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How Rising Competition Among Microfinance Institutions Affects Incumbent Lenders

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Abstract

This paper uses data from Uganda's largest incumbent microfinance institution to analyze the impact of entry by competing lenders on client behaviour. 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.

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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 has caused a great deal of concern among incumbent social capital-based lenders as they become less able to price the risk involved in uncollateralized lending and to use dynamic incentives to secure repayment when their clients face a rising number of outside options.[1]

The microfinance movement in Uganda took off during the 1990s, while the country was registering some of the most rapid growth in the developing world. The early '90s saw a small number of subsidy-driven MFIs making loans in relative isolation; however by the late '90s MFIs were increasingly overlapping in their geographical coverage. Importantly, more profit-motivated lenders had entered the fray, shifting the nature of competition between lenders and expanding the choices faced by consumers. Because FINCA Uganda was founded in 1992 and had a broad geographical reach by the end of the decade, it serves as a perfect lens through which to view the impact of this rapid increase in competition. Opinions among Ugandan microfinance practitioners regarding the importance of competition during the period of this study vary. The chief executives of most of the institutions involved in this paper were interviewed on the topic, and few were worried about competition insofar as it relates to the growth prospects of their institution. A common concern, however, was that, wherever two or more institutions are operating, many

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

clients may be taking loans from several lenders simultaneously, or 'double-dipping'. In interviews 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 this behaviour does drive up default rates. Even the more aggressive institutions which directly target the client base of other lenders worried about multiple loan-taking, indicating that while they could identify good clients, they were not able to obtain information about pre-existing debt levels.

In this paper, we exploit the increasingly intense interactions between MFIs in Uganda between 1998 and 2002 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 behaviour 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 rising competition on group performance in the incumbent MFI. Third, we look at the differential effect of competition from various kinds of lenders on individual clients with specific characteristics.

All of the stylized facts worded by chief executives 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 behaviour is the endogeneity of placement of competitors. New entrants make placement decisions based on the characteristics of a location, as evidenced in Section 5. The implication is that cross-sectional variation in competition is sufficiently endogenous to other factors (and, potentially, directly to the outcomes themselves) as to make unbiased cross-sectional identification of the impact of competition impossible.

With panel data on group outcomes, we resolve this problem by using group and time fixed effects throughout the study. This estimation structure removes all cross-sectional variation from the data, as well as the effects of any changes in outcomes that were commonly experienced by all groups at a point in time. The impact of competition is thus identified solely by group-level changes in outcomes that occurred subsequent to the entry of a competitor.

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 us to estimate individual

interaction effects even in the presence of endogenous placement. The assumptions required for unbiased estimation are discussed in detail in Sections 6 & 7.

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 behaviour 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. Their implications on repayment performance and dropout rates are summarized in Table 1. We distinguish the sharing of 'negative' information (meaning mutual reporting of defaulters) from the sharing of 'positive' information (which functions like a credit bureau, giving comprehensive, updated information on the total level of indebtedness of an agent seeking a new loan).

Although papers rarely directly address the effect of increased competition in absence of information sharing on repayment rates, it can indirectly be inferred in some cases. 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 behaviour by the entire lending group. The implication is that increased competition could lead to a higher incidence of group default. Marquez (2002) highlights the fact that competition lowers the screening ability of the incumbent bank, thus increasing the share of low quality borrowers among clients. In Petersen and Rajan (1998), competition weakens the long-term relationship between a lender and his clients, thus

reducing the lender's incentives to provide insurance in response to shocks. Both circumstances would lead to lower repayment rates. 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 a negative information-sharing network, this 'enforcement cost' hypothesis (H1) predicts a fall in repayment and an increase in dropout from the incumbent lender as competition rises.

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 repayment.

In the case where only negative information is shared, a weaker form of H2 prevails; lenders cannot perfectly identify client quality, but they can verify that a client has not had major repayment problems. This weaker reputation effect present under negative information sharing is denoted by H3a. "Absence of bad reputation" should lead to improved repayment and to a weak increase in dropout. A different strategic problem under negative-only sharing is presented by McIntosh and Wydick (2004). 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' (H3b) or take multiple

loans, and so repayment performance will fall although dropout may not rise. This dynamic exists independently of the degree to which negative 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 positive and negative information is transmitted, despite the absence of any formal credit reporting mechanism. The net effect on repayment under negative-only sharing is indeterminate; however a worsening of repayment disqualifies perfect information sharing, and unchanged dropout indicates that negative information sharing is neither perfect nor totally absent.

