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**Firm Finance from the Bottom Up:
Microenterprises in Mexico**

by

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Abstract

How do the smallest firms in Mexico finance their operations? We examine this question using data from surveys of microenterprises undertaken in 1994 and 1998. The survey identifies sources of startup capital, and also provides information on current bank loans and access to trade credit from suppliers. There is evidence that the credit crunch experienced by Mexico in the second half of the 1990s affected microenterprises. Controlling for differences in sampling as carefully as possible, we find that firms in the 1998 survey are smaller and have less bank credit than firms in the 1994 survey. In either survey, bank credit represents only a small part of the external finance of the firms. Informal credit—loans from family members or friends, and trade credit—and trade credit are much more common. We also examine access to informal credit, finding that firms located in states with higher rates of migration to the United States are more likely to receive informal loans. This suggests that remittances from US migrants may be a source of capital for Mexico's microenterprises. We find that receipt of trade credit is positively correlated with the firm's level of fixed assets, and is more common among firms with formal accounting systems. The latter result suggests that information matters in the trade credit markets, and that development of information institutions such as credit reporting bureaus would have beneficial effects for microenterprises.

The smallest firms play a critical role in economic development. As much as half of the labor force in developing countries is employed in microenterprises. In Mexico, for example, microenterprises provide jobs for about 45% of the labor force. Self-employment is sometimes a refuge for those with poor prospects in wage labor markets. Hence, the viability of microenterprises has a significant impact on poverty alleviation. But more dynamic small firms also form a pool from which larger firms may grow. The ability of small firms to realize potential growth depends in part on how efficiently capital is channeled to microenterprises.

Small firms present unique challenges for capital markets. They have high birth and mortality rates. Determining which firms have the potential for growth and hence the ability to repay loans is difficult. Enterprise owners often have few assets that can be used for collateral. Moreover, the desired loans are generally of small size, making traditional collateral-based lending unprofitable. In spite of these difficulties, the smallest firms in developed market economies frequently have access to bank credit. For example, among a sample of firms with fewer than 5 workers operating in the United States, half reported having a current bank loan. Formal credit is much less common among Mexican microenterprises, where fewer than 3% of small firms surveyed in 1998 say they have ever had a bank loan.

In this paper, we examine the sources of external finance of Mexico's smallest firms. We use data from the National Survey of Microenterprises (ENAMIN for its Spanish initials) administered in 1994 and in 1998 to ask two questions. First, to what extent did this credit crunch affect access to formal bank credit among microenterprises in Mexico? Gonzales and Marrufo (2001) document a precipitous decline in lending by Mexican banks in the latter half of the 1990s. The ENAMIN data show that the contraction of bank lending did have a significant effect on access to credit after startup. Among the largest firms in the ENAMIN sample, those hiring at least one paid worker, bank loans were twice as likely in 1994 as they were in 1998. About 15% of firms with employees report having received a bank loan sometime after starting operations in the 1994 survey, compared to about 7% in the 1998 survey.

Even in 1994, only a small minority of firms receives formal credit. Informal credit is a much more common source of external finance. Loans received from family members or friends and trade credit received from suppliers are the two most important sources of external finance. Focusing on the more recent 1998 survey, we ask: What factors determine which firms receive informal finance from family members and friends and trade credit? Loans from family members

and friends come most frequently at the time the firm starts up. Because the ENAMIN survey is a cross section, there is little information about the firms at startup. This limits our ability to analyze patterns of informal loans. We do identify a connection between migration of workers to the United States and sources of finance of microenterprises. Non-bank loans are more likely among firms located in states in which migration remittances are higher. Woodruff and Zenteno (2001) find that migration and remittances have a large and significant effect on the level of investment in microenterprises. Here we provide some evidence that one channel through which remittances enter microenterprises is through informal loans.

The data allow a more comprehensive analysis with regard to receipt of trade credit. We adopt a framework of informal enforcement of trade credit agreements. (See, for example, McMillan and Woodruff 1999.) Because of the small size of typical trade credit balances, suppliers offering credit are not likely to be able to use the legal system to recover delinquent trade credit. The offer of trade credit, then, requires that the supplier trust that the client will repay as promised. We consider two factors which may affect that trust. First, suppliers may observe the level of capital invested in the client's business. Higher levels of investment provide a signal that the client intends to be in business in the future.[1] Such borrowers are likely to value their own reputation more highly, and hence are more likely to repay. The borrower's assets may also provide some direct collateral for trade credit loans, even where courts cannot be used to seize those assets legally. The second factor which may affect the willingness of suppliers to grant trade credit is information provided by the client about the profitability of the firm. The ability to provide this information depends on the client having a formal system of accounts. Note that use of this information requires more trust on the part of the supplier, who must believe that the information provided by the client truly represents the profitability and prospects of the borrowing enterprise. We find that firms with more formal accounting systems are more likely to receive trade credit. This finding suggests that more widely available credit information might lead to an increase in trade credit among firms.

Economists have examined the link between access to capital and the foundation and growth of firms from many angles. Evans and Jovanovic (1989), Holtz-Eakin, Joulfaian and

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[1] We take the level of capital invested in equipment and real estate as determined prior to, and hence as exogenous of, the trade credit decision. Trade credit is usually offered for s very short term, and so is not generally thought be used to finance longer term investments in equipment. Messmacher (this volume) provides some evidence that trade credit has been used to finance longer term investments among larger firms in Mexico during the late 1990s.

Rosen (1994a, 1994b), and Blanchflower and Oswald (1998), among others, use household labor surveys to examine the importance of capital constraints as a barrier to entry into self-employment. Taking a macro-level approach, Levine (1997) reviews the evidence for the importance of financial development on firm growth and economic development more broadly using country level data. Development theorists have also examined the issue of credit constraints and business startups. Aghion, Caroli, and García-Peñalosa (1999) develop some simple frameworks and review empirical literature on the importance of credit constraints in economies characterized by high levels of income inequality. Banerjee (2001) examines the role of credit market failures in "poverty traps."

Much of this literature focuses on the role of formal financial system in channeling capital to firms. Though a more important source of finance for microenterprises, informal lending, has seldom been examined by researchers. One general exception to this is relatively organized informal lending networks, such as rotating credit associations or micro credit banks. Group lending organized by the Grameen Bank and Accion International are examples of the latter. Morduch (1999) presents a thorough review of issues related to group lending, and also examines the effectiveness of these organizations. Though the capital channeled through these organizations is significant, a much larger source of external capital for microenterprises comes from loans from family members or friends and credit received from suppliers.

