WHAT DRIVES A LONG-TERM RELATIONSHIP IN MICROCREDIT? INSIGHTS FROM A CAMBODIAN MICROFINANCE INSTITUTION

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What drives a long-term relationship in microcredit? Insights from a Cambodian microfinance institution

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This article examines the determinants of the nominal value of loans in microcredit and the factors that drive long-term relationship banking. The dataset is drawn from primary data gathered from 216 randomly selected borrowers in a Cambodian microfinance institution. Analysis is performed using an OLS regression model.

The results confirm positive and significant impacts of real estate assets and loan purposes on the amount borrowed and a negative impact of being single as a civil status.

Long-term relationships are positively affected by: age of borrower and purpose of loan; and negatively affected by female gender.

Contrary to general belief that microcredit is targeted to the "poorest of the poor", a new market segment in microcredit was discovered within which MFI might target low-income/asset backed clients, granting loans on a "sustainable" basis, by applying the fundamental criteria of commercial banking: assessing credit worthiness and loss given default.

Key words: Microcredit, collaterals, loan size, Relationship Banking.

JEL Code: G29, O16, I30.

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1. Introduction

Microfinance Institutions (MFIs) offer poor people access to basic financial services: "*the first goal of MFIs is to reach more clients in the poorer strata of the population, and the second goal is financial sustainability*" (Mersland & Strøm, 2008, p. 663). Ever since the seminal work of Hossain (1988), microfinance has been indicated as a tool in the fight against poverty (Pitt and Khandker, 1998) and even its eradication (Yunus, 2007). The rationale is that improvements in healthcare, nutritional advice and education can only be sustained when households have increased their income, consumption and control of financial resources (Littlefield *et al*. 2003; Khandker, 2005; Morduch, 1999. For contrary findings see Banerjee *et al*. (2010).

A number of (albeit controversial) studies over the past decades have attempted to evaluate the impact of microcredit (measuring, for example, how people's lives would have changed if microcredit had not been granted)[i]. To date however, and to the best of our knowledge, none has examined the determinants of the nominal value of loans and the factors driving long-term bank relationships. This paper attempts to address these deficiencies, and in addition, elucidate the role of collaterals within this context.

For this purpose the study examines the Cambodian Microfinance Institution: Maxima Mikroheranhvatho Co. Ltd. (hereinafter "Maxima").

Cambodia is one of the faster growing economies of South-east Asia. Annual growth in 2011 stood at +6.7% of Gross Domestic Product (GDP). At the same time however it remains one of the poorer countries of the World. Based on GDP *per capita* it is ranked[ii]. at 183th in the World. Economic growth in Cambodia is urban-focused (concentrated on garment production, tourism, and construction industries), with limited linkages to the rural economy. While the incidence of poverty declined from 47,0% in 1994 to 30,1% in 2007, it remains higher (34,7%), in the countryside and almost absent (under 5%) in Phnom Penh province (World Bank, 2006).

The 1999 "Law on Banking and Financial Institutions" and the following government decree for implementation, recognizes three categories of banking institutions: i) commercial banks; ii) specialized banks; and iii) registered or licensed Microfinance Institutions (MFIs). Both registered and licensed MFIs must adhere to a strict set of reserve requirements and accounting practices, most of which depend on deposit base and loan portfolio size. As of December 2010, a Cambodian Microfinance Insititution (2011) reported 25 active members, including 23 MFIs, one Non-governmental organization, and one commercial bank (ACLEDA). The industry's aggregate loan portfolio is heavily concentrated among the largest institutions, with the four larger MFIs (excluding ACLEDA) accounting for over 64,3 percent of the gross loan portfolio.

Maxima, established in 2000 and fully licensed as an MFI in 2004, provides financial services to low income clients. Maxima runs businesses in Phnom Penh and Kandal provinces, it covers 15 districts (out of 193), 79 communes and 262 villages. It has 2,594 active borrowers, which generate an outstanding loan portfolio of about 2.049 million USD, which yield an average loan balance per borrower of about 790 USD[iii].

