Department of Agricultural & Resource Economics, UCB

CUDARE Working Papers
(University of California, Berkeley)

How Rising Competition Among Microfinance Lenders Affects Incumbent Village Banks

Craig McIntosh [*]   Alain de Janvry [†]

Elisabeth Sadoulet [‡]

[*]University of California, San Diego

[†]University of California, Berkeley

[‡]University of California, Berkeley

How Rising Competition Among Microfinance Lenders Affects Incumbent Village Banks

Abstract

This paper uses data from Uganda's largest incumbent microfinance institution to analyze the impact of entry by competing lenders on client behavior. We first examine the geographic placement decisions of competitors, and find that placement decisions are strongly affected by district-level characteristics. We observe that increased competition induces a decline in repayment performance and in savings deposited with the incumbent Village Bank, suggesting multiple loan-taking by clients. Urban clients take multiple loans primarily from lenders with more individual methodologies, while rural clients borrow from several group lenders. Individuals who operate larger businesses are the ones most likely to leave the incumbent Village Bank when a Solidarity Group lender enters the marketplace.

How Rising Competition Among Microfinance Lenders Affects Incumbent Village Banks

Craig McIntosh[*], Alain de Janvry, and Elisabeth Sadoulet[**]

June 2003

Abstract

This paper uses data from Uganda's largest incumbent microfinance institution to analyze the impact of entry by competing lenders on client behavior. We first examine the geographic placement decisions of competitors, and find that placement decisions are strongly affected by district-level characteristics. We observe that increased competition induces a decline in repayment performance and in savings deposited with the incumbent Village Bank, suggesting multiple loan-taking by clients. Urban clients take multiple loans primarily from lenders with more individual methodologies, while rural clients borrow from several group lenders. Individuals who operate larger businesses are the ones most likely to leave the incumbent Village Bank when a Solidarity Group lender enters the marketplace.

---

[*] International Relations/Pacific Studies, U.C. San Diego, 9500 Gilman Drive, La Jolla, CA, 92093-0519. ctmcintosh@ucsd.edu.
[**] Department of Agricultural and Resource Economics, U.C. Berkeley.

1. Introduction

The first decade of explosive growth in microfinance saw these institutions lending as local monopolists. Lenders frequently divided up countries into regions where each would hold exclusive sway. As untapped markets have become increasingly saturated, however, monopolistic positions fell and many countries now see lenders competing directly for the same clients. This transition, even in countries such as Uganda where competition is not yet intense, has caused a great deal of concern among incumbent social capital-based lenders as they have no way of predicting their clients' behavior when these face a rising number of outside options while their loans remain uncollateralized.[1]

In this paper, we exploit the increasingly intense interactions between microfinance institutions (MFIs) in Uganda over the past four years to analyze how borrowers respond to competition between different kinds of lenders. We begin by reviewing the major theoretical predictions found in the literature and, on that basis, develop four hypotheses explaining client behavior that can be taken to the data. We perform three different but related analyses. First, we examine the determinants of lender location decisions, and so gain an understanding of the market segments occupied by different kinds of lenders. Second, we examine the effect of competition on group performance in the incumbent MFI. This includes drop out rate, new client enrollment rate, repayment performance, loan volumes, and level of savings deposited. We look at the heterogeneity of effects of competition according to the level of education in the district, the rural/urban location of the group, previous penetration of financial services in the district, and the level of unmet credit

---

[1] Social capital-based lending guarantees loans by relying on joint liability by a group of borrowers as opposed to individual collateral.

demand in the district. Third, we look at the differential effect of competition from various kinds of lenders on individual clients with specific characteristics.

How do we know when two institutions are in competition? The data used in this paper rest on the information possessed by clients of one lending institution, FINCA, about the presence and proximity of other lending institutions. The survey questions used to measure competition ask whether FINCA clients knew of the existence nearby of branches of the eleven major competing institutions, how long they had been present, and how close the meetings held by each competitor are to the location of FINCA's group meetings. Although subjective, we argue that this is the proper way to think about such competition: we should only attempt to measure the impact of competition from an institution on clients' behavior when is has become known to them. Consequently, we use a survey to elicit the nature and timing of information clients have about outside options; but the question still remains whether it is the mere presence or proximity of a competitor that is the relevant metric. To answer this, we define the intensity of competition in a variety of ways, and allow the data to tell us which measure is significant. Which definition matters should depend on the competitor's lending methodology. Individual lenders do not typically require frequent attendance of meetings and so their presence should be more important than their proximity. Joint liability lenders (Village Banks and Solidarity Groups), on the other hand, almost universally require weekly attendance of meetings, making proximity a crucial component in the total cost of credit. This distinction is borne out by the empirical results.

Opinions among Ugandan microfinance practitioners as to the importance of competition during the period of this study varied. The chief executives of most of the institutions involved in this paper were interviewed on the topic. The oldest formal microfinance institution in the country is barely a decade old, and there are vast rural regions

in the country that are still unserved by microfinance. Hence, to the extent that there is real competition between these institutions, it is recent and it is predominantly urban. Only in the two major cities of Kampala and Jinja could it be said that markets are approaching saturation, in the sense that a new microfinance client base can only be built by attracting current customers from other institutions. Consequently, few executives were worried about competition insofar as it relates to the growth prospects of their institution. A more common concern was that, wherever two or more institutions are operating, many clients may be taking loans from several lenders simultaneously, or 'double-dipping'. In cities, some of the more aggressive institutions directly targeted the client base of other lenders, implying that they were able to discern good repayers from defaulters. However, even these institutions worried about multiple loan-taking, which indicates that they were not able to obtain information about pre-existing debt levels. All of these stylized facts are borne out by our analysis: competition does not affect the incumbent village bank's ability to attract new clients nor does it cause them to lose clients. However, with no formal information sharing mechanism about clients' credit histories in place, it does lead to a gradual deterioration in repayment performance and to a drop in savings, both of which are consistent with clients responding to rising competition by engaging in double-dipping.

2. Identification and Endogenous Placement

The major econometric difficulty encountered in studying the effects of competition on client behavior is the endogeneity of placement of competitors. Other lenders most likely make placement decisions based on the characteristics of a location. Evidence on this process is shown in Section 5 with district characteristics measured at the beginning of the study, in 1996 or 1997, explaining subsequent entry between December 1998 and March 2001.