The paper has five main sections. In the first, we review the data on sources of credit of microenterprises in both the 1994 and 1998 versions of the survey. The 1994 survey was largely completed before the devaluation of the peso in December 1994, and before the brunt of the banking crisis that hit Mexico in the second half of the 1990s. The 1998 survey was taken as Mexico was attempting to reestablish the viability of its banking system. Section 2 evaluates the impact of the credit crunch on firms. The third section examines access to informal loans and the fourth section analyzes access to trade credit more carefully. Informal loans are those obtained from personal friends or family members, either at startup or subsequent to startup. The data allow us to say more about the variables affecting the receipt of trade credit, for reasons discussed below. A final section offers some concluding remarks.

Section 1: The Survey Data

We use data from the 1994 and 1998 versions in the ENAMIN. The ENAMIN surveys roughly 10,000 enterprises, with a sample drawn from a household based labor survey. The enterprises have no more than 15 employees in the manufacturing sector, and no more than 5 employees in other sectors. In fact, the majority of enterprises in both the 1994 sample and the 1998 sample have no employees other than the owner. The second largest group of enterprises works only with the help of unpaid household workers. Only about one-fifth of the firms have any paid employees. While the firms included in the ENAMIN are small, their importance in the labor market is large. According to Mexico's 1998 National Employment Survey, about 45% of the workforce is employed in firms of the size represented by the ENAMIN. Hence understanding how they finance their operations is important.

Table 1 shows characteristics of firms owned by males and females from the 1994 and 1998 surveys. For the table and the remainder of the paper, the sample is limited to firms whose owners are between 18 and 65 years of age who work full time, at least 35 hours per week. Several caveats to interpreting the data on the table are warranted. First, although the survey instruments in 1994 and 1998 are very similar, there are a few differences in the questions. These differences are noted where they lead to difficulties in interpreting changes in the situation of microenterprises over time. Second, the 1998 survey was carried out in 44 cities, with at least one city in each of Mexico's 32 states (including the Federal District) represented. The 1994 sample was drawn from only 34 cities in 28 states, and in 18 of those cities, 20 or fewer enterprises are represented in the sample. Because credit in Mexico became much more difficult to obtain between 1994 and 1998, we take some care to try to construct comparable samples over time. Nevertheless, these differences result in less certain conclusions about changes in characteristics of firms across time. Finally, we present much of the data for male-owned and female-owned enterprises separately. However, the division between male and female ownership is not completely clean. In many cases (24% in 1998 and 12% in 1998), a husband and wife both work in the firm. In over 80% of these cases, the husband is identified as the owner of the enterprise. It may be the case that the most successful female enterprises are categorized as being run by males, creating the impression of greater gender differences. The most important conclusions about differences between male-owned and female-owned firms do not appear to be greatly affected by this.

Table 1 reports data from the full sample for both 1994 and 1998, weighted by sample weights to represent all urban areas surveyed. For the initial look at the data, we include all firms meeting the owner age and work hour criteria, including firms in cities surveyed in 1998 but not in 1994. Starting with the more recent data (the right-hand columns of Table 1), the majority of enterprises headed by both males (60%) and females (59%) employ no one other than the owner. Almost a quarter (23%) of male-owned firms and 12% of female-owned firms hire paid employees. Most of the remaining firms, 17% of male-owned firms and 28% of female-owned firms, employ only unpaid family members.[2] The median level of invested capital (replacement cost) is about US $1400 for males and US$ 1200 for females. (All figures in the paper are US dollars using exchange rates for end of calendar year 1994 and 1998.) Over half (55%) of the firms owned by females operate in commerce, with restaurants (16%) and manufacturing (13%) being the next most common activities. The activities of males are more diverse: 30% operate in miscellaneous personal services, mostly repair services, while a quarter operate in commerce, 13% in manufacturing and 11% in construction. Male-owned enterprises have been operating longer than female-owned enterprises (9 vs. 6 years), and a much larger percentage of female-owned firms began operation within six months of the survey (17% for females vs. 7% for males). The average age of both male and female owners is about 41 years, and owners of both genders have just under 8 years of schooling on average.

With respect to differences between firms in the 1994 and 1998 versions of the survey, owners in the 1994 survey are less likely to work alone and more likely to hire paid workers. For example, among male-owned firms, 52% are self-employed in 1994 compared with 60% in 1998. By most measures, the firms in 1994 are also larger that those of the later survey. The mean replacement cost of capital used by the firm is two-thirds larger for males ($10,821 in 1994 vs. $6,488 in 1998) and more than 50% larger for females ($6070 in 1994 vs. $3947 in 1998). The average log replacement cost of capital shows a similar pattern, but for females, the median replacement cost of capital is larger in 1998 than in 1994. These differences appear to be driven in large by differences in the percentage of firms with paid employees in the two surveys. The 1998 sample has a smaller percentage of such firms than the 1994 survey. When the characteristics of firms are more closely controlled, the differences between the surveys are much smaller. For example, the median invested capital for firms with paid employees operating

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[2] About 2% of the firms owned by both males and females have partners who work in the firm.

in commerce is larger in 1998 than in 1994 for both males ($9881 vs. $8353) and females ($8373 vs. $7568). A similar pattern holds for both genders among those who are self-employed and working in commerce. In manufacturing, the 1994 firms with employees are larger than the 1998 firms with employees, but the firms without employees are no larger in 1994. We describe in the next section how we adjust the sample to ensure greater comparability between the 1994 and 1998 data.

Section 2: Did the Credit Crunch Affect Microenterprises?

Finance of investment by banks expanded rapidly in Mexico in the first half of the 1990s and then fell dramatically during the second half of the 1990s. The 1994 ENAMIN survey coincided with the peak of bank lending. The 1998 survey was taken well after the bank lending had begun to contract. Did the contraction of bank finance affect the finances of microenterprises? We begin by examining the levels of formal bank lending in 1994 and 1998. Loans from non-bank sources, most often from family members or friends, and trade credit received from suppliers are much more common. The credit crunch may also have affected credit received by the ENAMIN firms indirectly, since those providing them with loans or trade credit may have themselves been affected by the credit crunch.

