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Loan Officers' Gender and Microfinance Repayment Rates

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ABSTRACT *This study examines the impact of loan officer characteristics on repayment rates of microfinance borrowers in Mexico applying multilevel analyses, with special attention to the impact of the gender of the loan officer on default rates. The results strongly suggest that loan officers play a crucial role in improving repayment rates in microfinance and that male loan officers are better able to induce borrowers to repay than female loan officers. This may be because men exert authority over women and face fewer problems working late, travelling through unsafe places, and combining a position as counsellor with enforcing repayment.*

1. Introduction

An estimated 2.5 billion adults do not use formal financial services (Chaia et al., 2009). In particular, banks lack information and effective enforcement mechanisms to cater to the poor, although this does not mean that impoverished people lack any access to credit (they may borrow from informal sources, such as relatives and local moneylenders). The resources of such lenders are, however, limited, so that limited access to credit may curb the capacity of the poor to invest in profitable ventures or to cope with shocks to their income or heightened expenditures. Microfinance represents a successful attempt to address this challenge (Armendáriz De Agion & Morduch, 2010); it has reached an estimated 150 million people worldwide (Daley-Harris, 2009). Despite this impressive number, statistics about the global poor still suggest a significant potential to increase the outreach of microfinance.

To achieve this potential, microfinance organisations must keep their costs low and achieve high repayment rates on their loans. This will allow ensuring sustainability and capacity to expand activities. However, in situations in which borrowers may choose among various microfinance organisations, high repayment rates are increasingly hard to maintain (Vogelgesang, 2003) and microfinance organisations may adopt lending practices that lead to over-indebted clients (Schicks, 2013). The southern Indian state of Andhra Pradesh even plunged into a microcredit crisis after the microfinance-induced suicides of 2010. Due to bad lending practices, several branches of large microfinance institutions (MFIs) in Ecuador, India, and Nicaragua have been closed by the authorities.

Microfinanciers therefore must initiate strategies to improve the quality of their portfolios, such as the intensively researched methodology of group lending. In group lending, the members of the borrowing group have incentives to monitor one another and exclude risky borrowers from their

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group (Morduch, 1999). Based on field experiments, Cassar, Crowley, and Wydick (2007) show personal trust between group members and social homogeneity to be important for loan repayment. Hermes, Lensink, and Mehrteab (2006), however, suggest that only the social ties of the group leader and not those of the other members are important for repayment rates. They do not find any effect on repayment rates of group characteristics after controlling for the characteristics of the group leader. The paper thus criticises the well-known view that microfinance repayment rates are high primarily due to peer monitoring. Instead, the paper suggests that ‘peer monitoring’ among group members will not take place, or is not effective, if somebody, for instance a group leader, acts as a delegated monitor for the microfinance organisation. Indirectly, that paper therefore draws attention to a potential important role for microfinance loan managers, who mediate between the microfinance organisations and the borrower groups.

While the role of borrower groups has been studied extensively, the literature on microfinance pays hardly any attention to the role of loan managers. Some exceptions are Beck, Behr, and Guettler (2013), Dixon, Ritchie, and Siwale (2007), and Agier (2012). Beck et al. (2013) assess the impact of the gender of loan officers on default rates in Albania; Dixon et al. (2007) focus on the roles of loan officers with regard to loan delinquency in Zambia; and Agier (2012) analyses how loan officers influence the performance of microcredit loans in Brazil.

With this study we aim to contribute to the limited literature on microfinance loan managers. Like Beck et al. (2013), we focus on the impact of the gender of the loan officers on default rates. A special feature of the study is that we focus on microfinance borrowers who are organised in joint-liability groups. While the role of joint liability in decreasing moral hazard problems has been extensively studied, most existing studies completely ignore the role of the loan officer as intermediate between the group and the MFI. Hermes et al. (2006) show that social ties between a borrower and a group leader have a positive effect on repayment performance, thus implicitly pointing at a potentially prominent role of loan managers.

Our empirical analysis uses data from Pro Mujer Mexico. However, Pro Mujer is an international microfinance organisation that uses a similar approach, with a similar role for loan managers, in all countries where it is active; thus, our results have a wide external validity, beyond the case of Mexico. Pro Mujer was founded in 1990. The international headquarters are in New York, USA. Currently, the organisation operates in Argentina, Bolivia, Nicaragua, Peru, and Mexico. It focuses on group lending to poor women, who are engaged in small income-generating activities. Several characteristics of Pro Mujer are similar to most other MFIs around the world: more than 90 per cent of the borrowers are female, and the institution offers healthcare, education, and training to women groups.

The remainder of this article is organised into six sections. The next section supports our claim that the loan officer is important for loan repayment even when joint liability and peer monitoring apply. Then we introduce background information about Pro Mujer Mexico, and briefly describe the study region and the data in Section 3. Section 4 gives the underpinning of our main hypothesis that loans managed by male loan officers have higher repayment rates. It also presents some hypotheses on additional loan officer characteristics, before outlining the methodology in Section 5. The main results of the study appear in Section 6, prior to the conclusion.

