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ARE WOMEN MORE LIKELY TO BE CREDIT CONSTRAINED? EVIDENCE FROM LOW-
INCOME URBAN HOUSEHOLDS IN THE PHILIPPINES

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ABSTRACT

Based on survey data for 2002 and 2006 this paper investigates the determinants of credit constraints among women and men in two urban slum communities of Manila in the Philippines. The results show that women are more likely to be credit constrained than men. Rather than wealth, informal lenders seem to rely more on reputation and credit history to screen prospective borrowers, and the consequences of repayment delays or defaults are more severe for women than for men. These findings provide empirical support for women-targeted credit interventions in urban poor contexts, particularly those that enable women to build and capitalize on good credit histories.

KEYWORDS

Gender, credit constraints, intrahousehold allocation, bargaining power, urban poor, Philippines

JEL Codes: D14; J16; I30

INTRODUCTION

Microcredit programs often target poor women based on the expectation that women are less able than men to borrow from traditional lending sources (Mark M. Pitt, Shahidur R. Khandker and Jennifer Cartwright 2006). Gender norms that limit women's property rights and ability to pursue economic opportunities can result in low average incomes and lack of access to land and other assets for women (Carmen Diana Deere and Cheryl R. Doss 2006). Thus, it is reasonable to expect that poor women who want to borrow would find it difficult to get a loan and would therefore benefit the most from microcredit interventions.

But is this expectation borne out in the literature? Overall, the empirical evidence on gender differences in credit constraints is inconclusive (See Aliou Diagne, Manfred Zeller, and Manohar Sharma [2000] for a review). Part of the problem is the lack of individual data on borrowing behavior, which is why much of the empirical literature on gender and credit access compares households headed by men versus households headed by women. However, household-level analyses of credit constraints are incomplete and ignore credit constraints faced by women belonging to households headed by men. More recent work in this area recognizes the limitations of a household-level analysis and instead relies more on specialized surveys that collect individual-level financial data. Still, the evidence is mixed. Suresh de Mel, David McKenzie, and Christopher Woodruff (2009) conducted a field experiment in Sri Lanka to

analyze gender differences in microenterprise returns. Contrary to their expectations, de Mel, McKenzie, and Woodruff (2009) report that the returns to capital shocks are much higher for men than for women, suggesting that it is the microenterprises run by men, not women, that are more credit constrained.¹ On the other hand, Diana Fletschner (2009) analyzes gender differences in credit constraints in rural Paraguay, taking into account the possibility of conflictive intrahousehold dynamics and gender biases in rural market imperfections. Fletschner (2009) finds that the credit rationing status of spouses varies by gender, providing strong empirical support for women-targeted credit programs. These conflicting findings suggest that local context and type of borrowing are important, so we may not find the same gender gap across urban and rural areas, across formal and informal lending, and across production and consumption loans.

This paper contributes to the ongoing debate on gender differences in credit constraints by focusing on an underrepresented area in the credit literature: informal borrowing among urban squatters or slum dwellers in the Philippines.² Research on credit access in the Philippine setting almost exclusively focuses on rural credit markets, with particular attention to how credit and product contracts are interlinked (Ernesto D. Bautista 1991; Maria S. Floro and Pan A. Yotopoulos 1991; Maria Piedad S. Geron 1991; Raul V. Fabella 1992; Robert R. Teh, Jr. 1994). Studies that look beyond the rural context, such as Meliza H. Agabin, Mario B. Lamberte, Mahar Mangahas, and Maria Alcestis Abrera-Mangahas (1989) and Meliza H. Agabin (1993), note the paucity of attention to urban informal credit markets in the Philippines. In recent years, empirical work in this area has shifted the focus toward microcredit programs for women with, for example, Xavier Giné and Dean S. Karlan (2006) giving special attention to repayment rates and B. Lynne Milgram (2001) to the impact of access to credit on women's quality of life. Despite

the increasing attention on women's access to credit, however, the knowledge gaps on the urban informal credit markets remain.

Although de Mel, McKenzie, and Woodruff (2009) provide data on microenterprises in a similar low-income urban setting in Sri Lanka, this paper examines gender differences in credit constraints in the Philippines more generally, not only in terms of production or working capital loans. Specifically, this paper tests: (1) whether and to what degree women are more likely to experience quantity credit rationing compared with men, that is, having excess credit demand at the going interest rate, and (2) if a gender difference exists, is it due to differences in observable characteristics like wealth and other features of "good borrowers?"

This second question has broader implications for the types of interventions that can alleviate women's credit constraints. If, for example, women's inability to obtain credit results from lack of assets or collateral, then providing ways for women to gain access to land assets (for example, through strengthening property rights, joint land titling, and so on) may be justified. If the reason is poor credit history, as may be the case when lenders rely on reputation as collateral, then developing alternative mechanisms like Grameen Bank-style group lending and collateral substitutes may be more effective in relaxing women's credit constraints. Lastly, other gender-related factors, such as differences in financial responsibilities, differences in accessing potential lenders, and lender discrimination against women borrowers, may also be at play. Each of these factors would imply a different set of appropriate policy interventions.

The results suggest that women are indeed more likely to be credit constrained than men, but this is only partly explained by creditworthiness. Rather than wealth, informal lenders seem to rely more on reputation and credit history to screen prospective borrowers, and the consequences of repayment delays or defaults appear to be more severe for women than for men.

Moreover, the results suggest that other unobservable gender-related factors, such as gender norms that assign the management of day-to-day consumption to women, or the gendered patterns of social networking, also influence the credit rationing status of individuals. Further research on gender differences in borrowing and lending behavior is necessary to explore these alternative gender-related factors. Nevertheless, this analysis offers empirical support for women-targeted programs in urban poor contexts, particularly those that enable women to capitalize on and build good credit histories.

Lastly, this paper also demonstrates that financial data collected at the individual level reveals gender-sensitive borrowing patterns that remain invisible in reports from household heads. This approach challenges the naive, albeit standard, assumption in credit models that households borrow as a single unit.

DATA

This study uses survey data from two urban slum communities in the Philippines, collected in 2002 and in 2006–07 by researchers from American University (AU) and Cornell University (CU), in partnership with the Miriam College Women and Gender Institute (WAGI). The 2002 Urban Poor Home Worker Survey (UPHWS), was part of a multi-country survey of urban poor communities focusing on informal sector workers (AU and CU Urban Poor Project Team 2002). The project team's choice of the representative communities, Del Pan and Inarawan, took into consideration existing contacts with local community leaders and organizations who facilitated entry into the area. Del Pan is a well-established squatter community that is over fifty years old

and is located next to the Manila pier, in the heart of the city. It is a densely populated, high-crime community that is prone to flooding and has well-established social networks. Inarawan is a more recently established squatter community that is over twenty years old and is situated on a hilly area 15–20 kilometers from the Manila central business district. It is less densely populated compared to Del Pan, with generally larger living quarters. Inarawan is mainly populated by new migrants from the rural areas as well as displaced or evicted families from demolished squatter communities.

