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Loan repayment performance of clients of informal lending institutions

Do borrowing histories and dynamic incentives matter?

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Abstract

Purpose – The purpose of this article is to examine the effects that dynamic incentives and the borrowing histories of clients of informal lending institutions have on loan repayment performance, in particular, the extent to which multiple borrowing and progressive lending affect the repayment of loans.

Design/methodology/approach – The paper uses a data set of 835 borrowers drawn from an informal lending institution in Tanzania. Descriptive analysis and econometric models are used to test the developed hypotheses.

Findings – Whereas clients with multiple loans are associated with poor loan repayment, progressive lending contributes to positive repayment outcomes. Multiple borrowers face increased debt levels and thereby an increased inability to meet their repayment obligations; in contrast, progressive lending by building up a lender–client relationship helps clients to obtain higher loans with a minimum amount of screening.

Research limitations/implications – This was a cross-sectional study based on a sample of individual clients drawn from a single institution. However, since the majority of clients had also taken out loans with other financial institutions, the sample is considered to be representative.

Practical implications – A client's past repayment performance and multiple loan history must be assessed so that multiple borrowing can be prevented and credit absorption capacity can be gauged more accurately. The repeated nature of the interactions and the threat to cut off any future lending (if loans are not repaid) can be exploited to overcome any information deficit.

Originality/value – This study was conducted in a context in which the degree of information sharing was low and institutional access to clients' credit histories was limited. It contributes knowledge on how lenders minimise the risk flowing from the ex ante information gap and moral hazards arising from the ex post information gap.

Keywords Informal lending, Loan repayment performance, Multiple borrowing, Progressive lending

Paper type Research paper



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1. Introduction

One of the overriding questions regarding access to finance is whether a client's borrowing history and dynamic incentives (or progressive lending) influence loan repayment performance. Studies on clients' histories and the use of the progressive lending approach to

reduce ex post risks faced by lending institutions have received some positive attention (Charles and Mori, 2016; Arora, 2014), especially in a context where information sharing among lenders is limited and borrowers have the opportunity to borrow from multiple sources (Ibtissem and Bouri, 2013). It is well documented that, due to the growth in multiple borrowing practices and the difficulty of tracking clients' histories (Charles and Mori, 2016), microfinance institutions (MFIs) have attempted to use dynamic incentives to reduce ex post risks associated with their clients (Arora, 2014). The dynamic incentive mechanism boils down to the threat of not refinancing a borrower who defaults on her debt obligations (Ibtissem and Bouri, 2013). This incentive has a strong impact on the behaviour of microfinance borrowers because their needs for future loans to develop their businesses are considerable. However, there is little empirical literature that indicates how multiple borrowing and progressive lending actually influence loan repayment (Charles and Mori, 2016).

Because it is difficult to access formal financial services provided by banks in Sub-Saharan Africa, and in particular in Tanzania (IFC, 2013; FSDT, 2013), a considerable number of borrowers take loans from informal moneylenders (Van den Berg *et al.*, 2015). Indeed, both households and companies are increasingly borrowing from informal moneylenders[1] (e.g. private moneylenders, small businessmen) who typically offer more flexible conditions than formal financial institutions (FSDT, 2013). The exclusion of potential borrowers from traditional banking can be explained by the high level of asymmetric information, such as adverse selection and moral hazard, which raises problems of screening, monitoring and enforcement (Ibtissem and Bouri, 2013).

Essentially, informal lenders are competing with formal financial institutions by offering the same or similar products and fighting fiercely to increase their market shares. As a result, a new trend can be observed: cross-borrowing/multiple borrowing from various financial institutions (Pearlman, 2014). The advantage of multiple borrowing is that clients can borrow from several sources, but it may lead to over-indebtedness and a failure to repay loans, threatening the stability of financial service providers (Pearlman, 2014). Furthermore, growing competition among lenders decreases information sharing among them (Ghosh and Debra, 2001) and enables borrowers to take out several loans, which weakens their repayment incentives (Aghion and Morduch, 2005). When the number of financial institutions to which borrowers can apply for credit goes up, the borrower–lender link weakens, creating incentives for borrowers to engage in potentially harmful behaviour, such as multiple borrowing (Casini, 2009). This is likely to reduce borrowers' repayment incentives since the threat of being denied access to further credit in case of default is reduced.