2. Loan Officers and Repayment in MFIs with Group Lending

Stimulated by the widespread adoption of group lending schemes, such as the Grameen Bank (see, for example, Morduch, 1999; Ghatak & Guinnane, 1999), and the success of those programmes, several academic papers analyse the advantages of peer monitoring. Many MFIs offer group loans where borrowers are jointly liable for all loans taken up by group members. It is argued that joint liability will induce a process of peer monitoring, which may play a crucial role in alleviating ex ante moral hazard problems (for example Chowdhury, 2005; Conning, 1999; Stiglitz, 1990). Joint liability and peer monitoring may also ameliorate ex post moral hazard problems (for example Besley & Coate, 1995). The reason is that, if a bank writes a contract in which borrowers are made jointly liable for the

repayments of the loans, each borrower has an incentive to monitor her/his peer. This may provide incentives to the group members to invest in safe projects, and thus may reduce problems of moral hazard. This community-based monitoring may be a cost-efficient system of monitoring, because people living close to each other have better information about borrowers than banks (Varian, 1990). There are also some papers that have explored the key mechanisms of peer monitoring and show that joint liability lending may solve adverse selection problems and improve efficiency (for example Armendáriz De Aghion & Gollier, 2000). The key to this result is that debt contracts containing a joint-liability component provide incentives for assortative matching (Becker, 1993) implying that similar types of firms group together (Ghatak, 2000). Consequently, the assortative matching property enables banks to price discriminate between pairs or sets of borrowers, because the group of risky firms is less willing to accept an increase in the joint-liability component than the group of safe firms.

Based on the theoretical literature on group lending and peer monitoring and screening, several authors argued that group lending systems play a crucial role in reducing loan defaults and improving repayment rates. A famous study of Wydick (1999) on the effect of three different types of social cohesion (peer monitoring, social ties, and group pressures) on group-borrowing performance for 137 borrowing groups with a group lending institution in Guatemala provides some empirical evidence for the role of peer monitoring on repayment rates. Wydick (1999) analyses social cohesion effects on the provision of intra-group insurance, the mitigation of moral hazards within borrowing groups, and overall group repayment performance. The results indicate that peer monitoring affects group borrowing performance significantly by stimulating intra-group insurance, which diminishes moral hazard problems.

There are also some papers that question the importance of peer monitoring for reducing loan defaults. The standard peer monitoring model assumes that peer monitoring in a group lending system is costless. However, the assumption that group members can observe each other's actions without costs and thus can side-contract and monitor each other without costs is unrealistic. It seems much more realistic to assume that each borrower in a group needs to incur a non-observable monitoring cost. This immediately implies that peer monitoring may not take place automatically. It may also be the case that group members try to search for a more cost-effective alternative, for instance by delegating the monitoring tasks to one of the group members. Some evidence for this is given by Hermes et al. (2006).

In a study on the effects of monitoring and social ties among the participants of 102 microfinance groups in Eritrea, Hermes et al. (2006) show that social ties with the group leader do have a positive effect on repayment performance of groups, whereas this is not the case for social ties between other group members. Because the group leader is the intermediary between the group and the programme staff, and regularly reports to the programme's staff on the performance and sustainability of the group, he/she functions as a delegated monitor. Thus, the paper by Hermes et al. (2006) implicitly suggests that delegated monitoring may be more cost-effective than peer monitoring, and hence be more effective in improving repayment rates.

If peer monitoring is not costless, it may be argued that group members will decide to rely on the loan manager and give up their 'peer monitoring' role. If that is the case, the delegated monitor or loan officer is of primary importance in undertaking such activities, which leads to an improvement in loan repayment. We assume that this is the case in the context of Pro Mujer, where group members do not 'usually' live close to each other and may not have strong social ties, personal trust, or social homogeneity. In such circumstances, it will be costly for borrowers to obtain adequate information about each other's projects, risks, and personal prospects. A loan manager may then become very important for the enforcement of loan contracts.

Several studies illustrate this point. Dixon et al. (2007) describe how loan managers absorb monitoring and enforcement tasks from credit groups under management pressure in Zimbabwe. As clients refused to pursue defaulters, loan officers actively pursued defaulters instead of building mutual trust. They used the police to make defaulters pay and confiscated household possessions. Similar practices have been observed in Burkina Faso (Mknelly & Kevane, 2002). For BRAC in Bangladesh and Sri Lanka, 'staff pressure' is imperative for triggering 'peer pressure'. Staff induced strong

collective actions – such as forced acquisition of assets, by holding not just the joint liability groups of four, but the umbrella village organisations liable for loans (Montgomery, 1996). In case the members were reluctant to appropriate assets, field staff volunteered. Grameen Bank loan managers have been reported to follow a different, but equally coercive strategy. According to Mallick (2002), Grameen Bank loan managers hold up meetings until all women have paid their dues or until they return home late to prepare meals, which results in physical abuse by their husbands.

3. Background and Data

3.1 *Pro Mujer Mexico*

This research was conducted in collaboration with Pro Mujer, a non-profit microfinance organisation working in Latin America.¹ Pro Mujer Mexico started operations in 2002 in the state of Hidalgo. Recently it extended its operations throughout Mexico, in the states of Puebla, Tlaxcala, Mexico, Distrito Federal, Veracruz, Queretaro, and Oaxaca. It lends to more than 27,000 borrowers, 90 per cent of whom are women, and it has a loan portfolio of more than US\$7 million. The organisation operates through branches called *Centros Focales*, or neighbourhood centres, where financial services are disbursed to customers.

Pro Mujer's objective is to support entrepreneurial women of modest means, between the ages of 18 and 65 years, who lack sufficient access to credit and physical collateral. The organisation provides an integrated package of financial services, including credit for business, mandatory savings, education (for example training on topics such as gender, self-esteem, intra-family violence, communication, depression, and women's rights), and financial literacy (business administration, accounting, and access to cash machines). The methodology that Pro Mujer uses is village banking, which involves lending to small groups of mainly women who serve as guarantors for each other. Groups are formed by new clients that live in roughly the same area but do not necessarily have strong social ties.

Loan officers serve as intermediaries between Pro Mujer and its groups and clients. They inform and screen new clients during four-day instruction sessions (two hours a day). Screening is mainly based on information the potential clients have on each other and on their loan histories in Pro Mujer and the credit bureau².