The UPHWS interviewed a total of 376 women and men from 197 households between August and November 2002 (AU and CU Urban Poor Project Team 2002),³ of which 150 women and 132 men were re-interviewed between November 2006 and January 2007 (WAGI and AU Urban Poor Project Team 2007). The attrition rate was 24 percent for women and 26 percent for men, which is not surprising considering the high degree of mobility of urban informal settlers.⁴ In 2002, 90 percent of households surveyed were poor while 61 percent were severely poor, using per capita income thresholds of US\$2/day and US\$1/day, respectively.

The surveys collected information on household and individual characteristics, employment, informal sector work, credit, savings, and household decision making (AU and CU Urban Poor Project Team 2002; WAGI and AU Urban Poor Project Team 2007). To analyze credit constraints this study relies primarily on the second round data, which includes additional qualitative questions on credit constraints, supplemented by the first round information on credit history and other time-invariant characteristics.

Identifying credit-constrained individuals

The qualitative credit information in the re-survey (WAGI and AU Urban Poor Project Team 2007) were collected from the household head and spouse in separate and private interviews to determine whether each individual has excess demand for credit.⁵ Interviewers asked each respondent to provide details on all of his or her loan transactions within the last six months. Individuals typically reported loans that they personally borrowed (individual loans), as well as loans for which they felt some responsibility (joint loans), regardless of who the main borrower was or who made use of the loan. If spouses within the same household reported different loans, then I interpret these as individual loans. On the other hand, if spouses within the same household reported matching loan transactions, then I interpret these loans as joint loans. In the case of a joint loan, both spouses reported details of the credit transaction, so I assume they were both involved in some aspect of the borrowing decision. However, much of the borrowing behavior in the survey data appears to be individual rather than joint.⁶ This provides further support for an individual-level analysis.

To determine individuals' credit constraint status, I use individuals' responses to a series of qualitative questions summarized in Figure 1. I group respondents according to whether they attempted to borrow at all in the last six months. I classify those who did not borrow because they expected their loan application to be rejected as discouraged borrowers and all other non-borrowers as having no loan demand.⁷ I categorize individuals who received the entire loan amount they tried to borrow as having no excess demand for loans. These borrowers were able to obtain as much credit as they sought at the going interest rate. I classify individuals who received less than the full amount they intended to borrow as having excess demand for loans. These

borrowers had access to credit, but they were quantity rationed. Lastly, I classify respondents who tried to borrow but did not obtain a loan as rejected borrowers.

[Figure 1 about here]

I define individuals as quantity rationed if they were willing to borrow at the current interest rate but were unable to obtain the loan amount they demanded. Based on this definition, I classify the no excess demand and no loan demand groups as unconstrained (not quantity rationed), while I classify the excess demand, rejected, and discouraged groups as credit constrained (or quantity rationed). From these categories, I can also infer that, excluding the no loan demand group, all other individuals had some positive loan demand.⁸

[Table 1 about here]

Individual characteristics

The mean characteristics of respondents, summarized in Table 1, show a number of striking differences between women and men. An overwhelming majority of the men, 94 percent, reported having some form of paid work or livelihood, compared with only 58 percent of the women. Women who engaged in paid work earned roughly two-thirds the average monthly income men earned. Women respondents commonly cited childcare responsibilities as their primary reason for not engaging in paid work. Although women are less likely to earn income,

they are more likely to report wealth holdings, that is, physical assets and financial savings.⁹ About 47 percent of women reported wealth holdings, compared with only about a third of the men, although the average value of women's wealth is lower than men's. Among those with wealth holdings, however, a t-test of means reveals that there is no statistically significant difference in the mean wealth levels reported by men and women.

[Table 2 about here]

In terms of the credit constraint status, women were more likely than men to have positive loan demand and be credit constrained (Table 2). A larger proportion of women, 45 percent, reported being credit constrained compared with only 32 percent of men. On the other hand, 24 percent of men reported having no loan demand, compared with only 11 percent of women. Consistent with these patterns, the Chi-square test rejects the null hypothesis that individuals' current credit constraint status is not independent of gender, although t-tests of means on current and past credit characteristics show no statistically significant differences between women and men.

Table 3 reports the average characteristics of individual respondents across the credit constraint categories. The high incidence of late payments for discouraged borrowers corroborates the use of reputational mechanisms among informal lenders; that is, prospective borrowers who were delinquent on past loans are more likely to expect rejection. The low level of past total loans for the discouraged group also suggests that the effect of past delinquency may depend on the amount of the loan. Lenders may be more willing to restructure larger debts to increase the likelihood of repayment rather than allow the borrower to default. Thus, past

delinquency may be less important for larger borrowers. This suggests that the interaction of the following credit history variables, namely, past delinquency and past loan size, is likely to determine whether or not a respondent is credit constrained.

In terms of current credit characteristics, the excess demand group borrowed much larger amounts at nearly twice the average interest rate compared with the no excess demand group. Note that the excess demand group, by definition, has already borrowed up to its credit limit. This suggests that the excess demand group has a greater demand for loans and therefore is likely to face higher interest rates. One would expect borrowers to first exhaust the cheapest sources of credit (for example, kin), and then move on to more costly sources (for example, moneylenders).

[Table 3 about here]

Loan characteristics

A number of the particular characteristics of rural credit markets also appear to be present in Del Pan and Inarawan.¹⁰ First, informal credit sources dominate the urban credit market. Loans from kin, moneylenders, employers, suppliers, and other informal lenders provide about 87 percent of the total credit volume during the survey period.¹¹ Second, a majority of transactions did not require collateral at all. Only 3 percent of all credit transactions required some collateral, primarily jewelry and household appliances. Third, there is substantial variation in the types of credit contracts offered by different informal lenders. For example, kin credit and neighborhood store credit offer small short-term (one to three weeks) loans that carry little or no interest at all,

while moneylenders offer larger loans at longer terms (six weeks) and charge an average annual interest of 257 percent. As Floro and Yotopoulos (1991) observed in Philippine rural credit markets, lenders are heterogeneous and may have access to different sets of information on different types of borrowers. Thus, a similar matching system may also be operating in urban credit markets, where prospective borrowers are matched to different lenders according to the ability of the specific lender to enforce repayment from the specific borrower (Karla Hoff and Joseph Stiglitz 1993).

Although the UPHWS (WAGI and AU Urban Poor Project Team 2007) did not collect information on lenders specifically, the characteristics of current loan transactions can reveal differences in the terms of credit contracts undertaken by women and men. Table 4 summarizes the characteristics of current individual loans disaggregated according to the borrowers' gender and credit constraint status. Overall, women reported more loan transactions over the same period compared with men. The credit-constrained borrowers had, on average, larger loans and higher interest rates but longer periods compared with unconstrained borrowers. Most of the loans undertaken by both credit-constrained and unconstrained borrowers did not require collateral.¹²

[Table 4 about here]

In terms of loan sources, 98 percent of all individual loans were from informal sources. Only two out of the total 580 loan transactions were obtained from banks, while only eleven were from semiformal institutions, such as microcredit institutions, credit unions, and pawnshops. Credit-constrained women and men borrowed a larger proportion of loans from kin,

moneylenders, and a smaller proportion of loans from employers/suppliers and neighborhood stores, compared with their unconstrained counterparts. Also, credit-constrained borrowers had more semiformal and formal loans.¹³ This suggests that credit-constrained borrowers may have stronger credit demand.