In order to increase the comparability of the two surveys, we limit the sample from both years to cities that are amply represented in both years. The 1994 survey was administered in 34 cities in 28 states. But in 18 of those 34 cities, fewer than 20 firms were surveyed. The observations from these 18 cities have extremely large sample weights, causing concern that an outlier in the data may have a large effect on the weighted sample averages. In contrast, the 1998 survey was administered in 44 cities, representing all 32 states in Mexico. The coverage across cities was much more uniform, and thus the 1998 sample more completely represents urban Mexico. In order to obtain data that are more comparable across time, we limit both samples to those firms in the 16 cities given broad coverage in the 1994 ENAMIN survey. This has the effect of eliminating a relatively small number of firms (200) from the 1994 survey, but of cutting the 1998 sample almost in half, from 6044 to 3070. Despite the smaller sample sizes, we can have greater certainty that differences in the data more accurately reflect differences in the sampled populations of firms.

Data from the samples limited according to these criteria are shown on Table 2. Large differences between 1994 and 1998 in the levels of invested capital and in the percentage of firms hiring employees remain. Indeed, the differences are often bigger than those found using the full sample. Given that the samples are drawn in similar ways from an identical set of cities, with some caution we interpret the differences in the samples are representing differences in the population of firms surveyed during the two years. We address the differences in enterprise size in more detail later in this section.

Table 3 shows the sources of external finance provided at startup and since startup. In both 1994 and 1998, access to formal bank loans at the time of startup is very rare. Only 2.5% of male-owned firms and 2.6% of female-owned firms surveyed in 1994 received a bank loan at startup. The percentages in 1998 are very slightly smaller, but statistically indistinguishable. Some of the firms surveyed in 1998 were started many years earlier, before the banking crisis, so the comparison of access to bank credit does not entirely reflect changes in conditions between 1994 and 1998.[3] The firms were also asked if they have received a bank loan at any time since startup. Firms in the 1994 survey were about twice as likely to say they had received a bank loan after startup than firms in the 1998 survey. The difference in access to loans (5.9% vs. 2.2% for males and 4.9% vs. 2.8% for females) is statistically significant at the .01 level for owners of both sexes.[4]

Access to ongoing loans is much more common among those firms hiring at least one paid employee. For males in 1994, almost 15% of firms with paid employees had received a bank loan since startup. For female-owned firms, the rate was slightly higher, over 17%. Access to formal bank loans was significantly less common in the 1998 sample, with less than 6% of male firms and 8% of female firms reporting a bank loan after startup. Among firms with employees, then, the contraction of credit in the latter half of the 1990s is apparent. The difference between 1994 and 1998 is also significant when the sample is limited to firms operating in commerce, the most common activity among firms in the sample. Among male-owned firms operating in commerce, loan rates since startup were 6.8% in 1994 and only 4.1%

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[3] The differences between years remain small even when the samples are limited to firms starting within 3 or 4 years of the survey.

[4] Sánchez and Pagán (2001) analyze use of credit in the 1992 ENAMIN. Formal lenders (banks and credit unions) provided funds for 2.3% of startups and 5.0% of firms after startup in the 1992 sample. The data are not completely comparable with those on Table 3 because Sánchez and Pagán use the full sample rather than only firms whose owners work full time. Adjusting for the fact that firm with owners working part time are less likely to have formal credit, the 1992 levels are very close to those for 1994.

in 198, a difference significant at the .01 level (t = 2.56). Among females, 6.7% of commerce firms reported a loan since startup in 1994, compared to 3.4% in 1998 (t = 2.59).

Not only is the incidence of bank credit lower in 1998, but the impact of bank credit on firm size is less in 1998 as well. The average (median) investment level of firms with bank loans headed by males is $49,379 ($23,464) in 1994 and only $18,634 ($7,570) in 1994. The mean investment levels for firms without loans are $7,741 in 1994 and $6,001 in 1998. One way to measure the importance of bank credit on firm size is to decompose the change in investment level into three components. The first component is the change in the average investment level of firms without loans. The second is the change in the average investment level of firms with loans, and the third is the change in the proportion of firms with and without loans. Decomposing the overall change in the size of male-owned firms in this manner, we find that the change in bank credit explains the majority of the fall in average firm size. The lower percentage of firms having received bank credit and the smaller capital investment of firms with bank credit together account for about three-fifths of the difference in male-headed firm size shown on Table 2.[5] Among female-headed firms with bank loans, the average (median) investment also fell during the 1990s, from $21,402 ($9,214) in 1994 to $9443 ($4086) in 1998. However, among females the size of firms without bank credit fell proportionately almost as much (from a mean of $6449 to a mean of $3349). As a result, among female-headed firms only about a quarter (27%) of the change in overall firm size is explained by the reduction in the access to credit.

A larger percentage of enterprises in the 1994 survey hire paid workers than is the case in 1998. The difference is almost 7 percentage points for males (28.1% in 1994 and 21.3% in 1998), and more than 4 percentage points for females (15.7% vs. 11.4%). Firms with paid employees have much higher levels of invested capital in either survey year. While the data do not allow a full exploration of the connection between access to bank credit and employment

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[5] The percentage of the change in average investment level attributable to bank credit is estimated as follows. We take the average investment of firms without loans in 1994 ($7,741) and 1998 ($6,002). We then assume that all of the 92.5% of firms without loans in 1994 fell in size by this amount. The difference in investment levels of firms without loans explains $1,609, or 27%, of the $4380 change in overall firm size across the two samples. The remaining 63% is explained by changes in the size of firms with loans and changes in the percentage of firms with loans. The percentage attributed to firms without loans may be understated because the firms that would have received loans in 1994 but did not receive them in 1998 are likely bigger than the average firm without loans. The addition of the firms to the 1998 average likely pulled up the average size. In other words, the average size of $6002 would likely have been lower without the change in composition. Bu the understatement is likely to be small, because the reduction in the percentage of firms with loans was small relative to the total percentage without loans.

size, it is certainly plausible that the contraction of bank credit prevented some firms from expanding and hiring paid workers.[6]

Has the credit crunch affected access to informal loans? Most of the data suggest the answer to this question is no. Among female-owned enterprises, informal loans at startup were significantly more common in the 1994 sample than in the 1998 sample (29.1% vs. 21.0%, t=4.18). The percentage of female-owned firms receiving informal loans since startup is slightly higher in the 1994 sample as well, but not significantly so. For males, rates of access to informal loans are not significantly different between 1994 and 1998 for either startup or ongoing loans.

In sum, there is evidence that microenterprises in Mexico had less access to bank loans after the credit crunch of the late 1990s. Though bank credit was never used by a large percentage of the enterprises in the survey, the effect of the credit crunch was felt strongly most by those firms hiring paid workers. Enterprises with paid employees are most likely to have access to bank credit, perhaps because formal credit is necessary for their expansion. The finding is troubling because it suggests that the banking crisis may have limited the growth of the most able microenterprises. On the other hand, there is much less evidence that informal loans were affected by the credit crunch. This finding is good news, because informal loans are a much more important source of capital for the smallest firms.