For existing groups, loan officers are responsible for guaranteeing the collection of the payments. This mostly implies going to the villages of the credit groups for weekly or bi-weekly meetings to fill out presence forms, make sure that the women collect the money due and deposit it the same day in Pro Mujer's account, and negotiate conflicts when members default. During these meetings, the loan officers also provide training on topics such as basic business skills, health, and domestic violence. In addition, loan officers dedicate a substantial part of their time to the promotion of Pro Mujer in communities close to their focal centres or branches.

Loan officers receive a base salary and a bonus based on the achievement of targets related to the number of new clients and the reduction of default rates. The variety of tasks and responsibilities of loan officers means that the traits and skills that Pro Mujer requires are diverse. For example, loan officers should display social responsibility and motivation to contribute effectively and freely to social improvement. They should assume active roles and balance social and financial goals, while also providing professional education during the training. Job rotation is high: few loan officers keep their job for more than a couple of years. The main reasons given are high work pressure, low pay, and insufficient training and support from the organisation.

Loan officers are assigned to geographic zones depending on where they live: they need be able to reach their clients easily. There is some consideration to safety; Pro Mujer tries to assign men to the most dangerous zones yet no zone has only male loan officers and allocation of loan officers to regions within zones is largely random. Similarly, gender of the loan officer plays no role in the assignment of groups within regions. Groups are administered by those loan officers who have formed and instructed them. When loan officers leave, their successor or a colleague with a limited number of clients takes over the groups (for more detail on Pro Mujer see the Online Appendix).

3.2 Study Region and Data

Between December 2010 and March 2011, we conducted interviews in 18 branches of Pro Mujer Mexico operating in four states: Mexico, Puebla, Distrito Federal, and Tlaxcala. These branches are geographically distributed across two regions. First, the Mexico-Distrito Federal region includes 12 branches, most of which register very low default rates of less than 2 per cent monthly; this makes this region one of the most efficient in terms of loan repayment. It is a densely populated area, with anywhere from 679 to 5920 inhabitants/km², and has a good availability of public services (for example potable water, electricity, drainage, telephone, roads) and many microfinance providers (INEGI, 2010). Second, Puebla-Tlaxcala features six branches, some of which have high default rates (>5% monthly). With the exception of two branches, they target a rural clientele living in municipalities with a high degree of marginalisation and few basic services available. Competition with other microfinance providers is relatively low.

We collected complete data from 57 loan officers and 407 borrowers. Loan officers were interviewed by one of the authors or the research assistant, while borrowers were interviewed with the support of 25 trained enumerators. The resulting data was crosschecked with the information from the archives of Pro Mujer, which contain reports of all group meetings including the number of defaults incurred. Borrowers were selected randomly from the client portfolios of the loan officers. We interviewed about 5 per cent of the clients for each loan officer. Some borrowers had only begun their first credit cycle, especially in the four new branches³ included in our study. For other borrowers, we gathered information only about the latest two cycles, to avoid recall bias. We define loan default as internal default: the failure of the borrower to pay her/his instalment during at least one group meeting. This was the case for 18 per cent of the loans in our sample. We analyse internal default and not external default (the failure of the group to repay Pro Mujer) for two reasons. First, we consider internal default a more direct measure of moral hazard, whereas external default also depends on the group's capability to mobilise additional resources. Second, external default rates are very low, and therefore difficult to analyse.

Some borrowers switched loan officers within the credit cycles recorded. For all loans overseen by a single loan officer, we collected information on the associated officer whenever possible, either through the interviews with the current loan officers or through tracking and interviewing former loan officers. Most of these officers were working as branch managers for Pro Mujer at the time of the surveys, although some had left the institution and could not be traced. This could bias the result, because capability and leaving the organisation may be related. However, we expect this bias to be very small as only a few loans and loan officers are concerned (for example only three loan officers could not be tracked). We also discarded those loans administered by two or more loan officers, because it is simply impossible to link these loans to a consistent set of loan officer characteristics. We ultimately included in our estimation a total sample of 57 loan officers and a panel of 648 loans to 406 borrowers (see Table 1).

4. Hypothesis Development

4.1 Gender

Only two studies we know of assess the impact of loan officer's gender on repayment rates.⁴ Beck et al. (2013) find that the loan portfolios of female loan officers in Albania exhibit default rates significantly lower than those of male loan officers. Women seem to be better at building trust relationships and exploiting monitoring possibilities. Bellucci, Borisov, and Zazzaro (2010) confirm these findings for Italy, but suggest that the role of a loan officer's gender in terms of improving repayment rates decreases with the length of the relationship. Female loan officers do not seem to behave differently from their male counterparts as the interaction between the bank and the entrepreneur extends over time.

Contrary to our case, the loan officers in these studies operated in the setting of the standard business banks. This means that they meet with their clients in their office during business hours. The

Table 1. Number of observations per branch.

Branch name	Number of loan officers ^a	Number of borrowers	Number of borrower observations
Coronango	3	11	21
Cuapixtla	2	19	30
Huamantla	3	14	16
Huauchinango	3	31	48
Huehuetoca	2	19	31
Jardines de Morelos	2	16	24
Puebla	4	24	37
San Cristobal Ecatepec	2	6	7
Tecamac	5	27	47
Teoloyucan	5	30	50
Teotihuacan	4	34	60
Tepotzotlan	2	14	21
Texcoco	4	26	42
Tlahuac	2	18	18
Tonanitla	3	42	67
Tultepec	5	30	54
Xochimilco	3	16	20
Zacatlan	3	29	55
Total = 18	57	406	648

Notes: ^aFive loan officers handled cycles in different branches, so we had valid observations for a total of 57 officers.

bank objectives are purely commercial, and loan officers and clients meet infrequently. The impact of gender may be very different in the setting of a Mexican MFI lending to joint liability groups of small, mostly female, entrepreneurs that meet regularly, not only for repayment but also for training on business and personal skills, often outside the office and outside office hours. Below, we will first elaborate on the screening and monitoring process in Pro Mujer and subsequently explain how this may be affected by the gender of the loan officer.