Although there have been a few studies showing that multiple borrowing has a positive influence on loan repayment and the sustainability of lenders (Krishnaswamy, 2007), most studies (Mpogole *et al.*, 2012; Rhyne, 2001; Wisniwski, 2010) indicate that it has mainly a negative influence. However, the general impression here is that multiple borrowing is neither a necessary nor a sufficient condition for repayment problems. In addition, in developing countries, most informal lending institutions serve clients with unknown credit histories, as opposed to formal credit markets in developed countries, where the problem of multiple borrowing is largely overcome by strong legal enforcement, in combination with the availability of some kind of information database for lenders. Even though there are a few examples of information sharing through the creation of credit bureaus (Casini, 2009), the Tanzanian experience shows that the amount of information available to informal lenders is generally scarce.

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Informal financial institutions rely on soft information obtained from their clients to reduce the risk of adverse selection and moral hazards (Charles and Mori, 2016). To a large extent, *informal* lenders use *informal* sources of information (such as personal knowledge) to assess the credit history of a potential borrower. Accordingly, one of the strategies used by informal lenders is to begin by lending a small amount and then increase the loan size (i.e. progressive lending). Their main assumption is that this helps them gain access to more soft information on their client's ability to repay the loan and improves their ability to reduce adverse selection of borrowers (Boot and Thakor, 1994).

Whenever borrowers and lenders are tied in a reciprocal relationship, it is possible to lend money without incurring important financial losses (Casini, 2009). This implies that, even in the case of multiple borrowing, progressive lending is likely to give the lender access to important information about the client and minimise the risk caused by the ex ante information gap (hidden information), and/or the moral hazard arising from the ex post information gap (hidden actions after the loan has been taken and invested), ultimately improving loan repayment performance.

However, we lack empirical evidence about the extent to which the financer is likely to reduce the risk of non-repayment through progressive lending (in the context of informal lending). The underlying question is whether the financer is better able to prevent default thanks to a prior lending relationship with the client. Given the research gap in this area, this is still a matter of interest to academics.

The main goal of this paper is therefore to examine the effects that clients' borrowing histories and dynamic incentives have on loan repayment performance within the informal lending sector. As regards credit history, we wish to know whether the client has previously borrowed from another lender (i.e. has several loans) and/or from the same institution (repeat borrowing). In particular, we examine:

- the relationship between multiple loans and loan repayment performance; and
- the relationship between repeat borrowing and loan repayment performance.

The empirical setting of the study is Tanzania. Reform of the Tanzanian financial sector commenced in the early 1990s, aiming to encourage private players to enter the financial sector and increase competition in the financial industry, as well as the number and types of both formal and informal financial institutions (FSDT, 2013). Despite the expansion of the financial sector and a rapid increase in the number of banks, from 3 in 2000 to 57 in 2014, only 18.4 per cent of the population is covered (FSDT, 2013). Over 5.4 million people use semi-formal and informal financial services in Tanzania, largely to obtain credit.

Semi-formal providers are not regulated by the central bank but they may obtain a license that allows them to offer selected financial services (FSDT, 2013). They include savings and credit societies, non-government organisations, MFIs and financial companies. Informal service providers are neither legally constituted nor regulated by any institution. These providers deliver savings, credit and micro-insurance services. Some of these providers include rotating savings and credit associations, accumulated savings credit associations, burial associations (micro-insurance services), moneylenders, self-help groups, village community banks and others.

In 2014, the authors conducted a survey of individuals who had borrowed from an informal lending institution in Tanzania; it showed that clients with multiple loans were associated with poor loan repayment, but progressive lending, on the contrary, was associated with positive repayment outcomes. Accordingly, we will contribute to the ongoing debate on how lenders minimise the risk caused by an ex ante information gap, and/or moral hazards arising from the ex post information gap.

The paper will proceed as follows. Section 2 presents the theoretical perspective and empirical literature. Section 3 covers the study methodology, with emphasis on the data and sampling, variables and models. Section 4 presents the key findings. Section 5 discusses the findings and their implications. Section 6 identifies areas for further study.

2. Theoretical perspective and empirical literature

Essentially, the literature on loan repayment performance argues that non-performance of loans either results from an adverse selection of clients or from moral hazards. The issues of adverse selection and moral hazards stem from the information gap between borrower and lender. Information asymmetries may lead to adverse selection (i.e. the allocation of loans to borrowers with undesirable characteristics) and moral hazard (the borrower behaves in an undesirable way) (Kono and Takahashi, 2010; Reito and Spagano, 2014). Both of these problems will increase the proportion of borrowers who do not repay their loans on time. A borrower might also have enough money to repay their loan but still decide to default for strategic reasons.

The challenges of adverse selection and moral hazards are connected with multiple borrowing. On the contrary, one would expect that progressive lending would enable lenders to minimise the information gap and confront both challenges. In view of this, the following sub-sections will cover multiple borrowing and progressive lending, reviewing both theoretical and empirical analyses of these issues.