Maxima sells amortizing and bullet[iv] term loans to co-borrowers[v], groups, and small business enterprises, at fixed interest rates for terms of three different durations (6, 12, and 20 months). Nominal interest rates range between 1.9% and 2.8% per month, depending on the amount borrowed (less than 1.000 USD, between 1.000 and 2.000 USD, more than 2.000 USD) and the mode of settlement (if instalments are settled on householder's home, for example, this would attract an additional spread of 10 basis points).

Loans are categorized according to their purpose: i) agriculture; ii) commerce; iii) services; iv) transportation; v) housing; vi) family consumption and vii) extraordinary items.

The fixed interest rates that Maxima sells loans at are designed to maximise returns to the bank (Stiglitz and Weiss, 1981). Dissatisfied would-be borrowers which can offer to pay higher interest rates (or greater collateral), from the bank's perspective however, such loans are likely to be worse risks than the average loan at the fixed interest rate. In other words Maxima does not discriminate between individuals on the basis of their creditworthiness: rather it sets an average risk on loan portfolios and then decides whether or not to grant the loan or loans.

In order to gain access to credit however, would-be borrowers must first repay all loans previously granted by other banks or MFIs. There is a known sector weakness in this regard in Cambodia arising from a system that allows clients' unfettered access to multiple loans (Hoy and Foelster, 2010). In imposing this condition therefore, Maxima is simply applying client protection principles in the interests of avoiding client over-indebtedness (Forster *et al.*, 2010). Once loans have been negotiated a Maxima credit officer establishes the borrower's repayment schedule by first forecasting the client's weekly cash flows and then fixing the optimal monthly instalment[vi].

Two research questions arise at this point regarding lending activity: what factors affect the amounts borrowed? And what factors affect the establishment of long-term bank relationships?

In attempting to answer these questions this paper hopes to make two contributions to global financial knowledge. First, this study is one of the few attempts to empirically assess the role of real estate collaterals in microcredit: an area in which the dearth of empirical evidence to date has seriously impeded understanding of a critical issue. Second, this study is one of the few based on primary data collected in Cambodia.

The remainder of the paper is organized as follows. Section 2 reviews the theoretical and empirical literature addressing collateral requirements. Section 3 examines the data and methodology used. Section 4 presents and discusses the main findings; and finally, section 5 summarizes the paper and its conclusions.

2. Literature Review

There is a large body of literature on the role of collateral in financial markets (collateralized loan contracts is a standard practice in commercial banking around the world) and this literature tends to be organised into two main threads. One of these deals with the effects of collateral on interest rates (via the effects on default rates) and the other with access to credit.

In their seminal work Smith and Warner (1979), argued the issuance of secured debt lowers the total cost of borrowing. Secured debt in consequence, may even finance positive net-present-value projects that otherwise would not be financed (Stulz and Johnson, 1985). The use of collateral however, can introduce inefficiencies in credit allocation. Banks can under invest in the screening and monitoring of projects financed with secured loans, as collaterals help to reduce credit risk (Manove et al., 2000). Ever since the celebrated work of Stiglitz and Weiss (1981), there has also been an expectation that commercial banks that cannot observe borrower characteristics will have average interest rates on loans higher than the optimal rates would be for safe borrowers, if only the latter could be identified. While few programs require collateral, many have substitutes (Morduch, 1999). In addition, Takahashi et al. (2010) have shown that although collateral ownership is not an important determinant of participation to microcredit programs in Indonesia, relatively wealthier families nevertheless gain access to microcredit.

Even if microfinance to poor people, primarily women, has been the focus of many microcredit programs, however the women's access to credit is substantially restricted by the influence of patriarchal attitudes on lending practices, as shown by Zhao and Wry (2013) study. The authors argue that "gender inequality is an important consideration for understanding the ... focus of MFIs. In the same vein, Blackden and Bhanu (1999) in an African sample study, shows that women receive substantially less than 10 per cent of all credit compared to the total amount of loans lended and only a small portion (1 %) of the total credit reaches the agricultural sector.
In Paraguay likewise, when females access credit, loans to women are smaller than those granted to men for similar activities (Fletschner, 2008; World Bank, 2008; Baydas *et al.,* 1994)[vii]. Simarly, In Cambodia, women face social and economic marginalisation, discrimination, and have very limited access to economic resources (Chhay, 2011).