Section 3: Determinants of Loans

The data on Table 3 suggest that access to external credit is correlated with the size of the enterprises, measured by employment. Access to external finance is also positively correlated with the level of invested capital. The correlation between use of external funds and size may indicate the presence of capital constraints, as firms lacking access to external credit are smaller than optimal. Alternatively, the correlations could indicate that the firms receiving external credit have a higher demand for capital. The ENAMIN surveys are cross sectional, and the surveys contain little information about the characteristics of firms or their owners at the time of startup. Hence, the data do not provide us with a way of separating credit supply constraints from credit demand factors. Instead, we focus on one aspect of the question of which firms have access to

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[6] One alternative explanation for the increased percentage of enterprises without paid workers is that there may have been an increase of self-employed workers who were unable to find wage work, or were between wage jobs. This does not appear to be the case. According to data from the urban employment survey in the 4th quarter of 1994 and 1998, the percentage of the self-employed among all employed fell from 22.5% in 1994 to 20.7% in 1998.

external credit: the possibility that remittances from Mexican migrants to the United States are used to finance microenterprises.

Remittances of Mexicans working abroad grew rapidly during the 1990s, from just over US$2.5 billion in 1990 to almost $6 billion in 1998 and $10 billion in 2001. The latest figure represents about 2% of Mexico's GDP. International migration and receipt of remittances are geographically concentrated in Mexico, with remittances representing a much larger proportion of income in the central-western states of Mexico. Estimates of remittance receipts at the state level are available from a study of 1995 remittance flows carried out by the Bank of Mexico. According to the Bank of Mexico study, remittances per capita represented more than 10% of GDP per capita in the state of Michoacán. The size of the remittance flows mean that remittances represent a potentially important source of capital for microenterprises in Mexico. Woodruff and Zenteno (2001) provide evidence that microenterprises whose owners have access to remittances from migrants to the US are significantly larger than those without access to remittances. They estimate that 20% of the capital invested in microenterprises in Mexico is associated with remittance flows.

Remittances might enter microenterprises in many ways. Migrants returning from abroad might bring savings with them, and invest that savings in a startup. Relatives working abroad might make investments in the microenterprises. Migrants working abroad might also make loans to family members in Mexico. The ENAMIN survey does not contain direct questions on migration or remittances, so we are not able to determine if remittances enter either through personal savings or investments of business partners. Instead, we explore the possibility that remittances enter microenterprises through informal loans. Table 4 reports regressions examining the likelihood an enterprise received a loan either at startup or subsequent to startup. We use the 1998 ENAMIN data, because the available state level remittance data post-date the 1994 ENAMIN.[7] The estimation takes the form:

$$\text{Loan}_i = \alpha_i + \beta_i X + \gamma_i F + \delta_i S + \eta_i R + \mu_i,$$

where X is a vector of entrepreneur characteristics, including the number of years of schooling and the entrepreneur's work experience. The experience measure is based on the age the owner began working. F represents variables related to the firm, in this case the age of the firm. State

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[7] We use the full sample, since we are not concerned here about comparability with the 1994 survey.

level variables (S) include measures of GDP per capita and a measure of the development of financial markets, the number of bank branches per capita, measured in 1998.[8] Finally, R is a vector of state level remittance measures, μ_i represents noise, and the subscript i indicates an individual firm. State level remittances are measured as the level of remittances per capita in the state in 1995. The regressions are probits, and the reported coefficients represent the additional percentage of firms receiving loans for a one-unit change in the independent variable. The standard errors are adjusted for clustering at the level of the state, so that the significance of estimates of remittances and other state-level effects is not overstated. Firms stating that no capital was needed to start their enterprise are removed from the sample.

The dependent variable for the regressions is defined first as access to any form of external credit either at startup or after. Even what we call formal bank loans may be affected by remittance flows because many of these loans come not from commercial banks but from credit unions or other local saving institutions. The ability of these local institutions to make loans may depend on the flow of funds into the community. We also report regressions with the dependent variable defined as use of external credit from informal sources—loans from family members or friends. The regressions are probits, and the reported coefficients represent the additional percentage of firms receiving loans for a one-unit change in the independent variable.

The independent variable of interest measures flows of remittances. Estimates of the remittances received by residents of each of Mexico's 32 states (including the Federal District) come from the Banco de Mexico's 1995 study. Remittance receipts from a high of $154.18 per capita in the state of Michoacán (10% of state per capita GDP) to a low of $1.87 per capita in the state of Tabasco (one-tenth on 1% of GDP per capita in the state). In all, residents of 11 states receive remittances of less than $15 per capita, and residents of 12 states receive remittances exceeding $50 per capita.

The results on Table 4 indicate that enterprises operating in states with higher levels of remittances per capita are more likely to have made use of external finance. Among male firms, the coefficient of .11 in the regression using any form of external loan indicates that a firm

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[8] State level per capita income is included because capital available for investment is likely to be higher in states with higher income levels. The survey does not include data on the owner's non-firm assets, though education level and years of work experience are likely correlated with the owner's assets. Because our measure of investment also includes investment in inventories of finished and unfinished goods, market demand, measured by the growth rate of GDP over the three-year period leading up to the survey, could also affect the level of investment. This measure is not included in the results presented in Table 3. When included, it is insignificant, and it has only minor effects on the other results.

located in a state with per capita remittances of $50 is about 4 percentage points more likely to have received a loan than is a firm located in a state with per capita remittances of $15. This is about 12% of the sample mean of 30%. (The standard deviation of remittances per capita is about $35.) For females, location in a state with remittances per capita of $50 is associated with a 3.5 percentage points higher likelihood of receiving a loan, or about 9% of the sample mean of 38%

Similar results are obtained when the dependent variable is defined as use of informal loans, though the measured effects are somewhat smaller and statistically less significant. A one standard deviation increase in remittances per capita is associated with an increase in the likelihood of receiving a loan of 2.5 percentage points for males and about 3 percentage points for females.