2.1 Multiple borrowing

The rapid expansion and diversification of microfinance services have been accompanied by a new trend: individuals borrowing from several MFIs (Mpogole *et al.*, 2012). Indeed, there is ample evidence of multiple borrowing by MFI clients among various sources of informal and semi-formal lending, ranging from moneylenders and private financers to formal MFIs (Mpogole *et al.*, 2012). The literature has proposed two different explanations for this (McIntosh *et al.*, 2003). The first is that, ex post, i.e. after the loan has been taken and invested, some unexpected, negative shock may hurt the borrower and their business, making it impossible for them to repay the loan. Thus, a borrower may well decide to take out a second loan to repay the first, dangerously increasing their level of indebtedness. A second motivation for multiple borrowing is that the loan offered is too small to cover the borrower's specific needs. To obtain the missing capital, the client might find it more convenient to hide their real level of indebtedness and ask for additional loans from different institutions (Casini, 2009). This can lead to an incorrect risk assessment of the client and, as a consequence, to non-repayment of the loan.

Empirical research has yielded some contradictory results about the reasons for, and the likely impact of multiple borrowing. For example, Aghion and Morduch (2005) observed that no well-known study so far had robustly demonstrated a strong impact of microfinance programmes on overlapping, or shown that defaulting on loans was caused by multiple borrowing. Yet, Chaudhury and Imran (2002) found that there had been an increasing number of households in Bangladesh taking out loans from different MFIs and that their repayment rates were declining. Similar incidences have been reported in Bolivia, Bosnia and Herzegovina, Morocco, Nicaragua and elsewhere (Rhyne, 2001; Wisniwski, 2010). Wisniwski (2010) found a correlation between over-indebtedness (as measured by the number of loan agreements) and risk of default (as measured by the number of loans in arrears for 30 days or more). Individuals involved in a larger number of loan agreements were at a higher risk of defaulting. Vogelgesang (2003) found that multiple loans frequently triggered borrower defaults in Bolivia and also resulted in high

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interest rates, at least for some clients. Guha and Chowdhury (2013) published a model of microfinance competition that showed that taking out more than one loan was always inefficient and always led to default. Indeed, most of these studies suggested that borrowers resorted to multiple borrowing so as to have access to larger loan sizes, smooth the timing of repayments or maintain their cash flows.

McIntosh *et al.* (2003) provided a summary of the impact of multiple loans in Uganda, where they are widely recognised as a problem for microfinance lenders. The results suggest that clients do not abandon the incumbent lender but rather take out several loans, thus adversely affecting repayment to the incumbent.

Morduch and Rutherford (2003) established that some clients chose multiple memberships of MFIs for the option value of having a reliable permanent source of credit, especially if they had severed relationships with moneylenders. Mpogole *et al.* (2012) analysed incidences of multiple borrowing, reasons for multiple borrowing and the impact of multiple borrowing on loan repayment in Tanzania. Their results showed that the prevalence of multiple borrowing was very high. Over 70 per cent of 250 microfinance clients had at least two loans from different MFIs running at the same time. About 16 per cent had also borrowed from individual lenders. Major reasons given for multiple borrowing were insufficient loan sizes offered by MFIs, loan recycling and family obligations. Over 70 per cent of respondents had problems repaying their loans because of multiple pending due dates.

Although most studies have indicated that the impact of multiple borrowing is negative, a few studies contradict this notion. For instance, according to Khalily and Faridi (2011), multiple borrowing is not a major problem. Poor households always allocate and reallocate resources in response to different shocks. Multiple MFI membership or borrowing benefits these households by minimising the degree of idiosyncratic or covariate shocks. One strategy is to accumulate a large amount of savings to cope with shocks. Krishnaswamy (2007) carried out interviews with 21 MFI clients who were identified as multiple borrowers in their data set. They found these multiple borrowers to be more business savvy than single borrowers and to run more undertakings. A higher percentage of multiple borrowers said that amassing more credit was a completely voluntary decision and that they used the second loan for investment purposes. The study also found that multiple borrowers had equally good or better repayment records than single borrowers.

McIntosh *et al.* (2003) also argued that increased competition among MFI lenders and increased levels of multiple borrowers was a positive development for lenders because it called upon institutional innovation as regards information sharing on clients' indebtedness levels. Information sharing is a necessity to allow proper risk assessment in multiple loan-taking cases. Thus, the general consequence of combining deeper credit markets with information sharing through credit bureaus should be that increasing competition among lenders improves repayment performance and puts downward pressure on interest rates – to the benefit of MFI clients.