Table 5 summarizes the average loan and borrower characteristics by loan source to show how credit contracts differed by lender. In terms of overall credit volume for the period, moneylenders provided the largest proportion of total loan volume (28 percent), followed by other informal sources (20 percent), kin (19 percent), and semiformal sources (11 percent). However, based on the number of transactions, neighborhood stores (57 percent), kin (24 percent), and moneylenders (12 percent) provided the largest number of credit contracts. The majority of loans from kin, moneylenders, neighborhood stores, and other informal lenders were to women.¹⁴ Loans from these sources tended to be the smallest, averaging only 736 pesos (US\$14) for kin credit and 197 pesos (US\$2.60) for store credit, and they generally did not carry interest. Both types of loans also tended to be very short term; store credit was usually due within a week, while kin credit was due within three weeks when a due date is specified.

Loans from informal moneylenders carried the highest average interest rates, followed by formal loans and semiformal loans. Moneylenders and neighborhood stores had the highest proportion of loans to borrowers who had a history of delinquent payments, while loans from formal, semiformal, and other informal lenders were to borrowers who had always paid on time. Only moneylenders, semiformal lenders, and other informal lenders appeared to rely on collateral. Taken together, these descriptive statistics suggest that there are important differences in the characteristics of men and women that may influence their demand for loans as well as their access to different credit sources.

[Table 5 about here]

ANALYTICAL FRAMEWORK

My analytical framework assumes that the lenders in the urban informal credit market in the Philippines are composed of heterogeneous private individuals who provide credit out of their own savings (Aida Lava, Dennis Arroyo, Rosario de Guzman, and Joselette delos Santos 1989). Although the problem of asymmetric information is inherent in the credit transaction (Joseph E. Stiglitz and Andrew Weiss 1981), informal lenders can overcome this information problem by building and maintaining close personal ties with prospective borrowers (Floro and Yotopoulos 1991; Hoff and Stiglitz 1993; Abhijit V. Banerjee and Esther Duflo 2007).

Credit supply

As Hoff and Stiglitz (1993) propose, my framework assumes that borrowers are matched to lenders according to the ability of lenders to enforce repayment. I assume that a prospective borrower has access to a set of lenders, S , in his or her network of social and economic relationships. Each lender, s , sets a credit limit l_s based on the prospective borrower's observable characteristics \mathbf{X} that determine his or her creditworthiness.¹⁵ I assume that credit limits are increasing in accordance with the borrower's ability to pay. The absolute size of an

individual's overall credit limit, L , therefore depends on both the size of his or her lender network, as well as his or her creditworthiness, represented by the sum:

$$L = \sum_{s=1}^S l_s(\mathbf{X}). \quad (1)$$

Credit demand

I assume the decision to borrow among household members is noncooperative,¹⁶ and within their gendered spheres of financial responsibility, men and women maximize welfare subject to resource constraints. Following Jappelli's (1990) approach, I obtain consumption loan demand b^* by comparing desired consumption c^* against current income y :

$$b_c^* = c^* - y. \quad (2)$$

Unlike Jappelli's (1990) model, however, this framework recognizes that consumers can use borrowing and dissaving, separately or in combination, to finance desired consumption when current income is insufficient (Marcel Fafchamps and Susan Lund 2003).

Similar to agricultural households, individuals in urban poor households may also operate small enterprises that require production credit. The individual's reduced form total credit demand B^* can be represented simply as the sum of their consumption credit demand b_c^* , and production credit demand b_p^* :

$$B^* = b_c^* + b_p^*, \text{ where } b_c^*, b_p^* \geq 0. \quad (3)$$

The credit constraint

Combining the assumptions on credit demand and credit supply, I define an individual as credit constrained if total credit demand exceeds the credit limit L :

$$B^* = b_c^* + b_p^* > L. \quad (4)$$

Next, I assume that the credit limit takes the form, $L = \mathbf{X}\delta + \eta$, and the optimal consumption and production credit demand take the form:

$$b_j^* = \mathbf{X}\beta_j + \varepsilon_j, \quad j = c, p \quad (5)$$

where \mathbf{X} is a matrix of observable characteristics, β_j and δ is a vector of parameters common to all individuals, and ε_j and η are individual-specific error terms. Combining these assumptions, the latent excess credit demand equation (4) can be rewritten as:

$$\mathbf{X}\beta - \mathbf{X}\delta + \varepsilon - \eta > 0 \quad (6)$$

where β and δ represent the reduced-form effects of the observable characteristics on loan demand and the credit limit, respectively, and $\beta = \beta_c + \beta_p$ and $\varepsilon = \varepsilon_c + \varepsilon_p$.

Although both the desired loan demand and the credit limit are unobservable, the data can be used to identify individuals who have positive loan demand, as well as individuals for whom the credit constraint binds using the following binary variables:

$$q = 1 \quad \text{if} \quad B^* = \mathbf{X}\beta + \varepsilon > 0 \quad (\text{positive loan demand}) \quad (7)$$

$$q = 0 \quad \text{if} \quad B^* = \mathbf{X}\beta + \varepsilon \leq 0 \quad (\text{no loan demand})$$

and,

$$z = 1 \quad \text{if} \quad \mathbf{X}\gamma + \mu \geq 0 \quad (\text{credit constrained}) \quad (8)$$

$$z = 0 \quad \text{if} \quad \mathbf{X}\gamma + \mu < 0 \quad (\text{unconstrained})$$

where γ is a linear combination of the parameters in equation (6), and $\mu = \varepsilon - \eta$. Conditional on the observable characteristics \mathbf{X} , the probability that an individual has positive loan demand is assumed as:

$$\Pr(q = 1|\mathbf{X}) = \frac{e^{\mathbf{X}\beta + \varepsilon}}{1 + e^{\mathbf{X}\beta + \varepsilon}} \quad (9)$$

and the probability that an individual is credit constrained is assumed as:

$$\Pr(z = 1|\mathbf{X}) = \frac{e^{\mathbf{X}\gamma + \mu}}{1 + e^{\mathbf{X}\gamma + \mu}} \quad (10)$$

where $\mathbf{X}\beta + \varepsilon$ and $\mathbf{X}\gamma + \mu$ are the reduced forms for credit demand and excess credit demand, respectively. I assume both have logistic distributions and thus I estimate them using logit regressions (William H. Greene 2002).