Woodruff and Zenteno (2001) find that the effects of remittances on the size of enterprises are more closely associated with remittance levels in the owner's state of birth rather than the owner's state of residence. They take this as evidence that remittances affect enterprise size by increasing the supply of credit rather than increasing the demand for goods and services produced by the firms. Here, we find that the level of remittances in the owner's state of birth is not significantly associated with receipt of loans in the 30% of the sample for which state of birth and state of residence differ. (These results are not shown on the table, but are available from the author.) Hence, we cannot rule out the possibility that remittances increase the demand for products and services sold by the firms in the survey, and operate through increasing the demand for credit rather than the supply of credit. But the regressions do suggest that use of external credit is significantly higher in states whose residents receive higher levels of remittances.

Section 4: Determinants of Trade Credit

The second most common source of external finance is trade credit received from suppliers of inputs. About one-sixth of firms in the 1998 survey report that they receive trade credit. The percentage is highest among firms operating in commerce (almost 30%) and manufacturing (about 12%). In this section, we explore how the receipt of trade credit varies across firms in the sample. We use data from the 1998 ENAMIN, because the 1994 ENAMIN survey did not ask about ongoing trade credit.

The act of making a loan requires some faith that the borrower will repay. One way the borrower can instill that faith is by offering physical assets as collateral for the loan. Failure to repay results in a loss of collateral, making the lender whole and aligning the borrower's incentives. Pawn shops operate in this way. In the absence of collateral, the lender must be convinced that repayment is in the borrower's interest, at least in enough states of the world that the loan is profitable on an expectation basis. Information on the borrower's past payment record or her likely future profitability may be the basis of the lender's judgment about repayment prospects. Even when they cannot be used as collateral, physical assets may play a role in convincing the lender that repayment is likely, by signaling that the borrower intends to be in business for a long time.

Trade credit received from other firms, most often suppliers, is one of the most important sources of credit for small firms in any economy (Petersen and Rajan, 1997). In our sample of firms, trade credit is the most common source of credit. When a supplier has access to capital at lower rates than a buyer, trade credit may be an efficient mechanism for funding the buyer. Information gathered by the supplier in the course of doing business is useful in determining repayment prospects. Additionally, goods delivered by the supplier might be repossessed in the event of nonpayment. The supplier will be able to resell those goods more easily, and hence those goods are more valuable to the supplier than to an alternative provider of finance (Mian and Smith, 1992). But even when the supplier's cost of capital is as high or higher than the buyer's cost of capital, trade credit may be used to reduce the cost of transacting. Payment for and delivery of goods must often be separated in time, as when goods are shipped over some distance. In some circumstances, it may be optimal for the seller to bear some part of the risk of market demand for a product.[9]

In this section we ask, what is the basis of a supplier's faith that buyers will make payments for goods sold on credit? Formal enforcement through courts is unlikely to be the answer to this question in Mexico for firms of the size surveyed in the ENAMIN. Transaction sizes are small, and the cost of using courts in Mexico is comparatively large. Instead, repayment is almost certainly governed by informal means, based on information gathered by suppliers about their clients, and perhaps on repeated relationships between individual suppliers and

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[9] Delayed payment may also allow a buyer to inspect the quality of goods delivered by a supplier before paying for them. This implies a situation of two-sided moral hazard, rather than the one-sided moral hazard problem that is implicit in the discussion here. Long, Malitz and Ravid, (1993) discuss this possibility in more detail.

buyers. Several sources of information about the buyer are available from the survey. These can be divided in to three groups: information about the firm's assets, information about the firm's operation and profitability, and information about the owner. Among the first group are data on the replacement cost of equipment and real estate used by the firm. We exclude the value of inventories held by the firm, because that is likely to be affected by whether trade credit is received. Investments in real estate and machinery are less likely to be financed by trade credit, and hence we treat the level of investment as exogenous to access to trade credit. The survey does not contain information about the importance of repeated relationships between specific pairs of firms.

Lenders may obtain information on a prospective borrower's past credit record from a credit reporting bureau. Such information services are not well developed in Mexico, and are unlikely to be an important source of information about the firms surveyed in the ENAMIN. Faith in repayment may also be based on information about the customer's ongoing operations. We measure the quantity and quality of this information by the type of accounting system used by the enterprise. Owners were asked: "How do you keep the books of the firm?" Half of the firms responded "We don't keep books." About a fifth said they keep books personally or use a form provided by the government tax agency (SHCP). The remaining 29% of the firms said they keep formal accounts, using outside accounting services. Reliance on operating records requires some degree of trust. Firms operating in cash economies routinely keep multiple sets of accounting records, hiding a portion of sales from tax collectors or others. A prospective lender may not be certain how accurately the information provided reflects the true condition of the firm. To the extent the accounting records can be relied upon, information about the operation and profitability of firms with more formal accounting systems should be much easier to obtain than information about the firms that keep no accounting records. Those keeping informal records would be in an intermediate position.

We also know from the survey whether the firm operates from a fixed location or not. Information about the operation of firms operating from fixed locations should be more readily available. Reputation-based repayment may also depend on how long the enterprise has been operating, which is also known from the survey. Finally, with respect to the owner, the survey provides information on his or her age, education and work experience.

We expect to find that firms with more physical (non-inventory) assets will be more likely to receive trade credit, as will firm operating in a fixed location and those with more formal accounting systems. Older firms and those whose owners are older and more educated owners also might be expected to receive more credit. Trade credit will also likely be impacted by the sector in which the firm operates. For example, firms involved in commerce are much more likely to purchase supplies on a regular basis, facilitating the development of cooperative relationships with suppliers. Those providing personal services may purchase supplies much less frequently. As a result, they have less need for trade credit, and informal cooperation will be more difficult to develop. The regressions include controls for industry[10], and regressions with the sample limited to enterprises operating in commerce and manufacturing are also presented.

The regression coefficients are reported on Table 5. The independent variables are grouped by firm level variables and owner variables. Neither the age of the firm nor the owner's education and work experience is significantly associated with receipt of trade credit. However, the group of firm level variables is of somewhat more interest. The first regression (Column 1 for males and Column 6 for females) includes variables measuring the number of employees in the firm and the log of the replacement cost of investments in real estate and equipment. Larger investments and larger numbers of employees are characteristics that are likely to be visible to the firm's suppliers. Even where investments in equipment and real estate are not used directly as collateral, they provide a signal of the firm's ongoing viability and an indication of likely future profits. Hence, these should be associated with higher levels of trade credit. For both males and females, each of these variables is significantly associated with receipt of trade credit at least at the .05 level. The standard deviation of the employment variable is about one for both males and females (1.16 for males and 0.93 for females), so the coefficients indicate that a one standard deviation increase in employment (one employee) increases access to trade credit by about 3 percentage points for male-owned firms and 4 percentage points for female-owned firms. A one standard deviation increase in the log value of equipment investment is about 2.3, indicating that a one standard deviation increase in investment is associated with an increase in the likelihood of receiving credit of about 5 percentage points for males and 3.5% for females. (About 16% of

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[10] We use 7 industry groups (6 variables plus a base group) for males and 5 for females. Very few female-owned firms operate in the construction and transportation sectors.

male-owned firms and 21% of female-owned firms in the full 1998 sample receive trade credit from suppliers.)