The endogenous placement of competitors creates ambiguity in identifying the direct impact of competition versus the indirect effects of factors that are causal both to location decisions and to outcomes. To resolve this ambiguity, we exploit panel data techniques (Section 6). Specifically, we use fixed-effects at the level of the joint-liability group. By tracking group-level changes in outcomes that occurred subsequent to entry, we are able to identify the effect of competition subject to the assumption that location decisions are orthogonal to *changes* in incumbent clients' outcomes. To do this, our approach is to utilize the individual clients' accounting data of a microfinance lender to obtain a time-series of behavioral outcomes, combined with a cross-sectional survey with recall data on past intensity of competition.

When we turn to studying the effects of competition on individual clients in Section 7, we do not have a panel that would allow for individual fixed effects. However, since the endogeneity of placement is related to location, group-level fixed effects soak up any part of outcomes that is common to the whole group. We use variation between individual clients and their group mean outcome in order to measure how the characteristics of that individual affect dropout probability under competition. This methodology removes any factors experienced commonly by all members of a group, and so allows to estimate unbiased individual interaction effects even in the presence of endogenous placement.

3. Increasing Competition with Different Degrees of Information-Sharing: Four Hypotheses

The literature on microfinance competition, like the phenomenon itself, is quite recent. We review this literature to derive four hypotheses (H1 to H4) about how rising competition may affect client behavior toward repayment performance and drop out rates.

These four hypotheses derive from different degrees of information-sharing as they affect enforcement costs, reputation, double-dipping, and financial deepening.

Besley and Coate (1995) show how joint liability can help lenders in markets without observable lending histories overcome information problems, but also that such contracts remain vulnerable to strategic behavior by the entire lending group. The implication is that increased competition could lead to a higher incidence of group default. Theorists have since shown that increased competition in credit markets may not lead to lower prices because of irrational optimism among unserved entrepreneurs (de Mesa & Southey (1996)), dynamic contracting inherent in lending relationships (Petersen and Rajan (1998)), wasteful product differentiation (Villas-Boas & Schmidt-Mohr (1999)), or screening externalities (Marquez (2002)). Most pertinent is a paper by Hoff and Stiglitz (1998) which examines the role that multiple uncollateralized lenders will play in reducing each other's abilities to use dynamic incentives effectively. In the absence of an information-sharing network, this 'enforcement cost' hypothesis (H1) predicts a fall in <u>repayment</u> and an increase in <u>dropout</u> from the incumbent lender as competition rises. This dynamic depends on an externality effect in the costs of monitoring induced by a large number of lenders under asymmetric information. By contrast, if it is the case that either credit officers of the MFIs or members of the joint-liability networks can costlessly obtain information on default from other lending institutions, such an enforcement cost externality will not exist. In the event that information sharing is perfect, then dynamic incentives cannot be weakened by the entry of new lenders. Indeed, since in such a framework it is the expected future benefits of access to credit that make borrowers repay uncollateralized loans, a greater perceived future benefit from the financial system can only increase the set of states in which agents repay loans. So, while the drop out rate among clients of the incumbent lender may increase as they take

advantage of more remunerative opportunities, under perfect information sharing they will guard their 'reputation' (H2) more closely as the number of lenders increases, leading to an improvement in <u>repayment</u>.

A different strategic problem is presented by McIntosh and Wydick (2002). If there is asymmetric information as to borrowers' total indebtedness levels, lenders who coexist with other credit suppliers will be unable to gauge risk in lending accurately. If only dynamic incentives prevent default, impatient individuals will take advantage of this, and the result is that the incumbent's impatient clients do not drop out but rather 'double-dip' (H3) or take multiple loans, and so <u>repayment</u> performance will fall although <u>dropout</u> may not rise. This dynamic exists independently of the degree to which information about past defaults is observable. A related argument is found in Kletzer (1984), who examines the dynamics of sovereign default in international lending markets where creditors cannot observe the total indebtedness of less developed countries. Since these 'enforcement cost', 'reputation', and 'double-dipping' hypotheses all hinge on the degree of information-sharing, an attempt to measure the response to competition is functionally a test of the degree to which information is transmitted, despite the absence of any formal credit reporting mechanism.

Finally, the "financial deepening" (H4) literature (Greenwood and Jovanovich (1990), King and Levine (1993), Pagano (1993)) examines the complementarities and increasing returns to scale that may exist in the overall deepening of the country's financial sector. As such, the entrance of other financial institutions might be expected to improve the <u>repayment</u> performance of current borrowers through a kind of general equilibrium effect, while leaving <u>dropout</u> unchanged. Similar positive spillover effects can be inferred from an extension of Boucher and Carter (2001), who examine the pivotal role of risk in determining the demand for credit: even where collateral exists, agents who are risk averse or

who manage high-variance cash flows may be reluctant to leverage their land for credit. Thus, the advent of other sources of credit in the community may release collateral by giving agents who possess it ways of retaining their land in bad states of nature. The hypothesis that financial deepening will improve outcomes across the board is in this case independent of information sharing.

The literature review makes it clear that the theoretical predictions of the response to competition depend to a large extent on the degree of information sharing between lenders. We can categorize the four hypotheses derived from the literature as follows:

H1-Enforcement costs: With no information sharing on defaults, the presence of outside borrowing opportunities triggers a drop in <u>repayment</u> and a spike in <u>dropout</u> as clients game the system and move from lender to lender.

H2-Reputation: With perfect information sharing, the presence of other lenders actually reinforces the incentives to repay so that lower-cost loans can be obtained from other lenders, leading to an increase in <u>repayment</u> and <u>dropout</u>.

H3-Double-dipping: Without perfect sharing of information on total indebtedness, if impatient clients respond to competition by taking loans from multiple institutions, then we expect to see a gradual worsening of <u>repayment</u> performance and no change in <u>dropout</u>.

H4-Financial deepening: Regardless of information sharing, if an increase in the supply of credit in the community has a beneficial general equilibrium effect, then <u>repayment</u> will improve and <u>dropout</u> will not change as all clients face better smoothed, more remunerative business opportunities.