Thorough screening would help achieving repayment targets in the long run, but hinders the achievement of new group targets in the short run. As indicated before, loan managers screen new clients based on information of other clients and the credit bureau. There is strong competition between MFIs and many potential clients are registered in the credit bureau for default. Loan managers indicate that they find the formal criteria very strict, and that they have other more urgent tasks to do than screening, like collecting loans in default and preparing loan renewals. This suggests that there is little scope for differences in screening quality between loan officers. Moreover, due to the high rotation of loan officers, less than half of the clients were screened by their current loan officer. We therefore expect that monitoring rather than screening explains differences in default related to loan officer characteristics like gender. This conforms to the findings of Beck et al. (2013) who conclude that female loan officers in Albania do not screen loan applications more conservatively than their male colleagues.

All loan officers spend a substantial amount of their time on recapturing unpaid debts and trying to prevent default by all means (Roscam Abbing, 2011; Siwale & Ritchie, 2011), so they take over tasks that should be performed by the credit groups themselves. Hence, they act as delegate monitor for the groups, which, as indicated before, usually do not have the strong social ties that would make peer monitoring inexpensive. Most loan officers do not trust their clients to resolve internal debt problems and, for fear of group-level default, they visit the houses of those with internal debt to urge them to repay the money to their group members that have paid Pro Mujer in their place. Similarly, many loan officers immediately visit defaulting clients at their home in case joint liability does not work, without first trying to turn this external debt into internal debt. Some loan officers even sell assets from defaulter's houses to pay off (internal or external) debts. They claim that there is no legal enforcement

to ensure repayment, so all they can do is stalk defaulters. In some focal centres loan officers go on 'defaulters round' on Saturdays, sometimes taking their manager to exert more pressure. As one loan officer states about a defaulting client:

She needs to get the feeling I am always watching her. I will visit her at her house all the time. And I keep on negotiating and talking and talking and talking until at the end she gets tired of me and pays.

Loan officers thus work long hours, often also during evenings and on Saturdays. One loan officer stated:

You sacrifice a lot to work here, your social life, your family, time to eat. Actually you sacrifice everything in your life that is not focussed on Pro Mujer.

Gender differences and the specific socio-cultural setting of Mexico seem to put men at an advantage in the monitoring and enforcement process for several reasons that will be elaborated below. First, the *machista* culture of Mexico gives men an authoritarian role in social relations, which facilitates enforcing repayment from the predominantly female borrowers, and assigns women primary responsibility for domestic duties and childcare, which limits their options to work long hours. Second, men have less problems travelling through unsafe areas at odd hours than women. Third, men may experience less psychological strain from insisting on repayment.

Traditional machismo asserts that men are superior to women and should be in control of their wife. In a family, father's wish is law, and it is important not to be the weakest man in a group (Arciniega, Anderson, Tovar-Blank, & Tracey, 2008). These values still play an important role in Mexican society, where cultural norms influenced by Catholicism strongly reinforce gendered divisions of labour in which women are predisposed to serve their family (Molyneux, 2002). Almost 50 per cent of both men and women interviewed for the 'ISSP Family and Changing Gender Roles IV' survey in Mexico in the 2013 agreed with the statement that it is men's job to earn money and women's job to look after the home. In addition, 74 per cent of women and 70 per cent of men think that family life suffers when the woman has a full time job. The traditional role of women as caretakers is also reflected by the positive effect of the Mexican conditional cash transfer programme PROGRESA on women's but not on men's work hours: the increase in school enrolment resulting from the programme frees women's time for labour market participation (Alzúa, Cruces, & Ripani, 2013).

These cultural traditions may affect loan officer's capability to monitor and enforce loans in two ways. First, male loan officers may find it relatively easy to exercise power over the mostly female borrowers and to enforce repayment. Second, the high work pressure associated with additional defaulter rounds and other methods to exert pressure on defaulters seems especially problematic for women. The female loan officers in our sample complain that it is impossible to combine their job with the care for their children. Most women with small children let other family members take care of them, and some women leave their children alone in their houses during the day. As one woman indicated:

This month I have to create five new credit groups. At the moment I have created only one. On top of that I have defaulting clients. How am I going to solve all that? It gives me severe stress. I have a small daughter. At the moment my mom takes care of her all the time. At the point that my workload becomes even heavier, or when my daughter starts asking for my attention, I have to quit this job immediately.

Problems of combining their job with family care are likely to constrain monitoring time of women and may thus result in higher default rates compared to men.

High work pressure is not the only problem facing female loan managers: some of our female respondents complain that they feel unsafe during their work. They consider it a risk to be alone on the

streets after sunset. Some of the villages these women have to work in have a reputation of being violent and of having high crime rates. Like pressure to comply with domestic duties, this may result in fewer monitoring efforts by female loan officers. In a related study, women-only forest-user groups in Mexico, Bolivia, Kenya and Uganda were found to abstain from monitoring activities because of the distances to be covered and fears of women's harassment (Mwangi, Meinzen-Dick, & Sun, 2011).