Existing literature shows that there are indeed some contradictory results as regards the effect of multiple borrowing on repayment performance. However, these may be due to different contextual factors. In a context where access to finance is low and mechanisms for sharing client information are limited, the effect of multiple borrowing can be acute. In addition, it may largely decrease borrowers' welfare and reduce the sustainability of the lender. Lenders need to sustain their operations, and the major part of their income comes from the interest on loans. As long as the client pays, the lender will not worry about whether he/she has loans with any other lenders. In this regard, we hypothesised that:

H1. There is a negative relationship between multiple borrowing and repayment performance.

2.2 Progressive lending

The idea that loan repayment can be self-enforced in a context of repeated interactions was first formalised by Eaton and Gersovitz (1981) and further developed by Grossman and Van Huyck (1988). Drawing on these studies, some theoretical and empirical research on progressive lending was conducted, especially in the context of the group-lending model. Modern literature on financial intermediation has also extended the discussion to the role of "relationship lending" in the banking sector. Relationship lending is a situation where, through progressive lending, lenders develop close relationships with borrowers over time. Such proximity between lender and borrower has been shown to facilitate monitoring and screening, and can overcome asymmetric information availability.

In addition, the lender can influence the borrower's behaviour by threatening to exclude them from future loans if repayments are not made on time, and/or promise larger loans in the future as a reward for punctual repayments. Repeat/progressive lending can also mean that, at the beginning, the borrower only receives a small amount repayable over a short period; then, year after year, loan size increases as the borrower demonstrates their reliability and trustworthiness (Aghion and Morduch, 2005). This enables the lender to "test" borrowers by means of small loans at the start, thus screening out the worst prospects before taking any additional risks by expanding loan size. It also increases the opportunity cost of non-repayment in that the borrower becomes increasingly fearful about being denied access to credit in the future, since non-repayment would trigger their being cut off from a growing stream of future loans. The main challenge, however, is that lenders are uncertain about the extent to which borrowers value future loans.

In view of this, relationship lending usually refers to cases where the financer provides repeated lending and other financial services and, at the same time, collects borrower-specific information. Drawing a parallel with moneylenders' practices (Han and Greene, 2007), in the absence of collateral, informal lenders develop repeat relationships with borrowers and prefer their existing borrowers not to obtain any new loans from other lenders (Perry and Coetzer, 2009). The proximity between lender and borrower facilitates ex ante screening and ex-post monitoring; consequently, ex-ante and ex-post information asymmetries between borrower and lender depend on the strength (length, breadth or intensity) of the lending relationship (Kislat *et al.*, 2013; Boot, 2000). This strength as measured by the length or breadth of the lender–borrower relationship, or whether the lender is the borrower's main or only lender may be viewed as an inverse proxy for the degree of asymmetric information (Han and Greene, 2007). This is because the lender gathers additional borrower information as the relationship deepens (Degryse and Van Cayseele, 2000). This argument is relevant in informal lending, in which lenders may lower collateral requirements if they receive a reference from an existing client and/or if they have already transacted with a client several times. In some cases, informal lenders offer uncollateralised loans based on their experience and their relationship with a client. While this approach can potentially increase access to finance and address the challenge of collateral provision, its effectiveness has not been tested in an environment with a high degree of information asymmetry.

There are additional reasons for conducting further research on progressive lending. For instance, if several lenders are available, the threat of refusing any further financing loses its bite because borrowers who default on a loan can always turn to another lender (assuming

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that the other lender has poor information on their credit history, a common situation in the absence of credit bureaus). Another friction point is that, as loan size increases, default becomes increasingly attractive, especially if the relationship between lender and borrower has a clear end date.

Studies on repeat and progressive lending have been conducted in different parts of the world, mostly in the Middle East; some have demonstrated the existence of progressive lending across various countries. For instance, Robinson (2001) described 18 loan programmes in different countries and showed that 12 of them used progressive lending, with amounts rising to a maximum of 200 per cent of the initial loan. Aghion and Morduch (2005) showed that Grameen Bank provided an increasing series of loans to its clients. It has also been established that progressive lending overcomes moral hazards as it incentivises borrowers to repay. Ghosh and Debra (2001) applied a dynamic incentives argument to the case of unsecured microcredit loans in situations where lenders did not communicate and borrowers' repayment histories were not publicly observable. They found that if a borrower repaid an initial old loan to a lender, then the lender would be willing to provide a new loan to the borrower. Accordingly, the incentive to repay stemmed from the fact that there was just one lender who had better information about the returning borrower and was willing to provide a better loan than was available elsewhere.