These hypotheses can be summarized as follows:

Degree of information sharing	Hypothesis	Predicted impact of increasing competition on	
		Repayment	Dropout
No information sharing on defaults	H1: Enforcement costs	Worsens	Increases
Perfect information sharing	H2: Reputation	Improves	Increases
No information sharing on total indebtedness	H3: Double-dipping	Worsens	Unchanged
With or without information sharing	H4: Financial deepening	Improves	Unchanged

Important for incumbent micro-lenders is also to know which types of individuals are most likely to be drawn away from them by competition. Conning (1999) and Navajas, Conning, and Gonzales-Vega (2002) present models in which differential abilities at collateral collection, screening, and monitoring lead different types of lending institutions to focus on different client bases. According to this theory, given that our data consist solely of current clients in a village-banking institution, we would expect to see the 'best' clients being drawn away by lenders who invest more in screening and offer better terms. Additionally, given the pre-eminent role of collateral in mitigating moral hazard in lending, clients who depart for higher-level lenders should be those that possess the assets that are of use to those lenders as collateral and as screening tools.

4. Data

The data for this analysis come from several sources. First, and most importantly, we have group-level information provided by FINCA/Uganda, the country's largest Village Bank lender. While there are currently over 1,000 lending groups in the organization, some

groups are so new as to preclude their use in this test, and data are missing on others, leaving us with 780 groups for this study. Information from these groups includes a cross-sectional group survey and administrative data on loans over time. The group survey, conducted in 2001 by FINCA staff, contains information on basic characteristics of the group (such as size and location) as well as on the extent of competition. Competition was revealed by asking members of FINCA groups to identify, from a list of the eleven other major lenders in the country, *whether* they are present in the area, *how long* they have been in the area, and the *travel time* from the meeting place of the FINCA group to the other lenders' meeting place. This information allows us to construct time-series on the number and proximity of competitors retrospectively. The administrative data give outcomes of all loan cycles that extend back for roughly two years before the date of the survey and for one year after the survey (December 1998 to August 2002). These outcomes include dropout, new client enrollment, repayment performance, and borrowing and savings quantities for the groups.

Second, we have individual surveys conducted on the members of these same FINCA groups that give us basic information on their asset holdings and the characteristics of their businesses. Although these individual surveys were meant to encompass all the members of all groups, there were a relatively large number of non-respondents. The logistical hurdles involved for FINCA employees in collecting such a large amount of data led to some groups being skipped altogether. Rural groups in remote parts of the country were more likely to be skipped, as were younger groups. Levels of competition do not vary systematically. However, t-tests performed on differences in competition for groups with and without individual surveys are not significant. In total, 6517 questionnaires (from 470 groups), or approximately 50% of the expected census, turned out to be sufficiently

complete. These individual data allow us to examine how individual characteristics affect the probability of dropping out of FINCA in the face of competition.

Third, we have district-level data compiled from the District Resource Endowment Profile Survey (DREPS) conducted by the Uganda Bureau of Statistics and Development Consultants International in 1997. This survey contains data on 65,000 households' credit demand, access to amenities, landowning, and so forth.[2] From these, we construct measures of availability of financial services in the area: an indicator of MFI penetration with the percentage of the respondents reporting taking a loan with an MFI, the percentage of the respondents holding a bank account, and distance to the market. We also construct a measure of unmet credit demand, which is the average size of hypothetical loan desired in thousand U.S. dollars.[3]

The fourth data source is the Statistical Abstract from the 1996 census, which provides data on population, urbanization, and education at the district level.

Lender Typology

The lending institutions are classified into three types:

1. Village Banking (VB) institutions make loans to groups of twenty or more, require no collateral, use joint liability, require savings as a mandatory part of the lending package, do not conduct extensive screening, and generally charge higher interest rates and give smaller loans than other institutional lenders. FINCA itself is a Village Banking institution.

---

[2] This survey interviewed an equal number of households in all of Uganda's districts; the weights that they used to generate national-level averages have been criticized as being inaccurate, and so the survey has not been widely used. We do not need the weights to estimate district-level averages of variables, however, and so in fact the survey design proves ideal for our purposes.

[3] In a section entitled 'Future Credit Demand' there are several questions on household demand for a hypothetical future loan from a Credit scheme for Income Generating Projects. The unmet credit demand is the response to the question, "What would be the total amount of the loan preferred?". No interest rate was given to the respondents, hence this is probably a measure of unmet demand at current interest rate.

2. Solidarity Group (SG) lenders lend to joint-liability groups of approximately five individuals, usually require some kind of collateral, screen clients' businesses prior to lending, and disburse bigger loans at lower cost on more flexible terms than VBs.

3. Individual lenders disburse loans to individuals, require a larger degree of collateralization, conduct much more screening, and give the largest loans and the best terms.

Placing MFIs in this typology is necessarily approximate. We categorized the major lenders in Uganda as follows:

VB: FINCA, Uganda Women's Finance Trust, Exodus, Ugafode, FOCCUS, Mednet, and Feed the Children.

SG: Pride, Uganda Microfinance Union, and FAULU.

Individual: Commercial Microfinance and Poverty Alleviation Project.

Most MFIs in Uganda are currently engaged in developing new lending products which allow them to compete in more than one category of this typology. However, during the time-period of this study the distinctions were still clear, and we placed institutions in the category where they conducted the majority of their lending. Poverty Alleviation Project has been categorized as an individual lender because it disburses very large loans to individuals or projects at low (subsidized) interest rates, and so resembles an individual lender more than a SG or VB lender.

Competition measures

Throughout this analysis, we use three measures of competition defined as follows:

- Presence, indicating whether there is at least one competitor known to the members of the group.

- Number, which records the number of competitors.

- Proximity of the closest competitor, if there is any, measured by the inverse of its distance d in kilometer to the FINCA group, i.e., $Proximity = \dfrac{1}{1+d}$.

Table 1 shows the prevalence and increase in competition faced by the incumbent FINCA groups, distinguishing rural and urban environments. We see that while competition of all types is less intense in rural areas, VB lenders are actually *closer* to FINCA in villages, presumably because the size of the community is itself limited. In all cases, the increases in competition during the period are much larger in rural than in urban areas, particularly from Solidarity Groups and individual lenders. In addition, we see that while rapid growth of VB and individual lenders had eliminated significant rural-urban differences by 2001, significant gaps remained in SG coverage between cities and countryside.