Finally, the constant battle to enforce repayment makes the work psychologically imposing, especially for women. Female loan officers indicate it is very tiring to always quarrel with non-paying clients, to find the right balance between diplomacy and persistence, and to be considered a betrayer by clients. Pro Mujer loans are not distributed in a commercial context but as a tool to alleviate poverty and empower women. Loan officers not only administer loans, but also provide training and advice for business and social issues. They therefore have a dual role as credit enforcer and counsellor, and the frequency and intensity of meetings between borrowers and loan officer is very high compared to regular banking. This is likely to result in more intense and personal relations, especially when both loan officer and borrowers are women. First-hand observations of the borrowing groups indeed suggest that female loan officers, in their role as counsellors, work more closely with their borrowers and tend to demonstrate more 'solidarity' than male loan officers. As a result, female loan officers may fall short when enforcing loan repayments. We therefore propose the following hypothesis:

Hypothesis 1: The Likelihood of Loan Repayment Increases when the Loan Officer is Male

4.2 Other Loan Officer's Characteristics

Previous empirical research has evaluated the role of the loan officer's professional experience on loan repayment and on investment decisions (for example Agarwal & Wang, 2008; Andersson, 2004). Agarwal and Wang (2008) suggest that younger and less-experienced loan officers who are concerned about their careers may be induced to avoid loan losses in order to maximise their prospects. In contrast, Andersson (2004) finds that senior loan officers reach more consistent financial decisions than inexperienced loan officers because they have improved their screening and monitoring skills over time. Others studies such as Beck et al. (2013) find no relation between default probability and the loan officers' experience. In the context of Pro Mujer Mexico, we hypothesise that the work experience of loan officers is a crucial determinant of repayment rates, particularly if their professional experience refers to a previous job as loan officer. In addition, we think that loan managers who used to be borrowers at Pro Mujer have better repayment rates, as hands-on experience with Pro Mujer loans and shared experiences with current borrowers may facilitate communication with borrowing groups.

Similar to work experience, education should affect the capabilities of loan officers. We measure it by two dummies reflecting whether the loan officer has a social degree or an accounting degree. Social graduates may possess specific social and communication skills that facilitate interactions with borrowers. On the other hand, they may focus more on training and assistance than on repayment. Loan officers with an accounting degree may have higher abilities to manage the risk in their portfolios.

Whether loan officers are Catholic also may influence loan default probabilities. Most borrowers in our sample (81%) are Catholic, as are the majority of people in central Mexico. People are likely to share similar attitudes with members of the same religion; this then may facilitate communication during group meetings and create commitment and incentives for clients to repay their loans. Therefore we include a binary indicator of whether the loan officer was Catholic or not.

Loan officers who are married/cohabit with their partner and/or have children may have less time available for their jobs and exert less effort to screen, monitor, and enforce contracts with group members. On the other hand, we expect that loan officers who depend more on their existing jobs because they have no other job and/or they are the sole caregiver for their children make more effort to achieve good loan performance.

In Table 2, we present the descriptive statistics of the key loan officer's characteristics that are referred to in the section and used in the empirical analysis. Notably, only 19 per cent of loan officers

Table 2. Descriptive statistics for loan officer characteristics (N = 57).

Variable	Mean	Standard deviation	Minimum	Maximum
Loan officer is male	0.19	0.4	0	1
Experience with other MFIs	0.16	0.37	0	1
Former client of Pro Mujer	0.40	0.49	0	1
Experience with Pro Mujer (months)	14.52	12.45	1	54
Previous job (yes = 1)	0.19	0.40	0	1
Age (years)	31.96	9.38	19	57
Marital status (1 if married/living together)	0.42	0.50	0	1
Religion (1 if Catholic)	0.81	0.40	0	1
Children (yes = 1)	0.47	0.50	0	1
Accounting degree (yes = 1)	0.28	0.45	0	1
Social degree (yes = 1)	0.44	0.50	0	1
Other job than Pro Mujer (yes = 1)	0.30	0.46	0	1
Experience with other MFIs	0.16	0.37	0	1

are male. Additional control variables, collinearity diagnostics, and a correlation matrix are given in Online Appendix Tables A2.1, A2.2, and A2.3, respectively.

5. Methodology

With the novel approach of multilevel analysis, suitable for analysing hierarchically clustered data, we analyse the impact of various loan officer characteristics on the probability of loan default. As explained above, we define loan default as failure of the borrower to pay her/his instalment during at least one group meeting. Because the dependent variable is binary, the model is estimated using a logit model. It should be noted, however, that we use a three-level random-intercept logit model of the probability of loan default because this enables observed and unobserved heterogeneity at the loan, borrower, and loan officer levels to be accounted for, as we explain below.

The data used for the analysis have a hierarchical structure: each loan officer services a number of borrowers, who all get one or more loans. For efficient estimation of the determinants of default on loans, the lowest level of the hierarchy, we need to account for dependence of the observations for the two higher levels—borrowers and loan officers. Default rates for different loans of a single borrower are likely to be correlated and so are default rates for loans administered by a single loan officer. These correlations can be accounted for using a multilevel hierarchical random-intercept model. This method is basically an extension of the well-known random-effects model, which is used when there are several hierarchical levels, for example borrowers with clusters of loans. In multilevel models, the clusters themselves are nested in super-clusters, such that they form hierarchical structures (Bryk & Raudenbush, 1992; Hox, 2002; Kreft & De Leeuw, 1998; Rabe-Hesketh & Skrondal, 2008). In our case, we have loan cycles i for repeated borrowers j who work with loan officers k . Within this nested framework, the binary variable loan default Y can be estimated as follows:

$$Y_{ijk} = \alpha + \varsigma_{jk} + \varsigma_k + \beta_1 L_k + \beta_2 Z_{ijk} + \varepsilon_{ijk}, \quad (1)$$

where α is the common intercept; the β s are vectors of coefficients; ς_{jk} and ς_k are random intercepts at the borrower and loan officer level, respectively; and ε_{ijk} is the residual random intercept. The random effects are assumed to be independent of each other and across clusters. The explanatory variables comprise loan officer characteristics L and a set of controls Z , which include loan and borrower characteristics, and region dummies.