The reviewed literature shows that the concept of progressive lending has largely been analysed in the context of group lending with a strong focus on microloans. This study borrows the concept but examines it from an individual client's perspective, with initial loan amounts higher than those offered in group lending. Unlike other studies, we also examined the effect of progressive lending not only in terms of loan size increase but also in terms of the frequency of client–lender interaction, to see whether that would affect repayment performance. The study therefore tested the following hypotheses:

H2a. There is a positive relationship between repeat clients and repayment performance.

H2b. There is a positive relationship between repeat clients with higher loan amounts and repayment performance.

3. Methodology

3.1 Data and sampling

Our sample consisted of 835 individual borrowers drawn from an informal lending institution in Tanzania. The company was incorporated in 2010 to provide financial services both to enterprises and individuals; it relies on the relationship-lending approach, with an emphasis on the character and reliability of its clients. It collects information on clients from various sources, such as suppliers of products, personal guarantors and referees, so as to enable the client to obtain a loan quickly, unlike what normally happens with traditional lenders. It offers loans ranging from $100 to $30,000 depending on available collateral, the character of the client, their ability to repay the loan and their relationship with the company.

The sample was drawn from a list of 2,000 clients using a simple random table. The data were captured through a semi-structured questionnaire, which covered the demographic background of the clients, the intended use of loans, the collateral offered, guarantorships and references. While the data were collected in the course of loan applications, the loan repayment performance of each client was measured using the company's records after the end of the loan agreement. It is well known that the limitations of this method (collecting

information from a sample drawn from only one institution) may introduce bias. However, since the unit of analysis was the individual client and over 70 per cent of the clients studied had loans with other institutions, we may consider that the sample is representative of informal financing clients.

3.2 Variables

3.2.1 Dependent variable. As explained earlier, the analysis focused on the relationship between multiple borrowing, progressive lending and repayment performance. According to the banking literature, *repayment* can be measured in terms of the rate at which the portfolio is at risk of being overdue after 30, 60 or 90 days, or as the amount that has actually been paid against the amount that has become due (Kurosaki and Khan, 2012). In line with the standard in microfinance research, we measured repayment as a binary variable equal to 1 if the customer had (by the time of data collection) repaid their whole loan and 0 if they had not (Charles and Mori, 2016) – the higher the repayment rate, the better the institution's performance.

3.2.2 Independent variables. The study adopted an approach presented by Khalily and Faridi (2011): it measured *multiple borrower* as a binary variable equal to 1 if the client had borrowed from several lending institutions and 0 if they had not taken out any loan elsewhere. Favouring repeat clients is a strategy used to increase the repayment rate and customer retention (Rosenberg and Czepiel, 1984). Repeat clients are indeed regarded as the best clients since they help mitigate risk and the unknowns that come with new clients (Rosenberg, 2009). We defined a *repeat client* as a client who had previously borrowed from the institution under study, measured as a binary variable equal to 1 if they had done so and 0 if they had not. *Repeat frequency* was measured as the number of times the client had taken out a loan with the institution. The fourth variable was *increased loan*, measured as a binary variable equal to 1 if the repeat client had received a higher loan amount than the previous time, and 0 if the amount was the same or lower.

3.2.3 Control variables. The study included a number of control variables that may be correlated with the repayment performance of MFIs. The first was *gender*, defined as a binary variable that equals 1 if the customer was female and 0 if male. Many studies have evidenced that women outperform men in terms of repayment to lending institutions (Johnson, 2005). Therefore, it is important to control for gender so that the effects can be seen from other perspectives. *Marriage* was a second control variable, measured as a binary variable equal to 1 if the customer was married and 0 if they were not (Hermes *et al.*, 2005). Since loans are taken out for various purposes depending on the occupation of the borrower, it was also necessary to control for *occupation*, measured as a binary variable equal to 1 if the client was employed by an organisation and 0 if self-employed.

3.3 Estimation methods

The empirical analysis focused on testing whether multiple borrowing and progressive lending played any role in repayment performance. The analysis was carried out as follows. First, we ran a descriptive analysis consisting of summary statistics and correlation tests. The objective was to understand the data set and the nature of the variables by examining means, standard deviations and initial associations among the variables included in the study. Next, we conducted an econometric analysis to test the two stated hypotheses. Due to the fact that the dependent variable was binary in nature, probit regression was used (Hair *et al.*, 2008). Each independent variable was tested individually, together with the client-specific control variables.