Table 1. Competition to the incumbent FINCA groups

Averages	Urban groups 1997	2001	Rural groups 1997	2001	T-test of Rural-Urban difference 1997	2001
Number of observations		391		389		
Village Banks						
Presence	0.569	0.657**	0.383	0.615**		
Number	0.780	1.081**	0.478	0.972**	*	
Proximity	0.090	0.117*	0.108	0.158		
Solidarity Groups						
Presence	0.583	0.771**	0.161	0.365**	**	**
Number	0.733	1.077**	0.193	0.438**	**	**
Proximity	0.094	0.116	0.021	0.050**	**	**
Individual lenders						
Presence	0.286	0.373	0.085	0.311	**	
Number	0.307	0.426	0.087	0.357*	**	
Proximity	0.042	0.056	0.022	0.067		
(Asterisks: T-test of differences between 1997 and 2001:)						

*=95% significance, **=99% significance.

5. Competing Lender Location Decisions

Here we measure the extent to which competing lenders locate on the basis of local characteristics. As a first pass at the problem, we calculate correlations between the three different measures of the intensity of competition for the three types of lenders, as of March 2001.

These results, presented in Table 2, show that there is a clustering effect: the decisions of VB and SG lenders are most similar, followed by those of SG and individual lenders, while the least similar are those of VB and individual lenders. All correlations are positive, with the exception of the relationship between the density of VB location and the presence and number of individual lenders. This negative correlation is very close to zero, however, and so we conclude that lenders are likely to locate in similar regions, with the exception of the fact that we do not find any correlation between dense networks of village banks and good coverage by individual lenders. This suggests that competing SGs tend to cater to similar types of clients as VBs, while individual lenders cater to different types of clients.

Table 2. Correlations between different measures of competition intensity
(Measured at the location of incumbent FINCA lending groups; n=780)

	Village Bank			Solidarity Group		
	Presence	Number	Proximity	Presence	Number	Proximity
Solidarity Group						
Presence	0.297					
Number	0.281	0.361				
Proximity	0.077	0.058	0.437			
Individual lenders						
Presence	0.121			0.259		
Number	0.223	0.271		0.235	0.280	
Proximity	-0.031	-0.033	0.300	0.106	0.097	0.314

A second analysis of location decisions is conducted by estimating the change in the number of competitors between December 1998 and March 2001 around each incumbent FINCA group. Potential factors explaining increases in competition are district-level characteristics (from a survey conducted in 1997-98 and census data of 1996), and two group-level characteristics (urban or rural environment, and whether there is presence of a commercial bank known to the clients). This regression can be expressed as:

$$\Delta C_j = \alpha + \beta_1 X_j + \beta_2 Z_j + \varepsilon_j$$

where ΔC_j is the change in competition experienced by group j over the period, X_j is a vector of group-level characteristics, Z_j a vector of district-level characteristics for group j measured before the period, and ε_j an *iid* error term. Estimations are done separately for the three types of competitors.

Results reported in Table 3 clearly show that competition is strongly determined by cross-sectional variation in characteristics:

- Village Banks appear to be aggressively locating in rural areas during the period analyzed.

- Again we see a clustering effect: all lenders are more likely to enter markets characterized by high pre-existing MFI penetration, close banks, and high pre-existing utilization of formal banks.

- During the period, all types of lenders were more likely to locate in rural districts.

- More VBs and SGs than individual lenders entered, but this may be an overall trend, not necessarily a clustering effect.

Table 3. Explaining changes in competition intensity using pre-test variables
Dependent variable: Change in the number of competitors between 1998 and 2001 (742 observations)

	Mean value of variables	Individual lender Coeff.	Individual lender p-value	Solidarity Group Coeff.	Solidarity Group p-value	Village Bank Coeff	Village Bank p-value
Group-level characteristics							
Urban = 1	0.5	0.02	0.53	0.05	0.22	-0.19	0.00
Presence of commercial bank = 1	0.4	0.10	0.00	0.06	0.12	0.12	0.02
District-level characteristics							
Education (years of schooling)	5.1	-0.12	0.00	0.04	0.37	0.06	0.33
MFI penetration[1] (percent)	0.008	37.6	0.00	48.8	0.00	42.1	0.00
Unmet credit demand[2] ($ '000)	0.6	0.10	0.55	1.14	0.00	1.97	0.00
Distance to bank (km)	2.6	-0.16	0.00	-0.08	0.06	-0.31	0.00
Population with bank account (percent)	1.8	0.63	0.16	3.35	0.00	5.18	0.00
Population (1000)	635	-0.26	0.00	0.01	0.91	-0.22	0.05
Urban (percent)	20.4	-0.004	0.00	-0.008	0.00	-0.010	0.00
Intercept		-0.12	0.90	-6.77	0.00	-9.63	0.00
Mean value of dependent variable		0.144		0.312		0.427	
R-squared		0.137		0.114		0.181	

[1] Percent of the surveyed population reporting taking an MFI loan.
[2] Size of hypothetical loan desired in thousand U.S. dollars.
All independent variables are measured in 1998, except district population and urban share, measured in 1996.

In proceeding to the analysis of the impact of competition on client behavior, these results tell us that the presence of competition cannot be treated as ignorable, and thus we need to use econometric techniques that are robust to endogenous placement.

6. Impact of Competition on Groups

6.1 Average effect of competition

The analysis is done on 766 groups that experienced 2 to 11 loan cycles during the period of observation between December 1998 and August 2002. The total number of completed observed loan cycles is almost 4800, although observations on several of the outcomes are missing in the first two rounds.[4] Table 4 shows the wide range of outcomes

---

[4] Early on (e.g., in 1998) FINCA considered savings the private concern of clients and didn't have a grading system at all, so there are no observations on these in round 1. Round 2 is also missing many observations on

experienced by the different groups during the period of observation. Dropout rates vary

between 0 and 33 percent, averaging 5.6%, and new client enrollment rates average 4.2%.

The percent of clients with excellent repayment (defined by the institution as no late

payment and less than two missed meetings) varies across groups from 0 to 40%, with an

average of 10.6%, while the percent of clients with very poor repayment (persons having had

such a serious repayment problem that they will not be loaned to in the following cycle)

averages 3.2% although it may reach a high 36%.