Multiple lending (e.g. whereby an individual has taken out loans from more than one MFI), is becoming quickly a critical issue, since this practice increase the probability of default. In these cases, MFIs are forced to resort suboptimal actions, including selling the clients' collateral, writing-off nonperforming loans, or bringing the client to court (Hoy and Foelster, 2010). On the contrary, a strong and long lasting relationship lending would tend to protect clients welfare since his/her entire cash flow would be managed by a single MFI.

Several studies assume that the strength of the lender–borrower relationship is an inverse proxy for the degree of asymmetric information (for an overview, see, e.g., Boot, 2000). In particular, a stronger relationship reduces the information asymmetry. As a result terms and conditions in loan contract are more favourable (Boot and Thakor, 1994; Petersen and Rajan, 1995). However, banks might exploit their strong position to gain a rent by requiring more collateral. Empirical research tested this hypothesis using proxies to measure the strength of a bank relationship. If the duration of the relationship is a proxy of this strength, several studies find no significant effects between the duration of bank–firm relationships and the pledging of collateral (Menkhoff *et al*., 2006) or report a positive effect (Hernández-Cánovas and Martínez-Solano, 2006). However, the majority of empirical studies finds a negative relationship (Berger and Udell, 1995; Degryse and Van Cayseele, 2000; Chakraborty and Hu, 2006; Jiménez *et al*., 2006). If measuring the strength of the bank-borrower relationship by the number of banks with which the borrower has transactions (assuming that the more exclusive the relationship is, the stronger the relationship is), empirical evidences are conflicting. Chakraborty and Hu (2006) and Jiménez *et al.* (2006) find a negative relationship, demonstrating that relationships with multiple banks increase the probability of pledging collateral. By contrast, Menkhoff *et al.* (2006), Voordeckers and Steijvers (2006), Hernández-Cánovas and Martínez-Solano (2006) report a positive relationship, suggesting that relationships with multiple banks lower the probability of collateral pledging.

Recalling that Maxima is a profit oriented MFI, who faces the balancing in social and financial performance (Copestake, 2007), according to Roberts (2012), more profit-oriented MFIs seem to offer similar average loan sizes and are slightly more inclined to target women borrowers.

3. Methodology

We seek to investigate how loans are related to borrower's characteristics and/or collateral requirements. The latter is measured by the estimated value of land and house owned by the borrowers. Regarding borrower characteristics, we analyse whether longer relationship banking and his/her intellectual capital positively affects the amount granted (hypothesis 1). By changing a little our perspective, we investigate how the presence of collateral and the purpose of the loan affect a longer relationship banking (hypothesis 2). Thus, in accordance with the literature surveyed above, the following hypotheses will be tested.

H1: *As the length of the bank relationship increases (e.g. the lower the information asymmetry) and the higher the borrower's intellectual capital, the higher the amount granted by the MFI*.

H2: *Longer bank relationships depend on repeated financial needs: transportation, agriculture, trading and services require revolving credit facilities (e.g. a higher number of repeated loans).*

3.1 Sample design and data collection

Sample size (N) was determined by the following formula (Grameen Foundation, 2008, p. 64):

$$N = \left[\frac{\left(Z^2 xPx(1-P)xD\right)}{E^2} \right]$$

where:

Z: is the z-score derived from the desired confidence interval.

P: is an estimate of the proportion of the population to be measured.

D: in a range 1-10 is a design effect indicating the extent to which the sample deviates from random.

E: is the margin of error.

In order to provide a confidence level of at least a 95% for Maxima's 2,594 active borrowers; and P = 10% with a precision of 5%; and D = 1.5, the target sample size was set at 207.

Borrowers were randomly extracted from this sample using a two-stage ("strata sampling") technique: first, nine of the 15 Districts covered by Maxima were randomly selected; then borrowers were randomly selected from within these nine Districts. Borrowers who had ended their relationship with Maxima more than six months before were excluded from the pick list.

Some data were collected from Maxima records: the amounts borrowed for example; the estimated value of real estate, the number of loans granted; and the purpose of the loans. Other data: the borrowers' capacity to read and write, for example; the age of the borrowers; and the family source of income were directly collected by the second author and a trainee assistant during October and November 2010 via in-house interviewing[viii] of the selected borrowers.

