that the competition intensity measures are significantly positive at the 1% level in both columns. Our results indicate that intense competition results in deterioration of wide outreach, which supports the finding of McIntosh and Wydick (2004). Moreover, the result indicates that the coefficient on the interaction between competition and MFI age is significantly negative at the 1% level in column (b), which shows that although intense competition reduces wide outreach, its effect declines as MFIs increase experience. It can be argued that since MFIs with more experience can cope well with a changing competitive environment by taking advantage of technological progress and market power, they are able to reduce wide outreach less than less-experienced MFIs through competition.

With regard to control variables, wage, MFI size, and population density are significant in both columns (a) and (b), and financial depth and MFI age are significant in column (b), which is consistent with our prediction. It is found that large-scale MFIs loan to wealthier borrowers. Furthermore, the result indicates that MFIs with longer periods experience results in larger loan size per borrower. It can be argued that clients increase their loan size as MFIs increase experience, leading to a further increase in loan size.

6. Conclusion

Recent intense competition in the microfinance market has been expected to have a negative impact on the poorest clients of socially-motivated MFIs. However, we lack sufficient research data for empirical analysis in this field. The empirical results of previous literature are controversial, and a much more detailed analysis is required. Most previous literature conducts empirical analysis on profit-motivated MFIs and socially-motivated MFIs together, and it does not focus solely on the effect of competition on the poorest borrowers of socially-motivated MFIs, although this has been analyzed theoretically. This paper conducted inclusive empirical analysis on the impact of intense competition on FSS and wide outreach of socially-motivated MFIs. This analysis is the first detailed research targeting socially-motivated MFIs in a large number of developing countries across the world.

The main results of the empirical analysis in this paper are as follows:

(1) Competition does not have a significant impact on FSS.
(2) Competition reduces wide outreach.
(3) This negative impact of competition on wide outreach declines as MFIs increase experience.

As such, it could not be found that MFIs worsen FSS or increase subsidy dependence

as competition intensifies. However, our empirical results found that intense competition leads to poorer borrowers dropping out of the market. Our theoretical analysis predicted that competition would make MFIs reduce wide outreach or FSS to satisfy their budget constraints, since intense competition has a negative impact on the profits and cross-subsidization of MFIs. Our empirical results show that MFIs cope with the negative impact of competition not by reducing FSS but by limiting wide outreach. Thus, it is found that MFIs do not increase external subsidy[3], but exclude the poorest borrowers as competition intensifies. Moreover, the more experience MFIs have, the less wide outreach is reduced by competition. It can be argued that the more experienced MFIs take advantage of market power and technological progress and become less vulnerable to the changing competitive environments.

Competition has a positive impact since it prompts technology innovation and makes wealthier clients better off through a decline in interest rates. For the development of the microfinance market, entry regulation is not appropriate. However, we need to seriously consider the adverse effects of competition. In order to prevent the poorest borrowers from dropping out of the market, governments and donors need to increase subsidies for socially-motivated MFIs (targeting the poorest borrowers) based on the degree of competition and the operation age of MFIs. This can be supported by various studies which show that subsidy for MFIs has higher benefits than cost through cost-benefit analysis (Townsend and Yaron, 2001; Khandker, 2003). In the competitive environment, subsidy for MFIs enables the poor to borrow from MFIs and conduct economic activities, which increases their assets and productivity, and hence contributes to poverty reduction. Socially-motivated MFIs also need to offer more attractive loan services to secure profitable borrowers to maintain their wide outreach. There has been a global consensus that MFIs should achieve outreach and FSS simultaneously. However, this objective for MFIs needs to be rectified. If we operate microfinance as a tool for poverty reduction, we might need to permit the reduction of FSS to maintain wide outreach.

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[3] This is because we can assume that the higher FSS is, the lower the subsidy dependence is.

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Table 1 Definition and Summary Statistics

Variable	Definition	Mean	Standard Deviation
Financial Self-Sufficiency(FSS)	Adjusted Financial Revenue / Adjusted (Financial Expense + Impairment Losses on Loans +Operating Expense) :Indicate MFIs' ability to cover their costs through their operating revenue without external subsidy such as grants and soft loans.	1.0388	0.3196
Average Loan-Size	Loan-Size per borrower / GNP per capita ＊Use average loan-size as a measure of wide-outreach The larger loan size is, the lower the wide-outreach is	0.4888	0.5733
Competition Intensity	3 Ranks from 1 to 3 Based on the following value: the number of MFIs times the average number of clients divided by the number of potential borrowers in the country :1 for low, 2 for medium and 3 for high ＊Use the female population aged 15−64 years as a proxy for potential borrowers	1.2004	0.4249
Wage	Average personal expence of MFI employees / GNP per capita	5.1045	4.1897
Capital Price	Administrative expense / Total assets	0.0904	0.0824
MFI Size	3 Ranks from 1 to 3 Based on the following value: logarighm of total assets divided by GNP per capita :1 for small, 2 for medium and 3 for large	1.2284	0.5316
Logarithm of MFI Age	Logarithm of Years functioning as an MFI	2.1880	0.6657
Capital to Asset Ratio	Total equity / Total assets	0.4081	0.2855
Logarithm of Population Density	Logarithm of population density	4.2044	1.0655
Financial Depth	Money and quasi money(M2) as % of GDP	0.4365	0.2866

Source;
Number of MFIs in the country: Microcredit Summit Campaign (http://www.microcreditsummitt.org)
Women Population (aged 15 – 64 years) and Population Density;World Development Indicators(WDI)
Others: The Microfinance Information eXchange. Inc（MIX）

Table 2 Empirical Results for Model 1 and Model 2
Dependent Variable: FSS

Variables	(a)		(b)	
	coefficient	*p-value*	*coefficient*	*p-value*
Competition intensity	-0.2468	0.324	-0.4417	0.322
Interaction between competition intensity and Logarithm of MFI age			0.0713	0.596
Wage	0.0053	0.190	0.0050	0.220
Capital price	-1.2739	0.000	-1.2810	0.000
MFI size	0.0189	0.565	0.0167	0.616
Logarithm of MFI age	0.1234	0.007	0.0438	0.780
Capital to asset ratio	0.1311	0.082	0.1272	0.095
Logarithm of population density	0.0197	0.430	0.0228	0.379
Financial depth	0.0180	0.777	0.0208	0.748
cons	0.9802	0.000	1.1914	0.014
Number of Observations	889		889	
Number of Groups	450		450	
F ratio	0.000		0.000	
Hausman	0.986		0.997	

Table 3 Empirical Results for Model 3 and Model 4
Dependent Variable: The loan-size per borrower

Variables	(a)		(b)	
	coefficient	*p-value*	*coefficient*	*p-value*
Competition intensity	1.5282	0.000	2.4578	0.000
Interaction between competition intensity and Logarithm of MFI age			-0.3376	0.002
Wage	0.0298	0.000	0.0291	0.000
Capital price	-0.0756	0.704	-0.0598	0.760
MFI size	0.0785	0.003	0.0883	0.001
Logarithm of MFI age	-0.0196	0.596	0.3558	0.004
Capital to asset ratio	-0.0393	0.524	-0.0260	0.669
Logarithm of population density	-0.2293	0.000	-0.2482	0.000
Financial depth	-0.2211	0.131	-0.2566	0.097
cons	-0.5020	0.292	-1.4675	0.014
Number of Observations	889		889	
Number of Groups	450		450	
F ratio	0.000		0.000	
Hausman	0.984		0.998	