Table 4. Group outcomes during the December 1998 – August 2002 period

	Number of observations	Mean	Standard deviation	Minimum	Maximum
Dropout (percent of clients)	4794	5.6	3.9	0	33
New client enrollment (percent of clients)	4374	4.2	3.8	0	47
Excellent repayment (percent of clients)	4352	10.6	7.7	0	40
Very poor repayment (percent of clients)	4171	2.1	3.2	0	36
Average individual loan size (US$)	4782	135	72	0	1633
Average individual savings (US$)	4153	53.5	44.2	0	1182

The influence of competition on these outcomes is analyzed with the following

fixed-effects regression[5]:

$$O_{jt} = \alpha_t + f_j + \beta A_{jt} + \theta A_{jt}^2 + \gamma_{VB} C_{VBjt} + \gamma_{SG} C_{SGjt} + \gamma_{IND} C_{INDjt} + \varepsilon_{jt}$$

where O_{jt} is the outcome of group j in the four-month interval period t; C_{VBjt}, C_{SGjt}, and C_{INDjt}

are competition to group j in time t from VB, SG, and individual lenders, respectively; α_t is a

time fixed effect, f_j a group-level fixed effect, and A_{jt} the cycle number (or age) of the

---

these, but loans and dropout have been scrupulously recorded from the beginning. From round 3 onwards (late 1999) there are virtually no cases of missing data in one category and not another.

[5] While it might appear sensible to use a random effects specification, the problem arises that we have strong cross-sectional identification (endogenous placement) while the dynamic treatment effects are relatively subtle. This means that a random effects specification focuses on the between-group variation and does not capture the treatment effect. We, therefore, are required to use only within-group variation, with a fixed-effect specification, to identify the treatment effect, recognizing that this estimate is a lower bound on the true value

group. The different group outcomes that we consider are measures of movement in clientele (drop-out and new client enrollment rates), measures of performance in repayment (percentages of members with excellent and with very poor repayment rates), and measures of group activity (average loan size and saving level among individual group members).

Partial results are reported in Table 5, showing the estimates for γ_{VB}, γ_{SG}, and γ_{IND}, for the six outcomes O, and for the three measures of competition C (presence of competitors, number of competitors, and proximity of the closest competitor).

Table 5. Fixed-effect estimates of the impact of competition on various group outcomes

| Dependent variables | Measure of competition intensity | | | | | |
| | Presence | | Number | | Proximity | |
Independent variables	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Dropout (percent of clients)						
Village bank	0.07	0.84	-0.17	0.32	0.04	0.95
Solidarity group	0.03	0.92	0.01	0.96	-0.20	0.87
Individual lender	-0.42	0.42	-0.27	0.62	1.55	0.31
New client enrollment (percent of clients)						
Village bank	0.09	0.78	0.19	0.29	0.24	0.73
Solidarity group	0.01	0.96	0.10	0.67	0.69	0.59
Individual lender	0.68	0.20	0.49	0.38	**2.67**	**0.08**
Excellent repayment (percent of clients)						
Village bank	-0.16	0.78	**0.74**	**0.02**	-1.42	0.25
Solidarity group	**-1.07**	**0.03**	-0.19	0.63	1.07	0.62
Individual lender	-1.45	0.13	**-2.12**	**0.03**	**-9.33**	**0.00**
Very poor repayment (percent of clients)						
Village bank	-0.11	0.69	-0.12	0.38	0.77	0.18
Solidarity group	0.22	0.36	-0.06	0.75	1.17	0.25
Individual lender	-0.13	0.78	0.03	0.95	0.14	0.91
Average individual loan size (US$)						
Village bank	4.4	0.36	0.1	0.97	0.5	0.97
Solidarity group	-3.2	0.46	2.0	0.55	-22.6	0.23
Individual lender	-3.1	0.70	-3.8	0.65	-13.7	0.55
Average individual savings (US$)						
Village bank	-0.8	0.84	-1.9	0.41	**-24.0**	**0.01**
Solidarity group	-2.3	0.51	-3.4	0.21	-9.8	0.52
Individual lender	**-24.2**	**0.00**	**-21.5**	**0.00**	-27.4	**0.10**

All regressions include year and group fixed effects, and cycle number and its square.
4000 to 4800 observations, depending on the outcome and competition measure, on 766 groups.

The main results are the following:

- Competition is *not* changing the rate at which clients drop out from and enroll into the lending groups. This indicates that there are no large-scale defections, defaults, or expulsions, and that the market does not appear to be 'saturated' as a whole, in the sense that lenders are competing in a zero-sum game for clients. These results reject the "enforcement costs" (H1) and the "reputation" (H2) hypotheses.

- While drop out does not increase, competition from individual and SG lenders pushes down repayment performance. This suggests that there is double-dipping taking place by FINCA clients with these two kinds of lenders, and FINCA repayment is suffering as a result (H3). However, this result does not carry through to other VB lenders. It may be the case that the frequent meetings of VB lenders make double-dipping difficult, or that FINCA is the top-priority creditor among VB lenders, or that since all VB lenders use similar social collateral on loans that FINCA is less affected by double-dipping to these institutions. One way or the other, there appears to be some beneficial impact on repayment of having numerous local VB lenders (H4), lending credence to the idea that this is a general equilibrium effect through financial deepening.

- Non-response of loan size to competition indicates either that FINCA is the lowest-cost provider of credit, or that clients are still credit-constrained in the presence of competition.

- Savings are, in the short run, a zero-sum item, and so competing deposit institutions engage in a division of spoils . As results show, average individual savings decline with increasing competition from VB and individual lenders.

In summary, the results lead us to reject the "enforcement cost" (H1) and the "reputation" (H2) hypotheses regarding the impact of increasing competition on repayment and dropout for the incumbent Village Bank, as neither are responsive to rising competition. The "double-dipping" (H3) hypothesis is not rejected for competition from SG and individual lenders on repayment and dropout, while it is rejected for VB competition. Double-dipping induced by competition from SG and individual lenders thus worsens repayment for the incumbent Village Bank. Finally, the "financial deepening" (H4) hypothesis of competition on repayment and dropout for the incumbent Village Bank is rejected for SG and individual lenders, but not for VB, suggesting positive general equilibrium effects as Village Banking thickens at the local level.