The regressions reported in Columns 2 and 7 add variables indicating the location where the firm's activities take place. Firms are placed into three groups. The first includes with a fixed and dedicated location, the second those operating out of the owner's home, and the third firms operating without a fixed location. Supplies should have better information about those operating from fixed locations or their house than those whose operations are mobile.[11] Operating from a fixed location is significantly associated with increased levels of trade credit for males, but not for females.

Next, we include variables indicating the type of accounting system used by the firm. Like the level of physical capital investment, accounting records provide information about the profitability of the firm, and the prospect for future profits. Unlike physical capital, accounting records require some trust in the person keeping the records. A supplier can objectively judge the value of real estate and machinery, but not so easily the accuracy of accounting records. Again we group firms into three groups: those using external accounting services, those using an informal accounting system, and those without any accounting system. The regressions include variables indicating use of outside accounting services and informal accounting, and the coefficients can be read as relative to firms without any accounting system. The accounting variables are first included without the location variables (Columns 3 and 8) and then with the location variables (Columns 4 and 9). For both males and females, the type of accounting system is significantly associated with the likelihood of receiving credit. The measured effect is almost twice as large for females as for males. Male-owned firms using outside accounting services are about 11 percentage points more likely to receive trade credit than male-owned firms without accounting systems; the comparable figure for female-owned firms is 19 percentage points.[12]

The final regressions, reported in Columns 5 and 10, limit the sample to firms operating in manufacturing and commerce. These are the two sectors where trade credit is most common. Though all of the regressions include controls for industry groups, these controls may only imperfectly control for differences between sectors. The sample sizes are above 1,000 for both

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[11] This is not likely to be entirely true for those operating transportation services likely taxi cabs. Though they are classified as operating without a fixed location, their investment may be easily visible to suppliers.

[12] The difference in the coefficients for males and females is significant at the .01 level, but the significance of the difference is not robust to eliminating firms started within one year of the survey. This issue is discussed further later in this section.

males and females, even when the sample is limited to these two sectors. The results are quite similar to the full sample. The coefficients on number of employees, physical investment levels, fixed location and accounting systems are all larger, but so is the mean of the dependent variable. In proportion to the dependent mean, the coefficients are of similar magnitude. As with the full sample, use of formal accounting has a larger impact on receipt of trade credit for females than for males. Similar results are obtained when the sample is limited to only those firms operating in commerce.

More formal accounting systems may provide information which suppliers use to help determine the likelihood a customer will be able to repay trade credit. But formal accounting systems may also simply be measuring other characteristics of the enterprise. One particular concern is that new firms or firms which are started as seasonal or temporary ventures may be less likely to use formal accounting systems. These firms are less likely to use formal accounting systems, and are also less likely to be given trade credit by suppliers. Table 1 shows that over 20% of female-owned enterprises in the 1998 survey were established within 6 months of the survey. When enterprises established within one year of the survey are eliminated from the sample, the importance of formal accounting remains. Indeed, limiting the sample to older firms has only negligible effects on male-owned firms. For female-owned firms, however, the impact of eliminating new firms is somewhat larger. The difference between no accounting and informal accounting becomes insignificant, and the coefficient on outside accounting drops to .16. The latter coefficient is not statistically different from that of males.

The regressions indicate that firms with more employees are more likely to receive trade credit. Among male-owned firms, trade credit is positively associated with higher levels of investment in fixed assets, and with operating from a fixed location. All of these results are as expected. The enterprise's investments present a signal of commitment to continued operation of the firm. The signal can be easily read by a supplier visiting the firm. Perhaps the more novel and policy-relevant finding is that accounting information is also an important determinant of receipt of trade credit. This suggests that the decision to offer trade credit is based in part on information about the enterprise's operations.[13] Another potentially important source of information, currently not well developed in Mexico, is that available from credit bureaus that record

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[13] Information exchange is an important determinant of trade credit among firms in Vietnam and Eastern Europe as well. See McMillan and Woodruff, 1999 and Johnson, McMillan and Woodruff, 2002.

information on the past behavior of individuals and firms with respect to debt repayment. The regression results reported on Table 5 lend credence to the importance to inter-firm credit of this sort of information.

Section 5: Conclusions

The contraction of formal bank credit in Mexico in the latter half of the 1990s appears to have had a significant effect on the availability of bank loans among Mexico's smallest firms. There is less evidence that the credit crunch affected the availability of informal loans obtained from family members and friends. However, the effect of the contracting in formal bank lending was felt most by the most successful of the microenterprises, those hiring at least one paid worker. The impact on the ability of the smallest firms to grow is particularly troubling.

Informal loans and trade credit are the most common form of finance for microenterprises in Mexico. Loans are more common in firms employing paid workers, and in firms with larger capital investments. Loans are also more common among firms located in states receiving larger remittance flows from migrants to the United States. Trade credit is more likely to be granted to firms with employees, those with larger investments in fixed assets, and those operating from a fixed location. But information provided by the firm's accounting records also matters. The last result indicates that development of more extensive credit reporting services might help to facilitate inter-firm finance among Mexico's small firms. Credit reporting bureaus are not well developed in Mexico, and provide little information on firms of the size examined here.

An economy's smallest firms have access to significant levels of formal credit only in countries with the most developed capital markets. In most countries, capital to finance startup and operations must come from own savings and from non-bank loans. Loans obtained from specific microenterprise loan programs have been the subject of much research. (See Morduch (1999) for a review.) But non-bank loans from family members and friends—the type of loans most used by the firms in the ENAMIN survey—and trade credit from suppliers have been subject to less analysis.

These data provide some evidence on the use of informal loans by small firms. The analysis is limited by the nature of the data, and several questions remain unanswered. One limitation of the data is that the survey provides little information of the growth trajectory of

firms, and the sample is limited to firms with fewer than 15 workers. Thus, what we can say about how access to credit affects the prospects for growth of these firms is very limited. Do small firms grow larger, or are the economy's larger firms larger at startup? The survey also provides little detail on the nature of specific loans. Hence, much is left to be done to further our understanding of the informal sources of credit among small firms.