When borrowers were unavailable[ix] interviewers called the Maxima head office from the interview site and requested random extraction of a new borrower from the same village with the intention of conducting the interview that day. This was the "random walk" method. When no other extracted borrowers were available to be interviewed on the same day, a new borrower was extracted and added to the interview list for the following day (IRIS center, 2008, p. 27).

3.2 Measurement of variables

In principle the model presented here allows us to capture the determinants of an outcome y_{ij} (such as the number of repeated loans and the supply of credit) given some borrower characteristics.

Since we focus on loan cycle (how many repeated loans has been granted) and the amount borrowed in the last loan granted, we will assume that y_i is a continuous and non negative variable.

We defined the dependent variables as follows:

$A_{i,d}$ is the logarithm of the amount borrowed in the last loan by borrower *i* in district *d*;

$C_{i,d}$ is the loan cycle granted to household *i* in district *d*;

Independent variables are defined as follows:

"AMOUNT BORROWED" is the dollar value of the last loan granted, either still under amortizing or already fully reimbursed (during last six months).
"LITERACY" is the borrower capacity to read and write.
"AGE_BORROWER" is the principal borrower age at the day of interview.
"GENDER" is a dummy variable which is equal to 1 if gender is male, and 0 otherwise.
"EST_VALUE" is the logarithm of the house and land value owned by the household, estimated by the credit officer at the loan grant date.
"CYCLE" is the number of repeated loans granted to the borrower. In order to be refinanced a borrower must have previously reimbursed the earlier loan. As a consequence, this value is a proxy of the length of the relationship between the MFI and the client.
"P_AGRICULTURE, P_CONSUMPTION, P_TRADING, P_SERVICE, P_TRANSPORTATION, P_HOUSING and P_EXTRAORDINARY" represents the loan purpose declared at the grant date.
"A_AGRI, A_WAGED JOB, A_SMALL BUSINESS" identifies the family source of income.

3.3 Data analysis

Our methodology is based on an ordinary least squares (OLS) method for estimating the unknown parameters in a linear regression model (Hernández-Cánovas and Martínez-Solano, 2006). Following the above hypothesis to be tested, the following models are specified:

$$A_{i,d} = \alpha_0 + \alpha_1 x_{i,d} + \mu_d + \varepsilon_{i,d} \qquad [1]$$

and:

$$C_{i,d} = \alpha_0 + \alpha_1 x_{i,d} + \mu_d + \varepsilon_{i,d} \qquad [2]$$

where:

$A_{i,d}$ is variable AMOUNT BORROWED by household *i* in district *d*.

$C_{i,d}$ is the variable CYCLE by household *i* in district *d*.

$x_{i,d}$ is a vector of household characteristics for individual *i* in district *d*: social (AGE_BORROWER, GENDER, LITERACY), collaterals (EST_VALUE), source of income (A_AGRI, A_WAGED JOB, A_SMALL BUSINESS), and the purpose of the loan (P_AGRICULTURE, P_CONSUMPTION, P_TRADING, P_SERVICE, P_TRANSPORTATION, P_HOUSING and P_EXTRAORDINARY).

μ_d is an unmeasured determinant of y_{ij} that is fixed within a district (distinct from the x_i's in that they affect y_{ij} but not other household characteristics), and

ε_{id} is a nonsystematic error term reflecting, in part, unmeasured determinants of y_{ij} that vary over borrowers such that: $E\left(\varepsilon_{id}^{y} \middle| x_{ij}, \mu_d^{y}\right) = 0$.

Linkages with the economy (other than the source of income) are controlled by a dummy variable related to the district where borrower lives. Yet, village-level indicators, such as presence of a food shop, population, distance to the nearest all-weather road, availability of electricity or gas (Knowles, 2006a e 2006b) or school and health services (Engvall *et al.*, 2007), might be captured by another dummy variable related to the village where a borrower lives. However, given the sample size, we would have lost too many degree of freedom, weakling robustness in the OLS econometric model. Hence, we controlled socio-economic factors only at district level.

Actually, since Maxima's clients lives in just two provinces, closed to each other (Phnom Penh and Kandal), our model does not control for other environmental variables, such as climatic condition, land productivity or fertilizer used per hectare (Mosley and Suleiman, 2007).