6.2   Differential effect of competition across local characteristics

The effects of competition on the incumbent Village Bank lender depend on the characteristics of the district where it is located. To analyze the role of local characteristics, the econometrics can be specified as:

$$O_{jt} = \alpha_t + f_j + \beta A_{jt} + \theta A_{jt}^2 + \beta_{VB} C_{VBjt} + \beta_{SG} C_{SGjt} + \beta_{IND} C_{INDjt}$$
$$+ C_{VBjt} Z_j \gamma_{VB} + C_{SGjt} Z_j \gamma_{SG} + C_{INDjt} Z_j \gamma_{IND} + \varepsilon_{jt}$$

where Z_j is a vector of group or district-level exogenous characteristics for each group and the interaction terms $C_{Kjt} Z_j$ allow to identify how the effect of competition from lender type K varies across characteristics Z_j. These include the location of the group (urban versus rural) and the district-level average years of education, MFI penetration, and unmet credit demand.

Results are reported in Tables 6 and 7. In Table 6, competition is measured by the presence of a competitor, while in Table 7 competition is measured by the proximity indicator. While few parameters are statistically significant in each regression, the overall pattern of influence leads to the following conclusions:

- *Role of education in the district.* Clients in more highly educated districts behave as if there were more information sharing. This can be seen in their higher levels of repayment under individual (presence) and SG (presence and proximity) competition, and their higher savings and lower loans under VB (presence) competition. This result has several candidate explanations: it may be the case that more information is actually transmitted in highly educated districts, that educated individuals may consider the dynamic consequences of their actions and thus not double dip, or that the educated are able to engage in double-dipping without repayment problems.

- *Role of MFI penetration in the district.* Higher SG competition has stronger adverse effects on FINCA clientele (increase in dropout (proximity) and decrease in new client enrollment (presence and proximity)) if they compete in environments already saturated with lenders.

- *Role of unmet credit demand in the district.* High unmet credit demand in the district leads to lower repayment performance under individual (presence and proximity) and SG (presence) competition. This points to multiple loan-taking (H3), and again provides evidence for the fact that double-dipping is more prevalent with a different kind of institution than it is with another VB.

- *Role of rural location of group.* While several pieces of evidence have been presented to indicate that there is more multiple loan-taking from individualized lenders, these

Table 6. Role of district-level variation on the effects of presence of competition for the incumbent

Partial results

	Dropout rate		New client enrollment		Excellent repayment		Average loan size	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Village bank interactions (γ_{VB})								
District education	-0.41	0.50	0.98	0.11	0.00	0.00	**-22.08**	**0.02**
Urban group	-0.72	0.36	-0.14	0.86	0.00	0.00	18.97	0.11
District MFI penetration	-106.2	0.47	35.1	0.81	0.0	0.00	-2016	0.37
District unmet credit demand	0.003	0.57	-0.004	0.43	0.00	0.00	**0.145**	**0.04**
Solidarity group interactions (γ_{SG})								
District education	0.89	0.16	1.14	0.07	**2.38**	**0.03**	9.14	0.34
Urban group	0.58	0.38	**-1.77**	**0.01**	0.38	0.75	8.23	0.42
District MFI penetration	132.1	0.23	**-284.7**	**0.01**	76.7	0.70	-358.5	0.83
District unmet credit demand	**-0.009**	**0.01**	0.001	0.78	-0.010	0.12	0.012	0.83
Individual lender interactions (γ_{ind})								
District education	0.32	0.69	-0.22	0.79	**3.74**	**0.01**	9.22	0.46
Urban group	0.21	0.80	-0.46	0.57	1.67	0.24	-8.80	0.48
District MFI penetration	230.3	0.17	23.3	0.89	-259.4	0.38	-2020	0.43
District unmet credit demand	-0.004	0.34	0.002	0.69	**-0.022**	**0.00**	-0.011	0.86

4010 to 4616 observations, depending on the outcome variable, on 736 groups

All regressions include year and group fixed effects, cycle number and its square, and the presence of the three types of competition

Table 7. Role of district-level variation on the effects of proximity of competition for the incumbent

Partial results

	Dropout rate		New client enrollment		Excellent repayment		Average savings	
	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Village bank interactions (γ_{VB})								
District education	0.29	0.86	0.49	0.77	1.07	0.72	**127.63**	**0.00**
Urban group	**9.88**	**0.00**	2.31	0.43	-1.47	0.78	**79.40**	**0.02**
District MFI penetration	-61	0.87	-26	0.95	-469	0.48	**16115**	**0.00**
District unmet credit demand	-0.016	0.20	-0.002	0.90	0.019	0.41	**-0.94**	**0.00**
Solidarity group interactions (γ_{SG})								
District education	-2.26	0.52	3.58	0.30	**17.36**	**0.01**	-48.77	0.242
Urban group	-1.79	0.70	**-11.41**	**0.01**	1.35	0.87	-40.06	0.463
District MFI penetration	**1528**	**0.02**	-1729	0.01	810	0.48	-2317	0.763
District unmet credit demand	-0.011	0.58	0.026	0.20	**-0.086**	**0.02**	0.33	0.173
Individual lender interactions (γ_{ind})								
District education	0.12	0.96	-0.24	0.92	6.06	0.17	5.26	0.85
Urban group	-1.04	0.65	-3.36	0.14	5.20	0.20	34.18	0.187
District MFI penetration	112	0.78	-48	0.91	285	0.69	1776	0.706
District unmet credit demand	0.002	0.85	0.001	0.93	**-0.061**	**0.00**	-0.17	0.167

3950 to 4547 observations, depending on the outcome variable, on 736 groups.

All regressions include year and group fixed effects, cycle number and its square, and the presence of the three types of competition

institutions often are not present in the countryside. In Table 1 we saw that SG lenders are more than twice as common in cities as in rural areas, while there is no significant

difference in the prevalence of VB lenders. Hence, the results that we see from VB competition in Table 7 are compatible with double-dipping in the countryside occurring mostly from other VB institutions. Dropout is lower in the countryside (proximity) where clients take multiple VB loans, and consequently their savings in FINCA are driven down (proximity) as they make the minimum savings contributions in multiple institutions. We conclude that rural clients are most likely to double-dip from other VBs where different lending products are unavailable and markets are poorly saturated.