Though we hypothesise that differences in default rates related to loan manager characteristics result mainly from differences in monitoring and enforcement (see Section 4.1), in theory they may result just as much or more from differences in the effectiveness of screening: separation of adverse selection

(controlled through screening) from moral hazard (checked by monitoring and enforcement) is one of the most difficult empirical challenges when studying loan default (Giné & Karlan, 2014). Strict isolation of the effects of monitoring and enforcement would require either experimental data or data on rejected applicants to correct for sample selection and is therefore not possible with our data. We ran separate regressions for loans administered by the loan officer who originally screened the clients and loans administered by others to see if the results would be different. However, the dataset is not large enough to generate sufficient power for these estimates. Instead, we support our claim of the predominance of monitoring by introducing a dummy for screening by the current loan manager or not and an interaction term with this dummy and our main variable of interest – gender of the loan manager (these variables were jointly insignificant at the 10 per cent level in all relevant specifications). As the interaction term caused mild multicollinearity problems we present the regression results without these two test variables.

6. Estimation Results

Table 3 presents three versions of our borrower default model. In the simple Model 1, loan default depends only on loan officer characteristics. In Model 2, we added borrower characteristics. Model 3 is a comprehensive model that includes loan officer and borrower characteristics, and additional controls such as group and loan characteristics. Interestingly, the loan officer characteristics fully

Table 3. Three-level random intercept logit model (gllamm) of probability of loan default in-group lending microfinance (N = 648).

Variable description	Model 1:	Model 2:	Model 3:
	Loan officer characteristics	Loan officer and borrower characteristics	Loan officer, borrower, and peer monitoring characteristics
Panel A. Loan officer characteristics			
Gender of the loan officer:			
Gender (1 if male)	−1.286** [0.044]	−1.172** [0.035]	−1.112* [0.058]
Other loan officer characteristics:			
Experience with other MFIs	−0.452 [0.283]	−0.135 [0.739]	−0.119 [0.788]
Former client of Pro Mujer	−1.252** [0.042]	−1.013* [0.089]	−0.969* [0.085]
Experience with Pro Mujer (months)	0.0318 [0.156]	0.0269 [0.181]	0.0277 [0.175]
Previous job	−0.0868 [0.884]	−0.178 [0.737]	−0.104 [0.842]
Age (years)	0.0204 [0.324]	0.0205 [0.288]	0.0178 [0.393]
Marital status (1 if married/living together)	0.439 [0.494]	0.288 [0.624]	0.309 [0.595]
Religion (1 if Catholic)	−0.804 [0.143]	−0.919** [0.048]	−0.926* [0.056]
Children (yes = 1)	−0.370 [0.572]	−0.0837 [0.890]	−0.148 [0.806]
Accounting degree (yes = 1)	0.667 [0.249]	0.557 [0.270]	0.492 [0.335]
Social degree (yes = 1)	0.452 [0.387]	0.396 [0.421]	0.387 [0.478]
Other job than Pro Mujer (yes = 1)	−0.478 [0.202]	−0.528 [0.132]	−0.541 [0.119]

(continued)

Table 3. (Continued)

Variable description	Model 1:	Model 2:	Model 3:
	Loan officer characteristics	Loan officer and borrower characteristics	Loan officer, borrower, and peer monitoring characteristics
Panel B. Borrower characteristics:			
Group leader		0.753* [0.084]	0.748 [0.101]
Borrower marital status (1 if married/cohabiting)		-0.0298* [0.080]	-0.0302* [0.085]
Borrower age (years)		-0.0128 [0.477]	-0.0143 [0.438]
Borrower education (years)		-0.0446 [0.406]	-0.0471 [0.403]
Borrower speaks a local language		0.772 [0.438]	0.881 [0.362]
Borrower's time spent living in the same community		-0.432 [0.213]	-0.427 [0.226]
Borrower was client of other microfinance lenders		-0.458 [0.319]	-0.473 [0.312]
Borrower owns a business		-0.201 [0.524]	-0.182 [0.577]
Duration of borrower with Pro Mujer (contracts)		-0.0183 [0.763]	-0.0207 [0.765]
Duration of borrower with loan officer (contracts)		-0.148 [0.428]	-0.131 [0.500]
Panel C. Additional controls:			
Weekly meetings			-0.00606 [0.987]
Group size (# members)			0.0379 [0.973]
Ln (loan size in pesos)			0.0389 [0.936]
Ln (loan maturity in months)			-0.0425 [0.206]
Mexico State			-0.155 [0.785]
Puebla State			-0.305 [0.598]
Constant	-3.925*** [0.000]	-1.649 [0.155]	-0.786 [0.798]
Key statistics:			
Log-likelihood	-283.7	-276.3	-275.6
AIC	595.5	600.6	611.3
BIC	658.1	708.0	745.5
Rank	14	24	30
Number correctly predicted (percentage)			
Non-defaulters	533(100)	533(100)	533(100)
Defaulters	71(62)	58(50)	57(50)
Random coefficients:			
Borrower (level 2)	2.371*** [0.003]	1.983*** [0.009]	2.000** [0.011]
Loan officer (level 3)	0.00000774 [0.719]	-0.00000160 [0.824]	-0.00000126 [0.771]

Notes: *p*-values are in brackets; ***, **, and * indicate 1, 5, and 10 per cent significance levels, respectively. All models were estimated by using the maximum likelihood method with 12 quadrature points and robust standard errors. Adding more quadrature points did not produce any significant change in the coefficients and/or standards errors. AIC = Akaike's information criterion; BIC = Bayesian information criterion.

explain the impact of the loan officer on the probability of default – the random loan officer effect is not significantly different from zero, while unobserved borrower characteristics are significant determinants of default – the random borrower effect remains significant even after we introduced borrower characteristics. Few observed borrower characteristics are significant, and only at the 10 per cent level: single borrowers and group leaders are more likely to default. No other controls have significant effects on default.