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4. Findings

4.1 Summary statistics

Table I reports the means, standard deviations and minimum and maximum values across the sample for a number of key variables. We can see that only 42 per cent of clients repaid their loans in full; 71 per cent of clients had loans with other financial providers. This percentage is high and has two possible implications. One implication could be that a single loan was not sufficient to finance their projects and therefore they were compelled to opt for multiple loans. The second could be that clients borrowed from other providers to repay existing loans. The data also show that 68 per cent of clients were repeat clients, supporting the view that progressive lending is prevalent in informal lending institutions. This view is further supported by the fact that clients had had an average of four repeat loans, with a maximum of 21 repeats. Of the repeat clients, 58 per cent took out repeat loans in higher amounts than previously. This implies that some clients took out repeat loans in the same amount or even smaller amounts, depending on their needs.

The results also show that 81 per cent of clients were married, while only 27 per cent were female. The low number of women could be explained by the fact that the company studied here offers individual loans, whereas women prefer group lending (Chowdhury and Mukhopadhaya, 2014). Finally, we found that 90 per cent of clients were employees and not fully self-employed. However, the loans offered were not typical salaried loans, given that clients were neither underwritten by their employers, nor did they repay their loans through salary deductions. Although most clients were employed, additionally they were also running their own businesses.

4.2 Correlation results

Table II presents the correlations among the variables included in the study. Starting with the correlations between the dependent and independent variables, we show that repayment was negatively associated with multiple borrowing. This lends preliminary support to our first hypothesis, namely, that multiple borrowing decreases the rate of repayment: clients who borrowed from several providers faced difficulties in meeting their repayment dates.

On the other hand, repeat clients were significantly positively associated with repayment. A similar result was evidenced in the association between repeat frequency and repayment. We also demonstrated a positive association between repayment and the binary variable for a repeat client receiving an increased loan amount, indicating that this practice encouraged repayment. These results provide initial evidence that

Table I.
Summary statistics

Variables	Mean	SD	Min	Max
Dependent variable				
Repayment	0.42	0.49	0.00	1.00
Independent variables				
Multiple borrower	0.71	0.46	0.00	1.00
Repeat client	0.68	0.47	0.00	1.00
Repeat frequency	4.00	3.76	1.00	21.00
Increased loan	0.58	0.37	0.00	1.00
Control variables				
Marriage	0.81	0.39	0.00	1.00
Gender	0.27	0.44	0.00	1.00
Occupation	0.90	0.29	0.00	1.00

No.	Variables	1	2	3	4	5	6	7
1	Repayment							
2	Multiple borrower	−0.07**						
3	Repeat client	0.06*	0.10***					
4	Repeat frequency	0.07**	0.12***	0.53***				
5	Increased loan	0.08*	0.09**	043**	0.52**			
6	Marriage	−0.02	0.07**	0.04	0.04	0.04		
7	Gender	0.07**	−0.03	0.02	0.01	0.02	−0.16***	
8	Occupation	−0.02	−0.01	0.04	0.06*	0.04	0.01	−0.06

Notes: Significance levels: *$p < 0.10$; **$p < 0.05$; ***$p < 0.001$

Table II.
Correlation results

progressive lending is associated with a positive impact on lender performance. As has been argued in the literature, progressive lending supplies clients with a stream of capital, allowing them to grow their businesses and improve their loan repayment rate (Egli, 2004).

In terms of control variables, only women were significantly positively associated with repayment. Despite the fact that there were only a few women in our data set (Table II), they led the way in terms of repayment. This is in line with most of the microfinance literature, which indicates that women are better at repaying loans than men (Mori *et al.*, 2015).

We found some correlations among the independent variables, albeit of a weak type. The highest was the correlation between *repeat client* and *repeat frequency*. This was expected since *repeat client* only handled whether the client had gone through multiple loan cycles or not, while *repeat frequency* examined the frequency of the cycles. In our estimation, we ran each independent variable separately. In addition, the literature suggested that coefficients would need to be greater than 0.80 for multicollinearity to be a problem (Hair *et al.*, 2008). Since none of our correlations were of this magnitude, we may argue that there is no multicollinearity issue.

4.3 Regression results

Table III provides the results of the probit regression in which each independent variable was regressed separately (Models 1-4) and then all independent variables were regressed together (Model 5). Model 1 provides the results for *H1*, which stated that "There is a negative relationship between multiple borrowing and repayment performance". The results show that multiple borrowing had a negative effect on repayment (coefficient −0.31 with $p < 0.05$). Similar results can be observed in Model 5, in which all independent variables were regressed together (coefficient −0.25 with $p < 0.05$).