Table 1 presents the expected signs in model [1] and [2]:

We check for the presence of heteroskedasticity by using Breusch-Pagan test and White's general heteroskedasticity test and the results indicate that the heteroskedasticity is not a problem.

Table 1 Expected signs in model [1] and [2]

Variables	**Model [1]**	**Model [2]**
Cycle	+	
Age borrower	-	+
Gender	n.s.	?
Literacy	+	n.s.
Real estate value	n.s.	n.s.
Waged job	?	-
Small business	+	+

4. Findings

In this section, we present the empirical results of our study. We first report the univariate analysis in the section 4.1 and then in section 4.2 we report results of our OLS models estimation.

4.1 Descriptive statistics

Table 2 presents the descriptive statistics for the dependent and independent variables used in the study. The dependent variable in Model [1], the AMOUNT BORROWED from the bank, presents a sample mean of 1,105.09 USD. Out of the 216

households, 167 are able to read and write. This is consistent with the average national literacy rate (World Bank, 2006). The average age is 43 years old. Although real estate value does not formally guarantee a loan, contrary to a common wisdom that microcredit is typically addressed to people who do not own any valuable assets (Pankaj, 1996; Sengupta and Aubochon, 2008), we found an average asset value of 8,077 USD. We checked for the case whether a loan yields to a negative individual net worth (e.g. the value of the land and house worth less than the financial claims), however it never happened.

Our second dependent variable in the model [2], CYCLE, is the number of repeated loans granted to the borrower. Recalling that in order to be refinanced, a borrower must have previously reimbursed any earlier loans, as a consequence, this value is a proxy of the length of the relationship between the MFI and its client. On average the borrower have had almost 3 loans, which is a proxy of a 3 years relationship. On average loans are given to finance housing (34%), agriculture (20%), transportation (19%), trading (12%), services (8%), and consumption (6%). Hence, half of the capital is invested in profitable activities (agriculture, transportation, and trading). On average, 84% of the households are married, followed by a 6% that are single and 4% widowed.

Table 2 Descriptive statistics

	Mean	S.d.	Min	Max
AMOUNT_BORROWED	1,105.09	748.44	100.00	4,500.00
LITERACY	0.78	0.417	0.000	1.000
AGE_BORROWER	42.78	10.732	18.000	67.000
EST_VALUE	8,077.78	6,171.95	1,000.00	50,000.00
CYCLE	2.722	1.864	1.000	9.000
P_AGRICULTURE	0.199	0.400	0.000	1.000
P_CONSUMPTION	0.056	0.230	0.000	1.000
P_TRADING	0.120	0.326	0.000	1.000
P_SERVICE	0.083	0.277	0.000	1.000
P_TRANSPORTATION	0.190	0.393	0.000	1.000
P_HOUSING	0.347	0.477	0.000	1.000
P_EXTRAORDINARY	0.005	0.068	0.000	1.000
A_AGRI	0.259	0.439	0.000	1.000
A_WAGED JOB	0.273	0.447	0.000	1.000
A_SMALL BUSINESS	0.468	0.500	0.000	1.000
STATUS_SINGLE	0.046	0.211	0.000	1.000
STATUS_MARRIED	0.847	0.361	0.000	1.000
STATUS_WIDOWED	0.065	0.247	0.000	1.000
N	216			

Table 3 present the Pairwise correlation matrix between the dependent and independent variables. The amount borrowed from the bank is positively and significantly related to real estate value of the house owned by the borrower. There is a negative and slightly significant relation ($p<0.05$) between the amount borrowed and the housing purpose of the loans. Amount borrowed it is also positively correlated with the trade (at 1% significance level) and service purpose of the loans

(p<0.05). The other independent variables are not significantly correlated with the amount borrowed by the households and all present the expected sign.