Confirming our hypothesis, we find that male loan officers are better at enforcing credit contracts and in dealing with loan repayments than their female counterparts. This is in contrast with the findings of Beck et al. (2013) in a standard banking setting in Albania and can be explained by the specifics of the joint-liability methodology used by Pro Mujer and the Mexican setting. Village banking implies a combination of social objectives – assisting poor people to get out of poverty, and commercial objectives – assure repayment of loans. The female loan officers in our sample find it difficult to balance these objectives and to enforce loans – and thus engage in conflict with clients they got to know quite intimately. They feel that they betray borrowers when they try to enforce loan repayment after building up rapport with frequent meetings and trainings. Moreover, village banking involves travelling of the loan officer to meet clients in their own community for regular meetings, but also on so-called ‘defaulters rounds’. In Mexico, this often means travelling in areas that are considered unsafe for women. Finally, the Mexican *machista* culture instates authority of men over women, which facilitates loan enforcement from the mostly female borrowers by the male loan officers.

Strikingly, similarity of loan officers with their borrowers on other aspects than gender appears beneficial to loan repayment. Loans administered by Catholic loan officers (the dominant religion) and who were former clients of Pro Mujer were less likely to be in default. This result is in line with the idea that close interactions between borrowers and loan officers reduce information asymmetry, lead to fewer moral hazards, and strengthen contract enforcement, all of which can improve loan repayment rates.

7. Conclusion

By applying multilevel analyses, the paper studies the role of loan officers on loan repayment, with a special focus on gender. We use survey data for a sample of 57 loan officers and 406 borrowers of Pro Mujer Mexico – an organisation that provides joint-liability, group-based microfinance – and show that the characteristics of the loan officer exerts a significant impact on loan repayment rates, which corroborates the findings of Hermes et al. (2006), who suggest that a delegated monitor make take over peer monitoring. In the case of Pro Mujer, this person appears to be the loan manager. We hypothesise that default probabilities of loan portfolios handled by male loan officers outperform those administrated by female loan officers. Our results strongly confirm this hypothesis. This result draws specific attention to the crucial role of loan managers in reducing loan defaults in microfinance, an issue that has almost completely been overlooked in the traditional microfinance literature.

While our study strongly suggests that the gender of loan officers is extremely important in terms of default rates, it should be noticed that the cross-section variation in loan officers is relatively small as our sample only includes 57 loan officers. This is an example of a study in which aggregate data (loan officers) is combined with micro-level data (borrowers). It is well-known that OLS estimates of merged data in such cases may lead to downward bias in estimated standard errors. The usual procedure to control for the fact that borrowers dealing with the same loan officer are not independent would be to correct OLS standard errors for clustering. However, even then over rejection of the hypothesis of no effect may result. In our case, this could result in false conclusions of significant loan officer effects. Therefore we use a multilevel approach, which outperforms OLS estimates corrected for clustering, especially in case the amount of clusters (loan officers) is small, and hence results in much less false rejections (Cheah, 2009). To test the reliability of our main result, future research on the impact of the gender of loan managers would hopefully be based on a sample including a much larger group of loan managers.

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Disclosure statement

No potential conflict of interest was reported by the author(s).

Notes

1. This section is based on policy documents and interviews with managers and loan officers from Pro Mujer.
2. New clients are allowed to have loans with other institutions, but not to have outstanding overdue loans.
3. Coronango, San Cristobal Ecatepec, Tlahuac, and Xochimilco.
4. The quotes from the loan officer interviews in this section are taken from a qualitative background study conducted by Roscam Abbing (2011).

References

- Agarwal, S., & Wang, F. H. (2008). Motivating loan officers: An analysis of salaries and piece rates compensation. Federal Reserve Bank of Chicago. Working paper, available at <http://papers.ssrn.com/sol3/papers.cfm> (2008)
- Agier, I. (2012). The role of credit officers in the performance of micro loans. *Economics of Transition*, 20, 271–297. doi:10.1111/j.1468-0351.2012.00434.x
- Alzúa, M., Cruces, G., & Ripani, L. (2013). Welfare programs and labor supply in developing countries: Experimental evidence from Latin America. *Journal of Population Economics*, 26, 1255–1284. doi:10.1007/s00148-012-0458-0
- Andersson, P. (2004). Does experience matter in lending? A process-tracing study on experienced loan officers' and novices' decision behavior. *Journal of Economic Psychology*, 25, 471–492. doi:10.1016/S0167-4870(03)00030-8
- Arciniega, G. M., Anderson, T. C., Tovar-Blank, Z. G., & Tracey, T. J. G. (2008). Toward a fuller conception of machismo: Development of a traditional machismo and caballerismo scale. *Journal of Counseling Psychology*, 55(1), 19–33. doi:10.1037/0022-0167.55.1.19
- Armendáriz De Aghion, B., & Gollier, C. (2000). Peer group formation in an adverse selection model. *The Economic Journal*, 110, 632–643. doi:10.1111/1468-0297.00557
- Armendáriz De Agion, B., & Morduch, J. (2010). *The economics of microfinance* (2nd ed., 468 p.). The MIT Press: Cambridge, MA.
- Beck, T., Behr, P., & Guettler, A. (2013). Gender and banking: Are women better loan officers? *Review of Finance*, 17, 1279–1321. doi:10.1093/rof/rfs028
- Becker, G. S. (1993). A treatise on the family (288 p.) Harvard University Press, Cambridge, Massachusetts.
- Bellucci, A., Borisov, A., & Zazzaro, A. (2010). Does gender matter in bank–firm relationships? Evidence from small business lending. *Journal of Banking & Finance*, 34, 2968–2984. doi:10.1016/j.jbankfin.2010.07.008
- Besley, T., & Coate, S. (1995). Group lending, repayment incentives and social collateral. *Journal of Development Economics*, 46(1), 1–18. doi:10.1016/0304-3878(94)00045-E
- Bryk, A. S., & Raudenbush, S. W. (1992). *Hierarchical linear models: Applications and data analysis methods* (265 p.). Thousand Oaks, CA: Sage Publications.
- Cassar, A., Crowley, L., & Wydick, B. (2007). The effect of social capital on group loan repayment: Evidence from field experiments*. *The Economic Journal*, 117, F85–F106. doi:10.1111/j.1468-0297.2007.02016.x
- Chaia, A., Dalal, A., Goland, T., Gonzalez, M. J., Morduch, J., & Schiff, R. (2009). *Half the world is unbanked, Financial Access Initiative Framing Note*. Cambridge, MA: MIT Press.
- Cheah, B. C. (2009). *Clustering standard errors or modeling multilevel data. Research Note*. New York, NY: Columbia University.
- Chowdhury, P. R. (2005). Group-lending: Sequential financing, lender monitoring and joint liability. *Journal of Development Economics*, 77, 415–439. doi:10.1016/j.jdeveco.2004.05.005
- Conning, J. (1999). Outreach, sustainability and leverage in monitored and peer-monitored lending. *Journal of Development Economics*, 60, 51–77. doi:10.1016/S0304-3878(99)00036-X