Impact of wealth and gender

Contrary to other studies in the literature, such as Besley's (1994), Jappelli's (1990), and Boucher, Guirkinger, and Trivelli's (2005) studies, pairwise t-tests across credit constraint groups suggests that wealth is uncorrelated with respondents' credit constraint status. As Frederick J. Zimmerman and Michael R. Carter (2003) show, when subsistence constraints, asset price risk, and income risk are present, poor agents may prefer to borrow rather than lose their assets permanently (also known as asset smoothing). In the event of a weather shock, for example, people may be willing to borrow more even at unfavorable terms to be able to maintain their livestock holdings. On the supply side, lenders may rely less on wealth for screening potential borrowers if other observable characteristics such as credit history or reputation are reliable signals of creditworthiness. Indeed, lenders do appear to rely substantially on reputation as shown by the high incidence of delinquency among discouraged borrowers in the data (see Table 3).

Apart from wealth and credit history, gender norms that define the spheres of financial responsibilities for men and women may have an impact on credit demand by gender. For example, researchers observe that, in Indonesia (Hanna Papanek and Laurel Schwede 1988), Thailand (Aphitchaya Nguanbanchong 2004), and the Philippines (Delia D. Aguilar 1991), women are primarily responsible for meeting day-to-day household needs, such as food and other necessities, which suggests that women may be more likely to turn to borrowing to finance gaps in the daily budget. Information on current loan transactions reflects this gender assignment of responsibilities to some degree: Table 4 shows that about 60 percent of all loans from

neighborhood stores were taken out by women, and these loans were typically for food items and other household supplies.

Gender roles could also influence the way women build and access lender networks. Because men are more likely to be engaged in paid work in the public sphere while women are more likely to be engaged in unpaid work in the private sphere, men may be exposed to a larger, better-quality network of potential lenders compared to women. Although the UPHWS did not collect information on social networks (AU and CU 2002), the qualitative information in the survey is consistent with this hypothesis. When asked why they do not have loans, some women reported that the lender they approached had nothing to lend, whereas none of the men cited this reason. Even if men and women have identical social networks, however, women may have systematically lower credit limits and be more likely to be credit constrained compared to men if lenders discriminate against women borrowers.

Testable hypotheses

This paper tests the following hypotheses: controlling for other observable characteristics, (1) individuals with lower levels of wealth are more likely to be credit constrained; (2) individuals with poor credit history are more likely to be credit constrained; and (3) women are more likely to be credit constrained. Following the empirical literature on credit constraints, \mathbf{X} includes a female dummy F and variables that represent the individual's available resources \mathbf{x}_r , credit history \mathbf{x}_h , and other individual and household characteristics \mathbf{x}_c :

$$\mathbf{X}\gamma = \gamma_0 + \gamma_f F + \gamma_r \mathbf{x}_r + \gamma_h \mathbf{x}_h + \gamma_c \mathbf{x}_c . \quad (11)$$

I test the hypotheses using the estimated marginal effects evaluated at the sample means. A statistically insignificant estimated marginal effect of the female dummy suggests that differences in observable characteristics between women and men account for any gender differences in the probability of being credit constrained. In particular, higher levels of wealth holdings and good credit histories are expected to reduce the likelihood of a binding credit constraint. On the other hand, a positive and statistically significant estimated marginal effect of the female dummy variable supports the hypothesis that, beyond gender differences in observable characteristics, there are other unobservable factors correlated with gender that increase women's likelihood of being credit constrained. Although these marginal effects cannot be disaggregated into their demand and supply components, the loan demand regression can provide an analysis of credit demand at the extensive margin. To estimate the probability of positive loan demand, I use the same set of regressors, with the exclusion of the credit history variables.

Note that equation (11) restricts the coefficients to be equal for both men and women, which may not be reasonable if men and women behave differently either in terms of their loan demands, or in their access to lenders. To allow for differences between coefficients by gender, I include a complete set of female interactions as explanatory variables in the augmented matrix \tilde{X} for both the credit constraint and loan demand estimations. This is equivalent to running separate regressions for men and women but nests the test for differences in coefficients. This augmented model for credit constraints is specified as:

$$\tilde{\mathbf{X}}\tilde{\gamma} = \gamma_0 + \gamma_f F + \gamma_r \mathbf{x}_r + \gamma_h \mathbf{x}_h + \gamma_c \mathbf{x}_c + \theta_r(\mathbf{x}_r \times F) + \theta_h(\mathbf{x}_h \times F) + \theta_r(\mathbf{x}_r \times F).$$

(12)

RESULTS

The empirical exercise examines the impact of wealth, credit history, and gender on the probability of being credit constrained. The dependent variables of interest are the indicator variables on credit demand and excess credit demand, which were constructed using the qualitative credit data (Figure 1). The explanatory variables in the excess credit demand or credit constraint regression include a female dummy, resources (age, years of schooling, ln wealth), credit history (late past payments dummy, ln total past loans, and their interaction), and other characteristics (employee dummy, self-employed dummy, household size dummies, and neighborhood dummy). The credit demand regressions exclude credit history in the set of explanatory variables.

Table 6 presents the estimated marginal effects from the logit regressions. Models 1 and 3 report estimated marginal effects for the base models and Models 2 and 4 report the estimated marginal effects for the interactions models given by equation (11) and equation (12), respectively.

Determinants of loan demand

An important caveat in the interpretation of the loan demand logits is that the dependent variable measures only whether an individual has any loan demand. Therefore, variables that influence the probability of having some demand for loans may not necessarily have the same influence on the actual size of loan demand. On the other hand, a binding credit constraint depends on the level of credit demand as compared to the level of credit supply, both of which are unobservable. Nevertheless, the loan demand logits may provide insights on the role of credit demand in determining the likelihood of a binding credit constraint.

Consistent with the descriptive statistics, the base model estimates also show that women are 11 percent more likely to demand loans compared with men, all else equal. Even when the specification is relaxed to allow for differences in coefficients by gender, the marginal effect for the female dummy remains statistically significant at the 10 percent level. This suggests that gender may capture other unobservable characteristics that influence the incidence of loan demand. One possible explanation is that gender norms assign women greater responsibility for bridging day-to-day gaps in household consumption. Although such gaps may be small, this may increase the frequency by which women turn to the informal credit market for financing. While this could explain the higher incidence of loan demand for women, whether this effect carries over to the size of women's loan demand remains unclear.

The base model results also indicate that younger individuals and individuals who use working capital in their livelihood, and who are from larger households, are more likely to have some loan demand. These results are all within expectations. First, age captures life-cycle effects and also proxies for experience, which is part of human capital. Younger individuals may be more likely to borrow because of lower returns to their labor or because of costly life-cycle events such as marriage and childbearing. Second, self-employed individuals whose livelihoods

require working capital are more likely to have production credit demand in addition to consumption credit demand. Third, individuals from larger households are more likely to have more dependents and therefore higher levels of consumption.