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 repayment performance of current borrowers through a kind of general equilibrium effect, while leaving dropout unchanged. This hypothesis that financial deepening will improve outcomes across the board is independent of information sharing.

This 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. The differential predicted outcomes of increasing competition on repayment performance and client dropout, according to the degree of information sharing, allow us to

test which of the four hypotheses is not rejected by the data. This is what we proceed to do in this paper.

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 et al. (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, an institution that gave only Village Banking-type loans at the time of the study (although now, like many MFIs, it is diversifying the range of products it offers). 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. 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. 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' behaviour when is has become known to them. 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).

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. The logistical hurdles involved for FINCA employees in collecting such a large amount of data led to some groups being skipped altogether, leaving us with 6517 questionnaires (from 470 groups), or approximately 50% of the expected census, sufficiently complete. Student t-tests performed on differences in competition for groups with and without individual surveys are not significant. 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 variables describing the prevailing district-level supply for and demand of credit at the beginning of

[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.

the study.[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.

4.1. *Lender Typology*

The lending institutions that compete with FINCA 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. Institutions in Uganda that belong to this category are Uganda Women's Finance Trust, Exodus, Ugafode, FOCCUS, Mednet, and Feed the Children.
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. Institutions in this category are Pride, Uganda Microfinance Union, and FAULU.
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. Institutions in this category are Commercial Microfinance and Poverty Alleviation Project.[4]

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[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 can be interpreted as a measure of unmet demand at current interest rate.

[4] 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.

4.2. *Competition measures*

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

- *Presence*, indicating whether there is any competitor known to the group.

- *Number*, which records the number of competitors.

- *Proximity* of the closest competitor, if there is any, measured by $\texttt{Proximity} = \frac{1}{1+d}$.

Table 2 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 SGs and individual lenders.

5. Competing Lender Location Decisions

Here we measure the extent to which competing lenders locate on the basis of local characteristics. We estimate 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 FINCA 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. Regressions to explain the changes in competition faced by FINCA groups from each of three kinds of potential entrants to the market are run separately and reported in the three columns of Table 3. Results clearly show that competition is strongly determined by cross-sectional variation in characteristics:

- VB are aggressively locating in rural areas during the period analyzed.
- 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.

6. Impact of Competition on Groups

6.1. *Average Effect of Competition*

The analysis is done on 766 FINCA groups that experienced 2 to 11 loan cycles during the period of observation between December 1998 and August 2002. Table 4 shows the wide range of outcomes experienced by the different groups during the study.

The influence of competition on these outcomes is analyzed with the following fixed-effects regression[5]:

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

[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.

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 group. The use of α_t guarantees that the error term is orthogonal to the time dimension of the competition variable, and similarly f_j guarantees that the error term is orthogonal to the group dimension of the competition variable. The assumption needed for the estimates of γ to be unbiased, then, is that $C_{jt} \perp \varepsilon_{jt}$, or that unexplained changes in outcomes be unrelated to changes in competition which differ across groups other than through a causal impact. This assumption would be violated by a process of dynamic endogenous placement in which $\Delta C_{jt} = g(\Delta O_{jt-1})$, or by any shocks which are experienced differentially across space and which affect both C_{jt} and O_{jt}. It is robust to static endogenous placement in which $C_{jt} = g(O_j)\big|_{t=0}$, or to temporal shocks that are commonly experienced by all groups. The different group outcomes that we consider are measures of movement in clientele (drop-out and new client enrolment 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).

The main results are the following:

- Competition is *not* changing the rate at which clients drop out from and enrol 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 & H3a) 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 (H3b). 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 & H3a) 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" (H3b) 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 from Village Banking at the local level.