7. Impact of Competition on Individuals

Who are the individual borrowers most likely to drop out from the FINCA clientele as a consequence of increased competition? In answering this question, we deal with the endogenous placement problem by using group-level fixed effects. If placement decisions are made on the basis of observable and unobservable characteristics of the region or the groups, the direct effect of these characteristics as well as of competition based on these characteristics will pass into the fixed effects. By interacting the competition intensity from our three types of lenders with individual characteristics, we are able to identify how client traits increase or decrease their likelihood of leaving under competition relative to the group mean. Since we do not have data from the other lenders, we cannot tell whether clients are leaving FINCA to go to a specific competitor; rather we infer this by patterns of increased dropout that coincide with increased competition. The validity of this analysis relies on the assumption that no other unobserved determinants of dropout that vary across individual characteristics are correlated with the presence of competition.

Because of the inconsistency of fixed-effect probit regressions (Chamberlain 1980), we use a linear probability regression with robust standard errors to estimate the model.

Marginal effects are similar in the two specifications but the robust standard errors in the linear probability model are substantially larger. The estimated equation is the following:

$$\Pr(Dropout_{ij} = 1) = f_j + \beta X_i + C_{VBj} X_i \delta_{VB} + C_{SGj} X_i \delta_{SG} + C_{INDj} X_i \delta_{IND} + \varepsilon_i$$

where X_i represents individual characteristics. We do not include the competition variables directly, since their average effects are subsumed into the fixed effects.

How should asset holdings affect the probability of dropout under competition? To draw a direct parallel to Navajas et al. (2002), FINCA, like Bancosol in Bolivia, offers a 'One for All' contract and lets the joint liability mechanism conduct its screening. Hence, competing SG and individual lenders should be expected to leverage their abilities in the use of 'imperfect collateral' assets that are of high consumption value to the borrower. In fact, most of these lenders screen by making a visit to the client's business prior to approving a loan, a practice that is unusual among VB lenders. We therefore expect that the possession of physical assets will increase the likelihood of a contract being offered by individualized lenders, with particular focus on business size (stock) for SG lenders, and possibly land for individual lenders.

Results are reported in Table 8. As discussed above, the sample of observations is reduced to 6517 clients from 470 groups, out of the original 780 groups. This sub-sample of groups for which we have individual data does not differ from the overall sample in terms of competition intensity. Further, the following analysis is based on interaction effects in a fixed-effect analysis. This means that even if the intensity of competition for groups with individual surveys is not representative of the larger population, as long as the selection of groups is orthogonal to the interaction between individual characteristics and competition relative to the group mean, our results are unbiased. The competition interactions are

calculated as deviations from the mean, so the uninteracted coefficients represent marginal effects at the average level of competition.

The sole clear result from this analysis is the greatly increased probability of dropout from the incumbent Village Bank clientele for clients managing large businesses (measured by value of business stocks) in the face of SG competition. This result is consistent with theory on the supply side (for the reasons given above) and on the demand side (because larger businesses require the larger loan sizes and more flexible repayment terms of SG loans). This result is extremely strong and robust to specification. The increase in the probability of dropout among clients with high business sales under individual lender competition could be explained on similar grounds of supply (cash flow as a determinant in individual loans) and demand (the need for larger loans), but this result is more sensitive to specification. Land and home ownership are not significant, perhaps because our definition of 'individual' lenders does not include true banks. VB competition appears to exert a similar pull on clients regardless of their asset holdings.

Table 8. Differential effects of competition on dropout of individual clients

Linear probability model. Dependent variable: dropout = 1/0

	Mean value	Coefficient	p-value
Direct effects (β)			
Single	0.10	0.011	0.47
Divorced	0.09	0.004	0.83
Widow	0.09	**-0.027**	**0.08**
Business daily sales (US$ 1000)	0.027	-0.024	0.14
Business total stock (US$ 1000)	0.514	**-0.015**	**0.03**
Number of non-working adults	0.70	-0.010	0.10
Client education level (1 to 4)	2.12	**-0.015**	**0.01**
Household owns its home	0.67	-0.007	0.52
Household owns land	0.47	**-0.021**	**0.08**
Interaction with proximity of individual lenders (δ_{IND})			
Business daily sales (US$ 1000)		**0.412**	**0.05**
Business total stock (US$ 1000)		0.000	0.97
Number of non-working adults		-0.004	0.53
Client education level (1 to 4)		-0.003	0.82
Household owns its home		0.008	0.73
Household owns land		0.023	0.37
Interaction with proximity of solidarity groups (δ_{SG})			
Business daily sales (US$ 1000)		-0.658	0.15
Business total stock (US$ 1000)		**0.032**	**0.00**
Number of non-working adults		0.040	0.13
Client education level (1 to 4)		-0.015	0.69
Household owns its home		-0.091	0.15
Household owns land		0.016	0.81
Interaction with proximity of village banks (δ_{VB})			
Business daily sales (US$ 1000)		0.151	0.63
Business total stock (US$ 1000)		-0.015	0.34
Number of non-working adults		-0.013	0.50
Client education level (1 to 4)		0.024	0.33
Household owns its home		-0.008	0.86
Household owns land		**0.087**	**0.08**

Regression includes group fixed effects. Robust standard errors.

Number of observations: 6517 clients in 470 groups; R^2 = .53

8. Conclusion

While initially established as regional monopolies, competition has been rising rapidly among microfinance lenders as the industry comes of age. In the period analyzed in Uganda, new entrants that compete with the incumbent Village Bank tend to cluster in rural areas, where MFI penetration is already high, and are composed of other Village Bank and Solidarity Group lenders more than individual lenders. The paper analyzes the impact that this rising competition has on the incumbent Village Bank lender. We find that it has not had any dramatic negative consequences. While the data used in this paper are relatively noisy, we have used very robust methodologies and the results discussed at length are those that have been found not to rely on specification. Some of the more striking results are those where no significant effects are found; most importantly, there has been no change in the dropout rate or the client enrollment rate when competitors of any kind entered the market. Similarly, loan volumes did not change under competition. These facts appear to disqualify theories that predict rapid movement of clients from one lender to another, whether due to the improvement or the destruction of dynamic incentives. What is observed is some deterioration in repayment performance and a strong drop in savings. These phenomena are consistent with a story whereby clients do not abandon the incumbent but rather take multiple loans, thus damaging their repayment to the incumbent. Because mandatory savings and minimum savings balances are standard among MFIs, double-dipping clients are forced to share their scarce savings amongst the institutions from whom they borrow, reducing their level of savings with the incumbent.