Although the magnitudes and significance of marginal effects for the other variables are qualitatively similar for men in the interactions model, there are some interesting differences for women.¹⁷ First, while age is negatively related to loan demand incidence for men, the opposite is true for women. This may reflect gender differences in the returns to experience or in life-cycle factors. Second, working as an employee does not appear to influence the incidence of loan demand for men, but it reduces this probability for women by 22 percent.¹⁸ The predictability of income from this type of employment may reduce the need to smooth consumption via consumption loans, which has been found to be among the primary responsibilities of women in some regions (Eleanor R. Fapohunda 1988; Homa Hoodfar 1988; Papanek and Schwede 1988; Aguilar 1991; Nguanbanchong 2004). Third, an additional year of schooling increases the probability of demanding a loan by 2.5 percent for women, but it has no significant effect on the incidence of loan demand for men. More educated women may have a greater ability to recognize profitable investment opportunities that could increase their demand for production credit.

Determinants of credit constraints

Table 6 reports the estimated marginal effects on the probability of being credit constrained under Models 3 and 4 for the base model and interactions model, respectively. Similar to the loan

demand results, the base model estimates show that women are 16 percent more likely to be credit constrained compared with men. Furthermore, when the assumption of equal coefficients for men and women is relaxed, the marginal effect of being a woman is magnified and remains highly statistically significant.

One possible interpretation of this result is gender discrimination, where lenders favor men over women borrowers given identical characteristics. However, the limited studies available on informal urban credit markets do not appear to support this. Kondo (2003) reports that many informal moneylenders operating in urban public markets in the Philippines prefer to lend to women because they are more willing to share information, they maintain social ties, and they care more about their reputations. Thus the cost of monitoring loans to women would be lower compared with loans to men, which implies a larger, not smaller, credit limit for women. Another possible supply-side interpretation is that gender roles could be influencing the composition of lender networks, such that the quantity and quality of potential lenders to which women have access are inferior to the potential lenders to which men have access. For example, the gender assignment of market activities to men, and nonmarket activities to women, could lead to men forming wider social and economic networks with access to more resources compared to women. This implies systematically lower credit limits for women, which could increase their likelihood of being credit constrained.

On the other hand, women may be more likely to be credit constrained because of their higher credit demand compared to men, and this is consistent with the loan demand results. If gender norms assign the responsibility of managing day-to-day household consumption to women, then perhaps women are more likely than men to turn to the informal credit market for consumption loans. In this case, men may be borrowing primarily for production whereas

women may be borrowing for both production and consumption. All else equal, this implies that women will have more demand for credit compared with men, which translates into a higher probability of being credit constrained.

[Table 6 about here]

The base model results also show that wealth does not decrease the probability of being credit constrained, contrary to the expectations in the literature (Boucher, Guirking, and Trivelli 2005). On the demand side, subsistence constraints and risks may induce individuals to pursue asset smoothing even when it is costly to do so (Zimmerman and Carter 2003). In particular, they may be more willing to reduce consumption or incur costly debt rather than liquidate assets or dip into savings. On the supply side, informal lenders may be relying more on reputation and credit history rather than wealth to screen borrowers. If the credit limit is not increasing in wealth and credit demand is either increasing or is independent of wealth, then the net effect of wealth on the credit constraint status of individuals is expected to be positive.

The results on credit history are also within expectations. The incidence of late payments increases the probability of being credit constrained by about 44 percent, although this effect appears to be weaker for borrowers with larger loans. Lenders may be more amenable to restructuring loans when the loan size and therefore the potential loss from default is large, whereas small borrowers are more easily cut off from future credit.

As expected, individuals who require working capital in their livelihoods are about 37 percent more likely to be credit constrained. Unlike other individuals who borrow primarily to finance consumption, these individuals also borrow to finance working capital.

In general, the estimated marginal effects for men in the interactions model have similar levels of statistical significance and order of magnitude as in the base model, with the exception of the employee dummy. Not surprisingly, both men and women employees are 23 percent less likely to be credit constrained in the interactions model. Regular employment provides access to an additional source of credit, either directly from the employer via cash advances on earnings, or through Social Security and other employment benefits. Lenders also view regular employment as evidence of a borrower's ability to pay (Lava et al. 1989), so employees are likely to enjoy a higher credit limit from informal lenders. Overall, this is consistent with a lower probability of a binding credit constraint for employees.

The interactions model also reveals a number of significant differences in the estimated marginal effects for women. First, the effect of past loan delinquency on the credit constraint appears to be more severe for women compared to men. A woman who made late payments in the past is almost certainly credit constrained (the main and interaction effects sum to over 1), whereas men are only 51 percent more likely to be credit constrained. Women who borrowed more in the past are also less likely to be credit constrained regardless of their payment history. As Kondo's (2003) case studies among urban informal moneylenders suggests, reputational mechanisms may be more effective among women because they care more about their credibility and value their reputation within their social networks. Women who borrowed larger amounts in the past and paid on time are likely to enjoy even higher credit limits, whereas women who borrowed large amounts but made late payments are more likely to have restructured loans or extended loan terms as explained previously. Either case is consistent with a negative relationship between past loan size and the probability of being credit constrained.

Second, although wealth does not appear to influence the credit constraint status for men, it statistically significantly increases the probability of being credit constrained for women. This result is consistent with the hypothesis that women are more likely to borrow for consumption compared with men. Women with more wealth are more likely to demand more consumption loans, but their credit limits do not increase with wealth, responding instead to credit history, thereby increasing the probability of being credit constrained.

Lastly, Table 6 also reports the strong predictive power of the analysis, with slightly improved prediction for the interactions models (Models 2 and 4) compared with the base models (Models 1 and 3). The interactions model correctly predicts positive loan demand for 76 percent of the cases, and credit constraint status in 72 percent of the cases.

CONCLUDING REMARKS

This paper has investigated the determinants of credit constraints among women and men in two urban slum communities in the Philippines. The evidence suggests that women are indeed more likely to be credit constrained than men, but this constraint is only partly explained by creditworthiness. Rather than wealth, informal lenders seem to rely more on reputation and credit history to screen prospective borrowers, and the consequences of repayment delays or defaults appear to be much more severe for women. Beyond differences in observable characteristics, my analysis suggests that women are more likely to demand loans and are more likely to be credit constrained overall. This implies that there are other unobservable factors correlated with gender that statistically significantly influence the borrowing behavior of individuals. On the demand

side, one possible explanation is that gender norms assign women greater responsibility for managing day-to-day gaps in household consumption, resulting in greater demand for consumption credit among women relative to men. On the supply side, women may face lower credit limits compared with men because (1) lenders discriminate against women, or (2) women's social and economic roles limit their ability to build lender networks. Further research on gender differences in borrowing and lending behavior is needed to explore the validity of these hypotheses.