- Daley-Harris, S. (2009). *State of the microcredit campaign report*. Washington, DC: Microcredit Summit Campaign.
- Dixon, R., Ritchie, J., & Siwale, J. (2007). Loan officers and loan 'delinquency' in Microfinance: A Zambian case. *Accounting Forum*, 31(1), 47–71. doi:10.1016/j.accfor.2006.11.005
- Ghatak, M. (2000). Screening by the company you keep: Joint liability lending and the peer selection effect. *The Economic Journal*, 110, 601–631. doi:10.1111/1468-0297.00556
- Ghatak, M., & Guinnane, T. W. (1999). The economics of lending with joint liability: Theory and practice. *Journal of Development Economics*, 60(1), 195–228. doi:10.1016/S0304-3878(99)00041-3
- Giné, X., & Karlan, D. S. (2014). Group versus individual liability: Short and long term evidence from Philippine microcredit lending groups. *Journal of Development Economics*, 107, 65–83. doi:10.1016/j.jdeveco.2013.11.003
- Hermes, N., Lensink, R., & Mehrteab, H. T. (2006). Does the group leader matter? The impact of monitoring activities and social ties of group leaders on the repayment performance of group-based lending in Eritrea. *African Development Review*, 18(1), 72–97. doi:10.1111/j.1467-8268.2006.00133.x
- Hox, J. J. (2002). *Multilevel analysis: Techniques and applications* Psychology Press (382 p.). New York, NY: Routledge.
- INEGI. (2010). *Census of population and housing 2010*. Mexico: Instituto Nacional de Estadística, Geografía e Informática.
- Kreft, I. G., & De Leeuw, J. (1998). *Introducing multilevel modelling*. Thousand Oaks, CA: Sage.
- Mallick, R. (2002). Implementing and evaluating microcredit in Bangladesh. *Development in Practice*, 12, 153–163. doi:10.1080/09614520220127676
- Mknelly, B., & Kevane, M. (2002). Improving design and performance of group lending: Suggestions from burkina faso. *World Development*, 30, 2017–2032. doi:10.1016/S0305-750X(02)00119-5
- Molyneux, M. (2002). Gender and the silences of social capital: Lessons from Latin America. *Development and Change*, 33, 167–188. doi:10.1111/1467-7660.00246
- Montgomery, R. (1996). Disciplining or protecting the poor? Avoiding the social costs of peer pressure in micro-credit schemes. *Journal of International Development*, 8, 289–305. doi:10.1002/(SICI)1099-1328(199603)8:2<289::AID-JID368>3.0.CO;2-2
- Morduch, J. (1999). The microfinance promise. *Journal of Economic Literature*, 37, 1569–1614. doi:10.1257/jel.37.4.1569
- Mwangi, E., Meinzen-Dick, R., & Sun, Y. (2011). Gender and sustainable forest management in East Africa and Latin America. *Ecology and Society*, 16(1), 17.
- Rabe-Hesketh, S., & Skrondal, A. (2008). *Multilevel and longitudinal modeling using Stata* (318 p.). College Station, TX: STATA Press.
- Roscam Abbing, M. I. (2011). Loan officers of Pro Mujer México: An explorative case study on field workers' issues in a non-profit microfinance institution in Mexico (MSc Thesis). The Netherlands: Wageningen University. <http://library.wur.nl/WebQuery/theses>
- Schicks, J. (2013). The Sacrifices of micro-borrowers in Ghana - A customer-protection perspective on measuring over-indebtedness. *Journal of Development Studies*, 49, 1238–1255. doi:10.1080/00220388.2013.775421
- Siwale, J., & Ritchie, J. (2011). *Failure by design: the rise and fall of a microfinance institution in Zambia—a case of Pride Zambia* (Working Paper).
- Stiglitz, J. E. (1990). Peer monitoring and credit markets. *The World Bank Economic Review*, 4, 351–366. doi:10.1093/wber/4.3.351
- Varian, H. R. (1990). Monitoring agents with other agents. *Journal of Institutional and Theoretical Economics-Zeitschrift Fur Die Gesamte Staatswissenschaft*, 146, 153–174.
- Vogelgesang, U. (2003). Microfinance in times of crisis: The effects of competition, rising indebtedness, and economic crisis on repayment behavior. *World Development*, 31, 2085–2114. doi:10.1016/j.worlddev.2003.09.004
- Wydick, B. (1999). Can social cohesion be harnessed to repair market failures? Evidence from group lending in Guatemala. *The Economic Journal*, 109, 463–475. doi:10.1111/1468-0297.00457