Table 3 Pairwise correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
AMOUNT_BORROWED	1																	
LITERACY	0.022	1																
AGE_BORROWER	0.061	-0.077	1															
EST_VALUE	0.379***	0.056	0.0875	1														
CYCLE	0,092361	-0.048	0.184**	-0.024	1													
P_AGRICULTURE	-0.108	-0.039	-0.034	0.01	-0.063	1												
P_CONSUMPTION	-0.083	-0.162*	-0.008	-0.003	0.058	-0.121	1											
P_TRADING	0.195**	0.028	-0.054	0.05	0.002	-0.184**	-0.09	1										
P_SERVICE	0.137*	0.081	-0.180**	0.11	0.036	-0.150*	-0.073	-0.112	1									
P_TRANSPORTATION	0.098	0.084	0,073611	-0.082	-0.048	-0.241***	-0.117	-0.179**	-0.146*	1								
P_HOUSING	-0.152*	-0.029	0.088	-0.108	0.051	-0.364***	-0.177**	-0.270***	-0.220**	-0.353***	1							
P_EXTRAORDINARY	-0.074	0.037	-0.011	-0.034	-0.063	-0.034	-0.017	-0.025	-0.021	-0.033	-0.05	1						
A_AGRI	0.007	-0.140*	0.062	0.003	0.015	0.393***	0.041	-0.121	-0.102	-0.071	-0.165*	0,079861	1					
A_WAGED JOB	-0.075	0,086806	-0.019	0.013	0.047	0.007	0,085417	-0.035	-0.072	-0.005	0.011	-0.042	-0.363***	1				
A_SMALL BUSINESS	0.061	0.012	-0.038	-0.014	-0.055	-0.351***	-0.146*	0.138*	0.154*	0.067	0.135*	-0.064	-0.554***	-0.574***	1			
STATUS_SINGLE	-0.122	0.012	-0.122	0.017	-0.109	0,077083	-0.053	-0.014	0.173*	-0.05	-0.114	-0.015	-0.03	0.063	-0.03	1		
STATUS_MARRIED	0.07	0.02	-0.024	0.047	0.061	-0.078	-0.009	-0.001	-0.012	0.074	0.039	-0.161*	-0.072	0.058	0.011	-0.458***	1	
STATUS_WIDOWED	-0.07	-0.13	0.179**	-0.006	-0.001	0.01	0.01	-0.097	-0.079	-0.079	0.084	0.259***	0,070833	-0.077	-0.021	-0.058	-0.620***	1

* p<0.05, ** p<0.01, *** p<0.001

4.2 Multivariate analysis

Table 4 provides the results for the OLS regression models. Columns from 1 to 4 of the Table 4 shows parameters estimate by adding variables to Model (1). Model (1) investigates the determinants of the amount borrowed by individuals.

In column (a) Model [1] controls for social factors only: except from being single (S_SINGLE), these variables are not statistically significant to determinate the AMOUNT BORROWED.. As regards the evidence on a single status, it might be interpreted as a proxy of social capital: since groups with higher levels of social cohesion have a better repayment rate (Zeller, 1996, the lower the social capital that secured a loan the lower the bank exposure. Overall, Maxima do not discriminate on social characteristics. The variable CYCLE is positively and statistically significant to the amount borrowed, meaning that the longer the relationship, the higher the amount received (about 5% every new loan). This is consistent with general theory on the relationship lending (time reduces information asymmetry) and with the general psychological theory on five steps-based hierarchies of needs (Maslow, 1943): moving from basic needs toward comfort and safety needs requires more capital.

In the column (b), we added to the basic model in column (a) a group of variables related to the loan purpose and the estimate value of the real estate assets (land and house). CYCLE remains invariant as in the previous model. We found a strong evidence that the estimate value of the assets has a positive impact on the amount borrowed: for every 1 dollar in asset value owned, the supply of credit is 45.5% higher. Contrary to the general belief that microcredit does not discriminate on the value of collaterals or it is not addressed to people who own valuable assets (Pankaj, 1996), even if collateral does not formally back the principal, we found it virtually does. The porpoises of the loan are the main determinant of the amount borrowed: services (education, healthcare), inventories, and transportation (basically motorbikes) are the most expensive purposes to be financed. However, while controlling for fixed-effects at local level (district dummy variables), agriculture, consumption and trading purposes loose significance, meaning that at local level the loan purpose are more similar within borrowers (e.g. some district demand more credit for agriculture while other ask more credit for housing).