These findings provide empirical support for women-targeted credit interventions in urban poor contexts, particularly those that enable women to build and capitalize on good credit histories. This is not to say, however, that simply providing women with credit will automatically make a difference in their lives. On the contrary, there are clear examples where women-targeted microcredit programs create unintended negative consequences (Anne Marie Goetz and Rina Sen Gupta 1996). My findings suggest that microcredit programs alone are unlikely to be sufficient in eliminating the gender gap in credit rationing because differences in credit history are only one part of the story. The design of more appropriate interventions would depend greatly on the underlying causes of the unexplained gender gap in credit rationing. For example, if women's inadequate access to credit is due to their higher demand for consumption credit, then saving and insurance mechanisms that assist women in managing household budgets in the face of income variability could be effective in tempering the need for consumption loans (Beatriz Armendáriz de Aghion and Jonathan Morduch 2005; Stefan Dercon, Tessa Bold, and César Calvo 2006). On the other hand, if women's inadequate access to credit is due to their limited lender networks, then helping women to organize and network more broadly could expand the quantity and quality of the potential lenders they can access. Finally, if women's

inadequate access to credit is due to discrimination among informal lenders, then simply targeting women borrowers makes sense. In this case, the many microcredit programs that have been lending exclusively to women in poor communities would be on the right track. In the absence of more detailed data on lenders, however, these supply-side explanations are difficult to verify. Future work in this area should therefore include the collection of individual financial data on borrowing, lending, gifts, and transfers, as well as on social networks and other informal lenders. Beyond expanding the scope of topics and interviewing men and women separately, it is also imperative that future surveys are designed in a way that is sensitive to the gender dynamics of financial decision making within the household. At a minimum, this requires challenging the standard assumptions in the literature that characterize households as a single unit. This would allow a more rigorous analysis of the barriers women face in informal credit markets and provide better guidance for the design of policy interventions.

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NOTES

¹ De Mel, McKenzie, and Woodruff (2009) note, however, that while their data consist of a random sample of microentrepreneurs, these are not random samples of populations of men and women.

² Urban slum-dwellers are underrepresented in standard surveys because sample households are typically selected on the basis of permanent residence. While there is increasing attention to the issue of credit access and credit rationing in rural areas, it is not clear whether these research findings and their corresponding policy implications are applicable in urban settings.

³ Out of 197 households, eighteen are single-headed, of which seventeen are headed by women.

⁴ Of these respondents, 46 percent moved, 18 percent were displaced due to squatter evictions or demolitions, 18 percent were from dissolved or separated households, and 14 percent were deceased. Although attrition is nonrandom, estimation of probit models with selection for various specifications suggests that error terms for the probability of attrition and the probability of being credit constrained are uncorrelated.

⁵ This approach is similar to Fletschner's (2008, 2009) qualitative credit module.

⁶ Only sixteen out of 150 households reported at least one joint loan transaction.

⁷ The three most cited reasons for not applying for a loan are: (1) fear of rejection (for example, “nobody is willing to lend”), (2) fear of default (for example, “may not be able to pay back loan”), and (3) prefers not to borrow (for example, “not used to borrowing”). Note that reason (2) implies price rationing, that is, the borrower’s use for the funds may not generate enough returns to cover the cost of the loan.

⁸ Note that the excess demand and rejected groups applied for loans and therefore had some idea of the going interest rates. On the other hand, the discouraged group may be either price or quantity rationed. They may have opted not to apply because the interest rates were too high, or they may have been willing to pay the going interest rate but did not apply because they expected to be rejected. To distinguish between these two possibilities, I use the open-ended responses of non-applicants to classify whether they were price or quantity rationed. As a robustness check, I restrict the analysis to only those who attempted to borrow during the period. The results are qualitatively similar to those for the full sample.

⁹ Only two respondents reported owning land. The majority of the assets that respondents mentioned include appliances, jewelry, and cell phones, all of which have active secondary markets.

¹⁰ See Timothy Besley (1994) for an overview of the key features of rural credit markets.

¹¹ A case study of a squatter area in Manila by Tōru Nakanishi (1990) reveals the same dominance of informal lending – about 96 percent of the total borrowing was from informal sources, while the remainder was unpaid hospital debts. Banerjee and Duflo (2007) report similar patterns for Udaipur and Hyderabad.

¹² Of the nineteen transactions that required collateral, five borrowers used jewelry, seven used durable goods, one used land, three used ATM cards, and three used other assets as collateral.

¹³ Semi-formal sources include microcredit institutions, credit unions, and pawnshops. Formal sources include banks, the Social Security System (SSS), and the Pag-IBIG Fund.

¹⁴ Other informal lenders include funeral homes and appliance retailers who accept installment payments.

¹⁵ The interest rate charged by lenders is correlated to the borrowers' characteristics and is implicitly accounted for by \mathbf{X} .

¹⁶ This is a reasonable assumption given the dominance of individual borrowing among couples.

¹⁷ The marginal effects for men are the main effects for each variable. I compute the marginal effects for women by taking the sum of the main effect and the interaction effect for each variable, treating insignificant estimates as zero. Note that there is no statistically significant difference in the marginal effects between men and women where the female interaction effects are statistically insignificant.

¹⁸ I use the term employee loosely in this context to indicate relative stability in earnings. I define an employee as a paid worker whose income is guaranteed by an employer, regardless of whether it is formal or informal employment.