Bibliography

Aghion, Phillippe, Caroli, Eve, and García-Peñalosa, Cecilia, 1999, "Inequality and Economic Growth: The Perspective of the New Growth Theories," *Journal of Economic Literature*, Vol. 37(4), pp. 1615-1660.

Banerjee, Aghijit, "Contracting Constraints: Credit Markets and Economic Development," mimeo, MIT.

Blanchflower and Oswald, 1998, "What Makes an Entrepreneur?," *Journal of Labor Economics*, Vol. 16(1), pp. 26-60.

Evans, David and Jovanovic, Boyan, 1989, "An Estimated Model of Entrepreneurial Choice under Liquidity Constraints," *Journal of Political Economy*, Vol. 97 (August), pp. 808-27.

Gonzalez-Anaya, José Antonio and Marrufo, Grecia M., "Financial Market Performance in Mexico," this volume.

Holtz-Eakin, Douglas, Joulfaian, David and Rosen, Harvey S., 1994a, "Entrepreneurial Decisions and Liquidity Constraints," *Rand Journal of Economics*, Vol. 25 (Summer), pp. 334-47.

Holtz-Eakin, Douglas, Joulfaian, David and Rosen, Harvey S., 1994b, "Sticking it Out: Entrepreneurial Survival and Liquidity Constraints," *Journal of Political Economy*, Vol. 102 (February), pp. 53-75.

Johnson, Simon, McMillan, John, and Woodruff, Christopher, "Courts and Relational Contracts" *Journal of Law, Economics and Organization*, forthcoming Spring 2002.

Levine, Ross, 1997, "Financial Development and Economic Growth: Views and Agenda," *Journal of Economic Literature*, Vol. 35(2), pp. 668-726.

Long, Michael S., Ileen B. Malitz and S. Abraham Ravid, "Trade Credit, Quality Guarantees, and Product Marketability," *Financial Management*, Vol. 22 (1993), 117-127.

McMillan, John, and Woodruff, Christopher, "Interfirm Relationships and Informal Credit in Vietnam," *Quarterly Journal of Economics*, Vol. 114, No. 4, November 1999, pp. 1285-1320.

Messmacher, Miguel, "The Relationship between Trade Credit and Investment in Mexico: 1998-2000," this volume.

Mian, Shehzad L. and Clifford W. Smith, "Accounts Receivable Management Policy: Theory and Evidence," *Journal of Finance*, Vol. 47 (1992), 169-200.

Morduch, Jonathan, 1999, "The Microcredit Promise," *Journal of Economic Literature*, Vol. 37(4), pp. 1569-1614.

Negrin, José Luis, "Credit Information Sharing Mechanisms in Mexico: Evaluation, Perspectives and Effects on Small Firm Credit," this volume.

Petersen, Mitchell A., and Raghuram G. Rajan, "Trade Credit: Theories and Evidence," *Review of Financial Studies*, Vol. 10 (1998), 661-692.

Sánchez, Susana and Pagán, Jose, "Explaining Gender Differences in Earnings in the Microenterprise Sector," working paper, World Bank.

Woodruff, Christopher and Rene Zenteno, 2001, "Remittances and Microenterprises in Mexico," working paper, UCSD.

TABLE 1
Comparison of 1994 and 1998 Data

	Males		Females	
	1994	**1998**	**1994**	**1998**
Number of firms	5501	4510	1598	1534
Percentage self-employed	52.1%	60.1%	54.5%	58.8%
Percent with paid workers	27.6%	23.0%	15.9%	11.9%
Replacement cost of invested capital	$10,821	$6,488	$6,070	$3,947
	(27771)	(19473)	(17312)	(9121)
Median Invested capital	$2,285	$1,395	$899	$1,189
Log of invested capital	7.26	6.90	6.63	6.74
	(2.42)	(2.25)	(2.31)	(2.11)
Investment in inventories	$547	$322	$757	$393
	(3497)	(1883)	(5358)	(2366)
Age of firm (years)	8.43	9.19	5.62	5.9
	(8.75)	(8.70)	(7.13)	(6.61)
Firm started within the past 6 months	10.6%	7.4%	23.3%	16.6%
Sector of activity:				
Manufacturing	15.8%	12.7%	11.9%	13.2%
Commerce	29.2%	24.4%	50.0%	55.1%
Transport	7.4%	8.3%	0.3%	0.7%
Restaurant	5.7%	6.9%	14.6%	15.6%
Miscellaneous services	25.9%	30.1%	17.2%	10.0%
Professional services	8.2%	6.6%	5.9%	4.7%
Construction	7.8%	11.0%	0.0%	0.7%
Characteristics of owners:				
Years of schooling	8.28	7.97	6.59	7.52
	(5.05)	(4.49)	(4.43)	(4.41)
Age of owner	40.75	41.03	40.31	40.82
	(11.25)	(11.03)	(11.21)	(10.82)

TABLE 2
Comparison of 1994 and 1998 Data
Cities with more than 100 firms surveyed in 1994

	Males		Females	
	1994	**1998**	**1994**	**1998**
Number of firms	5361	2392	1538	678
Percentage self-employed	53.3%	64.5%	54.0%	60.5%
Percent with paid workers	28.1%	21.3%	15.7%	11.4%
Replacement cost of invested capital	$10,878	$6,499	$7,544	$3,599
	(28907)	(21617)	(20323)	(7962)
Median Invested capital	$2,457	$1,254	$1,337	$1,051
Log of invested capital	7.27	6.84	6.82	6.67
	(2.42)	(2.28)	(2.41)	(2.04)
Investment in inventories	$569	$304	$1,030	$271
	3829	(2014)	(6404)	(836)
Age of firm (years)	8.04	9.23	6.39	5.06
	(8.06)	(8.99)	(7.56)	(6.01)
Firm started within the past 6 months	11.7%	7.5%	16.8%	20.4%
Sector of activity:				
Manufacturing	14.3%	12.7%	7.7%	10.4%
Commerce	31.0%	24.1%	51.9%	62.3%
Transport	8.1%	9.4%	0.5%	0.2%
Restaurant	6.6%	6.0%	13.7%	16.3%
Miscellaneous services	25.0%	31.1%	19.6%	11.1%
Professional services	7.9%	6.3%	6.5%	5.0%
Construction	7.0%	10.3%	0.0%	0.8%
Characteristics of owners:				
Years of schooling	8.28	7.87	6.81	7.14
	(5.05)	(4.53)	(4.27)	(4.50)
Age of owner	40.75	41.06	40.86	41.18
	(11.25)	(11.03)	(11.35)	(10.96)