Table 4 Determinants of microcredit: OLS regression results

	(a) Amount Borrowed	(b) Amount Borrowed	(c) Amount Borrowed	(d) Amount Borrowed
Constant	7.022***	2.409***	2.273***	2.768***
	(21.77)	(4.28)	(4.08)	(3.92)
Literacy	-0.053	-0.148	-0.128	-0.100
	(-0.49)	(-1.52)	(-1.34)	(-0.99)
Age_Borrower	-0.003	-0.003	-0.003	-0.004
	(0.01)	(-0.82)	(-0.84)	(-1.11)
Gender	-0.123	-0.104	-0.098	-0.103
	(-1.21)	(-1.16)	(-1.08)	(-1.19)
Cycle	0.049*	0.049*	0.050*	0.078***
	(2.32)	(2.50)	(2.53)	(3.39)
S_Single	-0.651*	-0.839**	-0.803*	-0.757*
	(-2.16)	(-2.64)	(-2.54)	(-2.55)
S_Married	-0.241	-0.335	-0.316	-0.232
	(-1.24)	(-1.84)	(-1.71)	(-1.28)
S_Widowed	-0.408	-0.332	-0.330	-0.242
	(-1.47)	(-1.15)	(-1.15)	(-0.76)
Log Est_Value		0.455***	0.454***	0.480***
		(7.39)	(7.44)	(7.02)
P_Agri		0.701**	0.726**	0.003
		(2.73)	(2.88)	(0.02)
P_Consumption		0.685*	0.747**	0.524
		(2.60)	(2.89)	(1.77)
P_Trading		1.115***	1.157***	0.289
		(4.04)	(3.97)	(1.50)
P_Service		1.235***	1.268***	0.534**
		(4.44)	(4.32)	(2.63)
P_Transportation		1.099***	1.139***	0.380*
		(4.28)	(4.21)	(2.07)
P_Housing		0.850**	0.896**	0.176
		(3.29)	(3.31)	(1.06)
A_Agri			0.127	0.058
			(0.99)	(0.42)
A_Small Business			0.083	0.013
			(0.70)	(0.10)
District Dummies				YES
R^2	0.05	0.28	0.29	0.33
N	215	215	215	215

Absolute value of t statistics in parentheses. Coefficients and t statistics are not reported for the district dummies (to count for district variation) for the models 1-4. *Statistically significant at the 0.10 level; ** statistically significant at 0.05 level; *** statistically significant at 0.01 level.

Table 5 provides the estimations results for the determinants of long term microcredit banking relationship. Our dependent variable here is the number of the repeated loans, namely Cycle. In the column (a) we used social characteristics only. We find gender is a positive and significant determinant of the number of loans received. In all regressions, the age of the borrower is strongly significant to influence the numbers of the cycles received: the older the borrower, the longer the bank relationship. In columns (b) and (c) we added variables related to economics factors. We find that the service purpose positively and significantly affect the long term

banking relationship. In contrast to the previous model (1), controlling for fixed effects at district level, we find that in a given district the bank tend to refinance the same loan purpose. The other findings do not change across the columns in model (2).

Table 5 Determinants of a long term bank relationship: OLS regression results

	(A) Cycle	(B) Cycle	(C) Cycle	(D) Cycle
Constant	0.743	0.933	0.944	-3.045
	(0.94)	(0.51)	(0.49)	(-1.55)
Literacy	-0.091	-0.057	-0.0717	-0.183
	(-0.28)	(-0.18)	(-0.22)	(-0.56)
Age_Borrower	0.033*	0.038**	0.0367**	0.030*
	(2.55)	(2.90)	(2.87)	(2.40)
Gender	0.782**	0.829**	0.846**	0.559*
	(3.05)	(3.05)	(3.05)	(2.20)
S_Single	-0.642	-0.733	-0.764	-0.848
	(-1.18)	(-1.43)	(-1.39)	(-1.62)
S_Married	0.284	0.266	0.252	0.078
	(0.61)	(0.57)	(0.52)	(0.18)
S_Widowed	-0.273	-0.273	-0.264	-0.338
	(-0.45)	(-0.43)	(-0.41)	(-0.57)
Log Est_Value		-0.134	-0.133	0.077
		(-0.60)	(-0.61)	(0.37)
P_Agri		0.516	0.573	1.859**
		(0.93)	(1.02)	(3.27)
P_Consumption		1.137	1.212	2.193***
		(1.65)	(1.73)	(3.47)
P_Trading		0.756	1.023	2.548***
		(1.19)	(1.54)	(3.87)
P_Service		1.474*	1.772*	2.911***
		(2.09)	(2.46)	(4.29)
P_Transportation		0.530	0.764	2.104***
		(0.93)	(1.29)	(3.54)
P_Housing		0.741	0.972	2.045***
		(1.44)	(1.81)	(3.56)
A_Agri			0.017	0.179
			(0.04)	(0.52)
A_Small Business			-0.373	-0.045
			(-1.15)	(-0.16)
District Dummies				YES
R^2	0.08	0.10	0.11	0.29
N	215	215	215	215