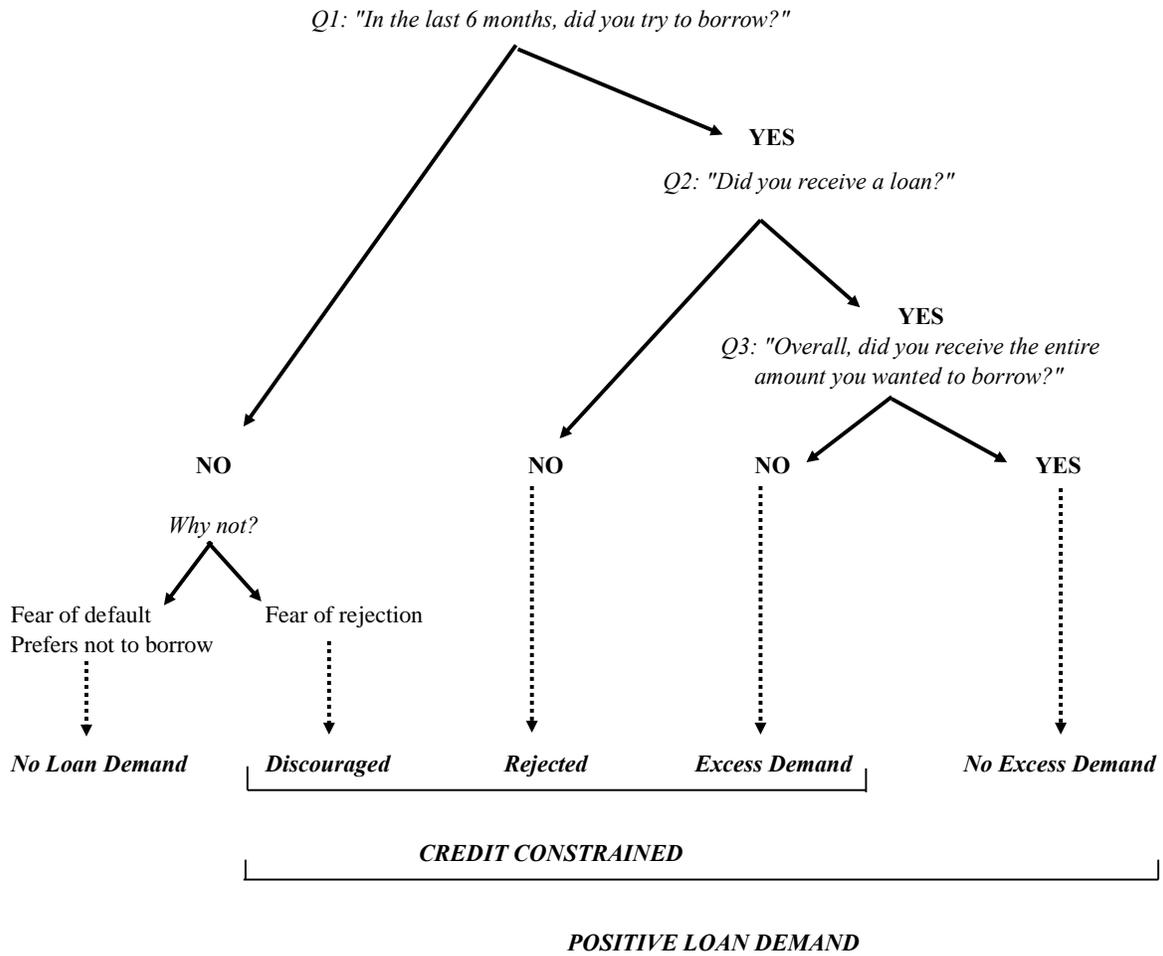


Figure 1 Borrower classification based on qualitative questions on credit constraints

Source: Author's own borrower classification using questions from WAGI and AU Urban Poor Project Team (2007).

Table 1 Mean individual and household characteristics by gender

	All n = 282	Women n = 150	Men n = 132	P-value
<i>Individual characteristics</i>				
Age (years)	38.4 (10.5)	37.7 (11.0)	39.2 (9.8)	0.224
Years of schooling	6.9 (3.0)	6.9 (3.0)	6.8 (2.9)	0.910
Any income generating activity? (%) ^a	74.8 (43.5)	58.0 (49.5)	93.9 (24.0)	0.000***
Monthly earnings (pesos) ^b	3,584 (2,935)	2,706 (2,594)	4,191 (3,012)	0.000***
Any wealth holdings? (%)	40.1 (49.1)	46.7 (50.1)	32.6 (47.0)	0.016**
Wealth (pesos) ^b	6,615 (14,664)	5,353 (1,141)	8,670 (3,113)	0.245
<i>Household characteristics</i>				
Household size	5.7 (2.5)	5.8 (2.5)	5.7 (2.5)	0.688
No. of children 0–5 yrs	1.1 (1.1)	1.1 (1.1)	1.1 (1.1)	0.823
No. of children 6–14 yrs	1.5 (1.4)	1.5 (1.4)	1.5 (1.3)	0.942

Notes: Standard deviations in parentheses. Values are in 2002 pesos. Exchange rate is PHP 53: USD 1. ***, **, * denote statistical significance at the 1, 5, and 10 percent levels, respectively. P-values from t-tests/chi-square tests by gender.

^a Individuals may have multiple income-generating activities.

^b Excludes individuals with zero values.

Table 2 Sample credit characteristics by gender

	All n = 282	Women n = 150	Men n = 132	P-value
<i>Credit constraint status</i>				0.027**
No loan demand	48 (17.0)	17 (11.3)	31 (23.5)	
No excess demand	125 (44.3)	66 (44.0)	59 (44.7)	
Total unconstrained borrowers	173 (61.4)	83 (55.3)	90 (68.2)	
Excess demand	78 (27.7)	48 (32.0)	30 (22.7)	
Rejected	12 (4.3)	7 (4.7)	5 (3.8)	
Discouraged	19 (6.7)	12 (8.0)	7 (5.3)	
Total credit constrained borrowers	109 (38.7)	67 (44.7)	42 (31.8)	
<i>Past credit characteristics</i>				
Borrowed in 2002 (% of n)	57.1 (49.6)	60.0 (49.2)	53.8 (50.0)	0.295
Total loans in 2002 (pesos) ^a	3,628 (5,203)	3,111 (4,460)	4,283 (5,983)	0.157

Any late payment in 2002 (%) ^a	12.4 (33.1)	12.2 (32.9)	12.7 (33.5)	0.931
<i>Current credit characteristics</i>				
Borrowed in 2006 (% of n)	63.8 (48.1)	68.0 (46.8)	59.1 (49.4)	0.121
Total loans in 2006 (pesos) ^a	3,418 (6,054)	3,479 (7,247)	3,338 (4,038)	0.878
Average loan size (pesos) ^a	1,936 (5,248)	2,059 (6,668)	1,776 (2,376)	0.721
Average loan term (days) ^a	57 (113)	54 (116)	61 (110)	0.621
Weighted average annual interest rate (%) ^a	76.0 (206.7)	84.2 (234.6)	65.2 (164.1)	0.543

Notes: Column percentages and standard deviations in parentheses. Values are in 2002 pesos. Exchange rate is PHP 53: USD 1. ***,

**, * denote statistical significance at the 1, 5, and 10 percent levels, respectively. P-values from t-tests/chi-square tests by gender.

^a Excludes non-borrowers.

Table 3 Sample characteristics by credit constraint status

	Unconstrained		Credit constrained			
	No loan demand n = 48	No excess demand n = 125	Excess demand n = 78	Rejected n = 12	Discouraged n = 19	All n = 282
<i>Credit history</i>						
Borrowed in 2002 (% of n)	58.33	53.60	57.69	58.33	73.68	57.09

Total loans in 2002 (pesos) ^a	4,461	2,800	4,898	3,990	1,662	3,628
Any late payments in 2002 (%) ^a	3.57	14.93	13.33	-	21.43	12.42
<i>Current credit characteristics</i>						
Borrowed in 2006 (%)		85.60	93.59			63.83
Total loans in 2006 (pesos) ^a		2,903	4,172			3,418
Average loan size (pesos) ^a		1,322	2,836			1,936
Average loan term (days) ^a		56	56			56
Weighted average annual interest rate (%) ^a		128.4	239.7			192.7

Notes: Values are in 2002 pesos. Exchange rate is PHP 53: USD 1.

^a Excludes non-borrowers.