TABLE 3
Sources of Finance

	Males				Females			
	All Firms		Firms with Paid Workers		All Firms		Firms with Paid Workers	
	1994	1998	1994	1998	1994	1998	1994	1998
Startup Finance								
Number of firms	5361	2392	1396	494	1538	678	236	84
Loan from bank/ credit union	2.5%	2.2%	5.3%	5.8%	2.6%	2.3%	6.2%	3.1%
Loan from friend/family/other	18.2%	17.6%	21.0%	19.3%	**29.1%**	**21.0%**	**37.7%**	**27.8%**
Credit after Startup								
Loan from bank/ credit union	**5.9%**	**2.2%**	**14.8%**	**5.9%**	**4.9%**	**2.8%**	**17.6%**	**8.0%**
Loan from friend/family/other	4.5%	4.8%	7.1%	6.1%	6.4%	5.1%	9.5%	5.6%
Credit from suppliers		12.4%		19.8%		17.7%		29.8%

TABLE 4
Regression Results
Use of External Credit

	MALES		FEMALES	
	(1)	(2)	(3)	(4)
	Loan from any source	Loan from Informal source	Loan from any source	Loan from Informal source
State Level Variables:				
Bank branches per capita	0.36	0.49	0.90	-0.51
	(0.52)	(0.90)	(0.99)	(0.63)
Remittances per capita in state	0.11	0.07	0.10	0.08
	(2.80)	(1.79)	(2.18)	(1.77)
Firm Level Variables:				
Years of schooling	0.006	0.002	0.008	0.004
	(2.60)	(1.37)	(2.24)	(1.42)
Years of work experience	-0.003	-0.003	-0.001	-0.002
	(3.81)	(4.20)	(1.23)	(1.55)
Age of firm (years)	0.003	0.001	0.008	0.003
	(1.41)	(0.25)	(1.44)	(0.56)
Age of firm squared	-0.0001	0.00001	-0.0002	-0.0001
	(1.09)	(0.16)	(1.11)	(0.37)
Industry controls	Yes	Yes	Yes	Yes
Number of Observations	3818	3818	1423	1423
R-Squared	0.06	0.05	0.02	0.01

Notes: t-values in parentheses. Standard errors are corrected for clustering at the state level.

In addition to the variables shown, all regressions include variables indicating that the owner reports data on two firms, and a variable measuring state GDP per capita, the average wage rate in the state's urban areas, and industry dummies (6 for males and 4 for females).

TABLE 5
Regression Results
Access to Trade Credit

MALES

	(1)	(2)	(3)	(4)	(5)
	All Enterprises	**All Enterprises**	**All Enterprises**	**All Enterprises**	**Commerce and Manufacturing**
Firm Level Variables:					
Number of employees	0.028	0.025	0.022	0.021	0.029
	(5.04)	(4.53)	(4.05)	(3.90)	(2.83)
Log of investment in real estate and equipment	0.021	0.017	0.015	0.013	0.02
	(5.37)	(4.24)	(3.73)	(3.37)	(2.85)
Firm operates from fixed location		0.07		0.039	0.061
		(3.88)		(2.14)	(1.72)
Firm operates from owner's house		0.05		0.03	0.03
		(1.83)		(1.23)	(0.58)
Firm uses outside acounting service			0.11	0.09	0.10
			(5.27)	(4.25)	(2.58)
Firm has informal accounting system			0.07	0.06	0.06
			(3.17)	(2.65)	(1.61)
Owner Variables:					
Years of schooling	0.00	0.001	-0.00002	-0.0002	-0.005
	(1.03)	(0.64)	(0.01)	(0.09)	(1.45)
Years of work experience	0.001	0.0008	0.001	0.0006	0.001
	(1.59)	(1.27)	(1.21)	(1.07)	(1.31)
Age of firm (years)	0.001	0.002	0.001	0.001	0.004
	(0.52)	(0.73)	(0.34)	(0.49)	(0.84)
Age of firm squared	-0.0001	-0.0001	-0.00004	-0.0001	-0.0001
	(0.93)	(1.05)	(0.75)	(0.85)	(0.86)
Industry controls	Yes	Yes	Yes	Yes	Yes
Number of Observations	3716	3716	3711	3711	1677
R-Squared	0.16	0.17	0.18	0.18	0.11

FEMALES

	(6)	(7)	(8)	(9)	(10)
	All Enterprises	All Enterprises	All Enterprises	All Enterprises	Commerce and Manufacturing
Firm Level Variables:					
Number of employees	0.041	0.04	0.029	0.029	0.039
	(2.90)	(2.84)	(2.10)	(2.09)	(2.17)
Log of investment in real estate and equipment	0.015	0.01	0.005	0.002	-0.008
	(2.04)	(1.18)	(0.61)	(0.26)	(0.77)
Firm operates from fixed location		0.034		0.01	0.03
		(0.77)		(0.12)	(0.49)
Firm operates from owner's house		-0.035		-0.04	-0.01
		(0.78)		(0.90)	(0.11)
Firm uses outside acounting service			0.19	0.18	0.26
			(4.68)	(4.45)	(4.68)
Firm has informal accounting system			0.08	0.07	0.07
			(2.00)	(1.91)	(1.49)
Owner Variables:					
Years of schooling	0.003	0.002	-0.002	-0.002	0.0002
	(0.74)	(0.54)	(0.42)	(0.50)	(0.05)
Years of work experience	-0.0004	-0.0003	-0.00003	0.00005	0.00001
	(0.40)	(0.30)	(0.03)	(0.05)	(0.01)
Age of firm (years)	-0.001	-0.001	-0.003	-0.004	0.001
	(0.23)	(0.24)	(0.65)	(0.69)	(0.11)
Age of firm squared	0.0001	0.0001	0.0002	0.0002	0.0001
	(0.54)	(0.50)	(0.82)	(0.83)	(0.36)
Industry controls	Yes	Yes	Yes	Yes	Yes
Number of Observations	1475	1475	1472	1472	1035
R-Squared	0.08	0.08	0.10	0.10	0.09

Notes: t-values in parentheses. Standard errors are corrected for clustering at the state level.

In addition to the variables shown, all regressions include variables indicating that the owner reports data on two firms, variables indicating the supplier is a large commercial firm, a large factory, a small factory, and some other type of firm (small commercial firms are the base group), and industry dummies (6 for males and 4 for females).