6.2. *Differential Effect of Competition across Local Characteristics*

While the previous regression eliminates all cross-sectional identification, we suspect that it will be the case that the effects of competition on FINCA clients depend on the characteristics of the district in which the competition takes place. To analyze the role of local characteristics, we retain our group-level fixed-effects but now introduce district-level characteristics interacted with the presence of competition. Because the fixed effects absorb all cross-sectional heterogeneity, there is no need to include the non-interacted district-level 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 enrolment (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 (H3b), 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 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 (Hubert-White corrected) standard errors to estimate the model. The model was tested using the linear probability, probit, and logit specifications; marginal effects were similar in all three 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. 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, 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.

8. Conclusion

While MFIs were initially established as regional monopolies, competition has been rising rapidly among lenders as the industry comes of age. The paper analyzes the impact that this rising competition has on the incumbent lender. Despite the fact that the data used in this paper are relatively noisy, we have used robust methodologies and the reported results are those that have been found not to rely on specification. We find that while credit saturation is lower in rural areas, entrance to the market in the countryside during the period analyzed is more intense than in cities. In addition, lenders tend to cluster in their location

decisions, district-level characteristics strongly determine these decisions, and group-based lenders increased operations more rapidly than individual lenders.

We find that the entrance of competing lenders induces a deterioration in repayment performance and a decrease in savings deposits among borrowers of the incumbent lender. These phenomena are consistent with a model of competition whereby clients do not abandon the incumbent lender but rather take multiple loans, thus damaging their repayments 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.

Strikingly, we find no change in the dropout rate or the client enrolment rate when competitors of any kind entered the market. Similarly, loan volumes did not change under competition. These facts are likely indicative of a market which has yet to be fully saturated, leaving open the possibility that some of the more draconian impacts of competition may yet be observed as the pool of unmet demand is drained. They also, however, appear to disqualify theories that predict rapid movement of clients from one lender to another when multiple lenders are present, whether due to the improvement or the destruction of dynamic incentives. Despite the absence of an aggregate effect on dropout, we find heterogeneity in impact among individual clients: borrowers with large businesses and high cash flows are the most likely to leave the incumbent as new lenders enter. While some part of this heterogeneity likely comes from the demand side, it also implies that entering lenders are able to identify the most promising existing clients.

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 observed absence of increase in drop out among clients of the incumbent lender indicates that, although Uganda has no formal mechanisms for the sharing of information, 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 neighbourhoods. 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 existing informal information sharing networks are not able to overcome the problem of identifying a borrower's total outstanding indebtedness. Interestingly, our results indicate that clients in districts with higher education levels behave as if local information sharing were better. Asymmetric positive information, then, may present a problem that requires a more formal mechanism for information sharing than now exists in the country, such as a credit bureau.

In conclusion, the results of this paper show that increased competition among MFI lenders calls upon institutional innovations for information sharing on client indebtedness levels if declining repayment rates are to be avoided. This is necessary to allow proper assessment of risk under multiple loan-taking. The general equilibrium effect of deeper credit markets combined with information sharing through credit bureaus should thus allow to transform increasing competition among lenders into a gain in repayment performance and downward pressure on interest rates to the benefit of MFI clients.

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Table 1. Hypotheses on the impact of competition according to the degree of information sharing

Degree of information sharing	Hypothesis	Predicted impact of increasing competition on Repayment	Dropout
No information sharing	H1: Enforcement costs	Worsens	Increases
Perfect positive and negative information sharing	H2: Reputation	Improves	Increases
Only negative information sharing	H3a: Absence of bad reputation	Improves	Weakly increases
	H3b: Double-Dipping	Worsens	Unchanged
With or without information sharing	H4: Financial Deepening	Improves	Unchanged

Table 2. Competition to the incumbent FINCA groups

Averages	Urban groups 1997	Urban groups 2001[a]	Rural groups 1997	Rural groups 2001[a]	t-test of rural-urban difference 1997	t-test of rural-urban difference 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		

*=95% significance, **=99% significance.
[a] t-test of differences between 1997 and 2001

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		Solidarity Group		Village Bank	
		Coeff.	p-value	Coeff.	p-value	Coeff	p-value
Group-level characteristics							
Urban = 1	0.49	0.02	0.53	0.05	0.22	-0.19	0.00
Presence of commercial bank = 1	0.38	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.

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

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.
Numbers in bold are significant at the 10% level.

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

Numbers in bold are significant at the 10% level.

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

Numbers in bold are significant at the 10% level.

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; $R^2 = .53$
Numbers in bold are significant at the 10% level.