This is in line with most of the literature, which suggests that multiple borrowers have higher debt levels and hence are unable to meet their repayment obligations (Mpogole *et al.*, 2012; Wisniwski, 2010). If the negative effect of multiple borrowing is not managed well, this may have a negative impact on the lender in the long term, especially with regards to institutional sustainability.

Models 2 and 3 present the results for *H2a*, which stated, "There is a positive relationship between repeat clients and repayment performance". Model 2 (repeat client) was significant, with a coefficient of 0.25 at $p < 0.10$, and Model 3 (repeat frequency) had a coefficient of 0.37 with $p < 0.05$. The Model 3 results showed that frequency of repetition had a significantly positive effect on the repayment rate. This was also evidenced in Model 5, where frequency

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Variables	Repayment Model 1	Model 2	Model 3	Model 4	Model 5
Multiple borrower	−0.31**				−0.25**
Repeat client		0.25*			0.08
Repeat frequency			0.37**		0.09*
Increased loan				0.15**	0.09*
Marriage	0.03**	−0.33	−0.36	0.02	−0.02
Gender	0.11	0.31**	0.09	0.19**	0.18*
Occupation	−0.35	−0.05	0.06	−0.03	−0.04
Pseudo R^2	0.11	0.09	0.08	0.09	0.16
Observations	835	835	835	612	514

Table III.
Regressions results

Notes: Significance levels: *$p < 0.10$; **$p < 0.05$

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of repetition again had a positive effect on the repayment rate (coefficient 0.09 at $p < 0.10$). *H2b*, stating that "There is a positive relationship between repeat clients with higher loan amounts and repayment performance", was tested in Model 4. The results were significant, with a coefficient of 0.15 at $p < 0.05$ showing that higher loan amounts were associated with better performance.

These results have considerable implications both for clients and lenders. As regards clients, progressive lending helps them to obtain higher loans with minimum screening, by building a relationship with a lender (lender–client relationship). The lending is further perceived as an implicit conditional agreement that is reserved for "good" repeat clients. The effects are also significant for lenders. First of all, they benefit, from zero adverse selection costs and minimal moral hazard costs. Second, progressive lending creates greater sales opportunities and interest income, thanks to larger loans with low transaction costs.

The results concerning the control variables showed little significance for repayment performance. We found married people to be associated with a positive repayment effect, in Model 1, with coefficient 0.03 at $p < 0.05$. This may be because married people do not want to have to tell their spouses that they have not been able to repay their loans. In line with most of the microfinance literature, Models 2 and 4 showed women to be associated with a better repayment rate (coefficient 0.31 at $p < 0.05$ for Model 2 and coefficient 0.18 at $p < 0.10$ for Model 4).

5. Discussion and implications

For quite a long time, microfinance research has attempted to establish various strategies that could reduce the risk of loan non-repayment caused by adverse selection and moral hazards. Although the debate is still ongoing, several strategies, such as joint liability and progressive lending, have received some attention in the literature. Yet multiple borrowing appears to be one of the most serious challenges faced by microfinance, especially in the context of a developing economy where access to information about clients is limited. Our paper informs the debate on loan repayment performance by assessing the extent to which clients' borrowing histories and dynamic incentives may influence it. Overall, we demonstrated that over two-thirds of clients in the sample had several loans, while the same proportion of clients had received repeat loans. It was also evident that most of the repeat clients had received higher loan amounts progressively. The findings are consistent with previous literature indicating that multiple borrowing is associated with poor loan repayment performance (Vogelgesang, 2003), whereas progressive lending improves it (Robinson, 2001).

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Contrary to demand-side studies, which reveal that multiple borrowing does not increase the risk of default (Khalily and Faridi, 2011; Krishnaswamy, 2007), our paper supports the view that multiple borrowing contributes to a higher default rate. Given that most previous studies showing the negative effect of multiple borrowing were derived from typical MFIs that offer microcredit, it is interesting to observe similar findings in an informal lending institution offering relatively large loan amounts mostly to employees. This implies that, as in the case of multiple membership of traditional MFIs, multiple borrowing from informal lenders weakens the capacity of the borrowers to repay their loans.

While from the client's point of view, taking out several loans may be for investment purposes, and this could be healthy for their business (Krishnaswamy, 2007), our findings (based on the supply side) show that informal MFIs are likely to become unstable if they lend to clients who have several loans. Banks offer loans to clients according to their ability to repay, but in many cases, borrowers resort to informal lending institutions for additional loans, which may lead to over-indebtedness. Indeed, informal lenders, who are competing for clients, are likely to recruit customers with an insufficient capacity to repay their loans, and this may contribute to poor loan repayment performance. In addition, most clients take additional loans from informal financers only after all borrowing options through their employers have been exhausted (Charles and Mori, 2016).