Absolute value of t statistics in parentheses. Coefficients and t statistics are not reported for the district dummies (to count for district variation) for the models 1-4. *Statistically significant at the 0.10 level; ** statistically significant at 0.05 level; *** statistically significant at 0.01 level.

5. Summary and conclusions

This paper enlarges knowledge on microcredit activities by exploring two relatively elusive dimensions: the role of guarantees and the repeated relationship in microcredit.

In particular, this study investigated the determinants on loan cycles and on the amount borrowed. We found the former be strongly positively related with the age of the borrower and negatively related with a female gender. Yet this evidence might be caused by a relatively younger age within females or by non revolving needs in loan purposes (e.g. agriculture purposes tend to be repeated at every season, while housing or education ones tend to vanish over a longer time).

As regards the amount borrowed, we discovered a strong positive relation with real estate values, albeit assets do not formally back loans: for every (logarithm) dollar in real estate holdings, the amount borrowed is about 48 cents. This is indirect evidence that Maxima client target is not the "poorest among the poor people" (Lanzavecchia, 2012). However, Maxima practice is completely consistent with a sound and safe (micro) banking activity, aimed to a long term relationship with clients and their welfare protection.

Low-income markets can be served by applying fundamental economics of commercial banking: assessing credit worthiness and loss given default. While this practice will tend to exclude the poorest people, nevertheless MFIs would still target to segment of clients not served by commercial banks.

Once more, our concern is on their social responsibility in carrying out an effective client protection.

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[i] Roodman and Morduch (2009), Goldberg (2005), among the others, reviewed studies in microcredit impact evaluation. Overall, unchallenged statistical proof of the impact of microfinance on outcomes such as poverty, women's empowerment, health, and education remains elusive, mainly due to difficulties in creating randomized controlled experiments that are free of bias (Karlan and Goldberg, 2006), and are able to control so many subjective variables, such as the credit use, the type of microenterprise and the skills of the borrower (Karnani, 2007).

[ii] GDP dollar estimates are derived from purchasing power parity (PPP) calculations *per capita*: in 2011 GDP per capital in Cambodia was 2,300 USD. Source: CIA (2012).

[iii] Data source: http://www.mixmarket.org/mfi/maxima/report

[iv] Bullet loans are for agriculture porpoises only.

[v] Such loans are extremely common all over the world. Cosigned loans are popular in the United States (Berger and Udell, 1998), in Europe (Pozzolo, 2004) and in many developing countries. There are also many historical instances of this lending practice, including 19th century Britain (Newton, 2000), Germany (Banerjee et al, 1994), and Russia (Baker, 1997).

[vi] Cash flows on loans (disbursement and repayments) are settled in dollars, as a consequence, currency risk is mostly transferred (Maxima is mostly funded in US dollars) to borrowers (basically rural people) who, however, get income in local currency.

[vii] From a different perspective, Rashid and Townsend (1993) argues that the fungibility of credit within the household makes gender and other individual characteristics of borrowers potentially unimportant in loan usage. A finding that the gender of credit program participant matters in the determination of these outcomes is seemingly inconsistent with perfect fungibility.

[viii] Each interviewer was accompanied by a Maxima's credit officer, who introduced him/her to the borrower and translated the questions in the local language.

[ix] All people we met accepted to be interviewed (e.g. no refusal was recorded).