Table 4 Loan characteristics by gender and credit constraint status

	Unconstrained			Credit constrained		
	Total n = 343	Women n = 191	Men n = 152	Total n = 237	Women n = 171	Men n = 66
Mean loan amount (pesos)	666 (1,679)	488 (1,502)	891 (1,859)	1237 (4,570)	1230 (5,217)	1256 (2,151)
Mean loan term (days) ^a	17 (28)	15 (22)	20 (35)	27 (59)	23 (61)	38 (52)
Mean annualized interest rate (%)	16.19 (55.84)	17.38 (56.85)	14.70 (54.70)	56.35 (209.60)	45.70 (187.53)	84.12 (258.15)
<i>Loan source</i>						
Informal (total)	342	190	152	225	166	59

	99.71	99.48	100	94.94	97.08	89.39
Kin	67	45	22	71	58	13
	19.53	23.56	14.47	29.96	33.92	19.7
Moneylender	30	17	13	39	25	14
	8.75	8.9	8.55	16.46	14.62	21.21
Employer/supplier	15	4	11	5	2	3
	4.37	2.09	7.24	2.11	1.17	4.55
Store	224	121	103	108	79	29
	65.31	63.35	67.76	45.57	46.2	43.94
Other Informal ^b	6	3	3	2	2	0
	1.75	1.57	1.97	0.84	1.17	0
Semi-formal ^c	1	1		10	4	6
	0.29	0.52		4.22	2.34	9.09
Formal ^d				2	1	1
				0.84	0.58	1.52

Notes: Unit of observation is a loan transaction. Includes only individual loans in the last six months. Standard deviations in parentheses. Values are in 2002 pesos. Exchange rate is PHP 53:USD 1.

^a Excludes indefinite loans.

^b Other informal sources include funeral parlors and appliance retailers who accept installment payments.

^c Semi-formal sources include microcredit institutions, credit unions, and pawnshops.

^d Formal sources include banks, Social Security System (SSS), and the Pag-IBIG Fund.

Table 5 Borrower and loan characteristics by loan source

	Kin n = 138	Money- lender n = 69	Employer/ Supplier n = 20	Store n = 332	Other informal n = 8	Semi- formal n = 11	nFormal n = 2
Female	0.75 (0.44)	0.61 (0.49)	0.30 (0.47)	0.60 (0.49)	0.63 (0.52)	0.45 (0.52)	0.50 (0.71)
Age (years)	32.38 (10.39)	38.97 (11.54)	37.50 (8.26)	36.88 (6.80)	40.88 (11.62)	38.91 (8.08)	47.00 (9.90)
Yrs of schooling	6.52 (3.52)	6.99 (2.93)	6.40 (2.21)	6.51 (2.70)	5.38 (2.72)	7.64 (2.84)	5.50 (0.71)
Any income- generating activity?	0.58 (0.50)	0.83 (0.38)	0.95 (0.22)	0.72 (0.45)	0.75 (0.46)	0.82 (0.40)	1.00
Monthly earnings (pesos) ^a	3,070 (2,410)	4,059 (2,265)	5,099 (2,935)	3,709 (2,927)	4,909 (4,282)	6,978 (4,263)	5,983 (7,739)
Any wealth?	0.36 (0.48)	0.43 (0.50)	0.40 (0.50)	0.41 (0.49)	0.50 (0.53)	1.00	0.50 (0.71)
Wealth (pesos) ^a	2,806 (5,017)	5,885 (8,278)	20,139 (45,712)	3,835 (1,912)	16,351 (25,281)	6,104 (7,040)	14,165
Any late payment in 2002?	0.03 (0.17)	0.12 (0.32)	0.05 (0.22)	0.15 (0.36)	-	-	-
Loan amount	736 (1,724)	2,115 (1,667)	1,962 (2,681)	197 (130)	12,936 (21,729)	5,116 (4,457)	5,031 (3,831)
Loan term (days) ^b	24 (38)	43 (21)	47 (38)	8 (9)	164 (262)	125 (60)	76 (22)
Indefinite loans	0.14 (0.35)	0.04 (0.21)	0.40 (0.50)	0.01 (0.11)	0.13 (0.35)	0.36 (0.50)	-
Annualized	0.44	256.54	12.00	-	24.88	55.81	109.20

interest rate (%)

(5.14) (330.92) (53.67) (63.03) (60.96) (128.98)

No collateral (%) 98.55 91.3 100 100 62.5 27.27 100

Notes: Standard deviations in parentheses. Values are in 2002 pesos. Exchange rate is PHP 53: USD 1.

^a Excludes individuals reporting zero values.

^b Excludes indefinite loans.

Table 6 Logit results: Marginal effects

	Positive loan demand			Credit constrained		
	Model 1	Model 2		Model 3	Model 4	
	dP/dx	Main effect dP/dx	Interaction effect dP/dx	dP/dx	Main effect dP/dx	Interaction effect dP/dx
Female	0.112*** (0.040)	0.105* (0.054)		0.163*** (0.063)	0.224** (0.090)	
<i>Credit history</i>						
Made late payments in 2002				0.439** (0.206)	0.507** (0.230)	0.659** (0.297)
Total loans in 2002				0.006 (0.011)	0.004 (0.013)	-0.048* (0.025)
Interaction term: Made late payments x Total loans in 2002				-0.122*** (0.035)	-0.122* (0.071)	0.014 (0.079)
<i>Resources</i>						
Age	-0.005*** (0.002)	-0.005** (0.002)	0.0113*** (0.004)	-0.003 (0.004)	-0.005 (0.004)	0.001 (0.008)

Years of schooling	-0.002 (0.006)	-0.001 (0.006)	0.025* (0.014)	0.018 (0.011)	0.016 (0.011)	-0.008 (0.027)
Wealth	0.003* (0.002)	0.009 (0.009)	0.004 (0.010)	-0.001 (0.003)	-0.002 (0.007)	0.022** (0.011)
<i>Controls</i>						
Employee	0.031 (0.042)	-0.025 (0.056)	-0.215* (0.128)	-0.100 (0.110)	-0.228* (0.129)	-0.388 (0.240)
Self-employed with working capital	0.130*** (0.036)	0.126*** (0.042)	-0.146 (0.091)	0.367*** (0.067)	0.391*** (0.073)	0.048 (0.131)
Household size: 5–7 members	0.109*** (0.040)	0.102*** (0.037)	-0.062 (0.075)	-0.071 (0.076)	-0.078 (0.076)	0.195 (0.142)
Household size: 8 or more members	0.094*** (0.031)	0.101*** (0.032)	-0.071 (0.077)	-0.113 (0.088)	-0.113 (0.086)	-0.030 (0.170)
Del Pan neighborhood	-0.130*** (0.039)	-0.117** (0.049)	0.209** (0.090)	-0.127* (0.068)	-0.137* (0.072)	0.122 (0.131)
Observations	282	282		282	282	
Wald chi2	33.53***	38.74***		45.13***	60.22***	
Pseudo R2	0.2102	0.2437		0.1439	0.1839	
Correctly classified	73.76%	75.89%		67.73%	71.99%	
Joint significance test of female interactions		8.82			14.25	

Notes: ***, **, * denote statistical significance at the 1, 5, and 10 percent levels, respectively. Marginal effects evaluated at sample means. Robust standard errors in parentheses.