Our study was conducted in a context in which the degree of information sharing was low, while technological and institutional access to clients' credit histories was limited. This means that informal lenders were unable to determine the risk exposure of loan applicants. As a result, the danger of clients being adversely selected was high. Contrary to traditional microfinancing, where joint liability helps to reduce the default rate, informal financers target individual borrowers. As a result, enforcing loan repayment can become a challenge, especially if a borrower moves to a new location. This is why many informal lenders opt for progressive lending as a strategy to reduce default risk.

Our empirical findings demonstrate that progressive lending is associated with positive loan repayment performance. Indeed, the rationale for progressive lending is supported by two lines of arguments. First, progressive lending helps the lender to gather more information about the client; this would not have been accessible through screening the client, which is the traditional approach, and it is likely to reduce the adverse selection problem. Second, progressive lending can reinforce dynamic incentives because a borrower who defaults on their current loan gives up the option of obtaining a larger loan, or several, in the future (Ghosh and Debra, 2001). As long as a borrower is sufficiently perseverant, threatening to limit their access to future loans (either fully or partially) acts as a strong enough deterrent to defaulting. Overall, it can be argued that any lender, whether formal or informal, will study a borrower's repayment history and with every successful repayment will update their assessment of the borrower's perseverance. This is in line with Ghosh and Debra (2001), who argue that when lenders do not communicate effectively with each other and borrowers' repayment histories are not publicly observable, progressive lending can help to improve loan repayment rates.

Since informal lenders are competing with banks, and they do not know each other, progressive lending appears to be an adequate option for reducing both adverse selection risks and moral hazards. In Tanzania, for instance, where credit bureaus exclude informal lenders, progressive lending has helped to improve loan repayment performance. This, however, depends on the extent to which borrowers value future credit and the length of loan cycles. Most informal lenders have short loan cycles, which enable clients to pay off their initial loans and gain access to larger amounts. For

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instance, in our case study, some clients had accessed loans 16 times within a period of five years. The trend was to increase the amount loaned in successive cycles. Then again, MFIs must ensure that they offer loan sizes that are compatible with their clients' ability to repay, rather than increase the amount according to the loan cycle.

Our study makes a number of contributions to the existing literature. First, by using data related to an informal institution, we generated results supporting the findings of studies whose data had been drawn from traditional MFIs. The results show that, while increased competition can lead to an increase in the number of providers of finance and a decline in interest rates, the total effect appears to be negative. Second, we demonstrated that multiple loans do not only come about through membership of several MFIs, but also through informal lenders, despite the lack of joint liability in the latter case. This clearly shows that both ex-ante and ex-post risks might be more prevalent in the case of informal lending, mainly owing to information asymmetry. Given that mechanisms for monitoring multiple borrowing are lacking, MFIs will most likely experience a deteriorating portfolio quality, weakening their financial performance. Third, our study argues that in a context where information sharing amongst financers is limited, progressive lending remains a viable strategy that may be used to increase dynamic incentives to repay loans.

In terms of policy implications, it can be argued that information sharing between formal and informal lenders would help minimise overlap in lending to clients. This could be achieved by setting up credit bureaus or clearing houses. More accessible credit information bureaus are needed to monitor multiple borrowing in the microfinance sector and to allow creditworthiness information to be shared among MFIs. If informal MFIs are not accommodated within credit bureau databases, the risk could extend to banks, since there is an increasing tendency for clients to be shared.

It is also important for MFIs to ensure that loans from all available sources are taken into account when screening clients. The past repayment performances and multiple loan histories of these clients must be assessed to prevent multiple borrowing and, also, to gauge credit absorption capacity more accurately.

6. Areas for further studies

Although our paper makes a sizeable contribution to the field, further investigation will be needed. First, the scope of future studies should be expanded by including both formal and informal institutions in data samples. Second, it would be useful to analyse the purpose of multiple loans taken from informal institutions; this would help explain a client's behaviour after borrowing. Third, it would be interesting to analyse the extent to which progressive lending reduces moral hazards, especially when loan size increases with each credit cycle. While MFIs are attempting to apply innovative lending models, it is important to explore other unsecured lending approaches used by informal institutions to ensure that they are sustainable, given their limited access to client histories.

Note

1. Informal finance is a broad concept that encompasses a wide range of financial activities and services that take place beyond the scope of a country's formalised financial institutions and lie outside the reach of financial sector regulation (FSDT, 2013). In our case, "informal finance" means selective banking services offered by institutions that are not recognised as official banks, as well as services offered at the ad hoc level without any formal financial sector regulation.

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