The taking of multiple loans is widely recognized as an emerging problem for MFI lenders in Uganda. In interviews during February of 2001 with credit officers from several major MFIs, the reasons attributed to borrowers for double-dipping were to smooth the

timing of repayment of loans, to maintain cash flow, and the fact that interspersing several smaller loans leads to a lower overall cost of credit given the declining-balance interest calculations prevalent in the industry. Nonetheless, they were unanimous in the opinion that the behavior does drive up default rates. The director of Mednet, a VB institution, considered multiple-loan taking to be a sufficiently serious problem as to outweigh any positive benefits for lenders that arise from the greater training and experience prevalent among clients in high-competition environments. Several results from the analysis lead us to believe that, whereas FINCA clients are most likely to double-dip from an individual or SG lender, double-dipping from other VB lenders is most prevalent in rural villages. This can easily be explained by the fact that only 36% of rural groups report the presence of a local SG lender versus 77% of urban groups, while VBs are equally prevalent (62% versus 65%, respectively) and equally close in rural and urban areas. We also find that increasing competition with Solidarity Groups and individual lenders induces clients with larger businesses selectively to drop out, leading the incumbent Village Bank to lose some of the clients it would most prefer to retain. This is one reason why Village Banks have introduced new financial products in an attempt to keep their best clients in the face of rising competition.

In many ways, testing for the implications of competition between social-capital based lenders is completely equivalent to testing for the degree of information sharing prevalent in the market. The fact that we do not observe a precipitous drop in repayment rates indicates that, although Uganda has no formal credit bureau, credit officers and joint-liability groups are able to identify deadbeat borrowers coming from other lending institutions. This is not altogether surprising, as credit officers from different organizations are known to meet informally to discuss the performance of clients in their neighborhoods.

Particularly in rural areas, clients are extremely unlikely to be able to default in one joint-liability network without acquiring a reputation that would preclude their joining another. The evidence of double-dipping, however, implies that such informal information sharing networks are not able to overcome the problem of identifying a borrower's total outstanding indebtedness. The director of FAULU (a major SG institution) says that double-dipping is emerging as a serious problem in Uganda because of absence of the kind of national database which allows their Kenya-based program to check borrower indebtedness prior to issuing a loan. Interestingly, our results indicate that clients in districts with higher education levels behave as if local information sharing were better.

In conclusion, the results of this paper are quite encouraging for the long-term future of the microfinance movement. It would appear that the more dire theoretical predictions on the consequences of rising competition are not borne out, even in an environment with no formal sharing of information. While the intensity of competition in Uganda during the course of this study cannot be compared to that existing in countries of Central America or South Asia, at this less advanced stage competition is generating few negative impacts. Given the strong downward pressure on interest rates engendered by competition, as well as the evidence found here of a beneficial general equilibrium effect of deeper credit markets, there is cause for hope. Improved mechanisms for the sharing of information on client indebtedness levels should be able to overcome problems associated with improper assessment of risk under multiple loan-taking, thus addressing the major adverse effect of competition found here.

References

Besley, T., and Coate, S. (1995). 'Group Lending, Repayment Incentives and Social Collateral.' *Journal of Development Economics*, Vol. 46, pp. 1-18.

Boucher, S., and Carter, M. (2001). 'Risk Rationing and Activity Choice in Moral Hazard Constrained Credit Markets', University of Wisconsin AAE Staff Papers Series number 445.

Chamberlain, G. (1980). 'Analysis of Covariance with Qualitative Data', *The Review of Economic Studies*, Vol. 47, Issue 1, pp. 225-238.

Conning, J. (1999). 'Outreach, Sustainability and Leverage in Monitored and Peer-Monitored Lending', *Journal of Development Economics*, Vol. 60, pp. 51-77.

de Mesa, D., and Southey, C. (1996). 'The Borrower's Curse: Optimism, Finance, and Entrepreneurship', *The Economic Journal,* Vol. 106, Issue 435, pp. 375-386.

Greenwood, J., and Jovanovic, B. (1990). 'Financial Development, Growth and the Distribution of Income', *Journal of Political Economy*, Volume 98, No. 5, pp. 1076-1107.

Hoff, K., and Stiglitz, J. (1998). 'Moneylenders and Bankers: Price-Increasing Subsidies in a Monopolistically Competitive Market', *Journal of Development Economics*, Vol. 55, pp. 485-518.

King, R., and Levine, R. (1993). 'Finance, Entrepreneurship and Growth: Theory and Evidence', *Journal of Monetary Economics*, Vol. 32, Issue 3, pp. 513-542.

Kletzer, K. (1984). 'Asymmetries of Information and LDC Borrowing with Sovereign Risk', *The Economic Journal*, Vol. 94, Issue 374, pp. 287-307.

Marquez, R. (2002). 'Competition, Asymmetric Information, and Information Dispersion in the Banking Industry', *Review of Financial Studies*, Vol. 15, No. 3, pp. 901-926.

McIntosh, C., and Wydick, B. (2002). 'Competition and Microfinance.' Working paper. http://are.Berkeley.EDU/~mcintosh/Comp.pdf

Navajas, S., Conning, J., and Gonzales-Vega, C. (2002). 'Lending Technologies, Competition, and Consolidation in the Market for Microfinance in Bolivia', Working Paper, http://wso.williams.edu/~jconning/lendtech_Bolivia.pdf

Pagano, M. (1993). 'Financial Markets and Growth: An Overview', *European Economic Review*, Vol. 37, Issue 2, pp. 613-622.

Petersen, M., and Rajan, R. (1995). 'The Effect of Credit Market Competition on Lending Relationships', *The Quarterly Journal of Economics*, Vol. 110, Issue 2, pp. 407-443.

Villas-Boas, J., and Schmidt-Mohr, R. (1999). 'Oligopoly with Asymmetric Information: Differentiation in Credit Markets', *RAND Journal of Economics*, Vol. 30, Issue 3, pp. 375-396.