THE WILLIAM DAVIDSON INSTITUTE
AT THE UNIVERSITY OF MICHIGAN BUSINESS SCHOOL

Interfirm Relationships and Informal Credit in Vietnam

by John McMillan and Christopher Woodruff

Working Paper Number 132
February 1998

Comments Welcome

This paper uses data gathered in part with the assistance of a grant from the William Davidson Institute.

INTERFIRM RELATIONSHIPS AND INFORMAL CREDIT IN VIETNAM

John McMillan and Christopher Woodruff[1]

Graduate School of International Relations and Pacific Studies
University of California, San Diego
La Jolla, CA 92093-0519, USA
Fax: 619 534 3939
jmcmillan@ucsd.edu, cwoodruff@ucsd.edu

February 23 1998

1. Interfirm Finance

Firms routinely rely on other firms' goodwill. Where a well-functioning legal system exists, in advanced economies, ongoing relationships complement formal contracts in helping to make deals work smoothly (Macauley, 1963; Haley, 1997). Where laws of contract are absent, in many developing and transition countries, informal relationships can serve as a substitute in allowing deals to be made (Greif, 1996; McMillan, 1997). Ongoing or clientelistic relationships have long been studied by sociologists, anthropologists, and economic historians.[2] They have been little studied econometrically, however, because data are hard to come by and because the dependent variable, the success of the cooperation, can be hard to measure.

A survey of private firms in Vietnam is used in this paper to examine interfirm relationships; this survey gives detailed data on a firm's relationships with specific trading

---

[1] We thank Stephan Haggard, Edward Lazear, Garey Ramey, James Rauch, Joel Sobel, Lars Stole, Frank Upham, Dimitrios Vayanos, and Joel Watson for comments, Nguyen Vo Hung and Nguyen Thanh Ha for implementing the surveys, and Steven Kullback, Liem Le, Trac Pham, and Tamara Richardson for helping to organize them. The data collection was supported by IR/PS's Vietnam-Pacific Program, the project on Institutional Reform and the Informal Sector, the UCSD Academic Senate, and the William Davidson Center.

[2] Geertz (1978) defines clientelization as the tendency "for repetitive purchasers of particular goods and services to establish continuing relationships with particular purveyers of them rather than search widely through the market at each occasion of need." Ongoing relationships in various settings have been studied by Geertz (1978), Barton (1983), Dore (1983), Granovetter (1985), Uzzi (1996), Grabher and Stark (1997), Podolny and Page (1997); also Posner (1980), Milgrom, North, and Weingast (1990), Greif (1993), Greif, Milgrom, and Weingast (1994).

partners. We take as our measure of a firm's trust in its trading partner the amount of trade credit it grants. We ask how the informal relationships work, what the determinants of successful cooperation are, and whether the reliance on informal contracting entails any costs.

We find that interfirm relationships are far from arms-length. The bilateral relationships are shaped by being embedded in two kinds of networks: one based on pre-existing ties of family or friendship, the other on communication among manufacturers of similar types of goods. The firms in our sample use both of these networks to investigate potential trading partners before dealing with them and then to monitor them once they start to transact. The punishment for nonpayment of a debt can be bilateral--the creditor refuses to deal any more with the debtor--or communal--other firms are told of the bad debt and blacklist the debtor.

These informal devices are effective, in allowing deals to be made in the absence of a legal system, but they come with some efficiency costs. Exclusion is the corollary of ongoing relationships. Continuing to deal with the customary trading partner might mean refusing to deal with new entrants; we find that better deals from outsiders are sometimes foregone. Small firms appear to use networks differently from large firms. Small firms and slow-growing firms rely on family networks whereas large firms and fast-growing firms do not, suggesting that to be successful, rather than just to survive, a firm must somehow break out of its reliance on family-based clientelistic links. Interfirm networks remain significant even for large firms, however, in that they use other firms in the industry as sources of information about new suppliers. Perhaps a network of firms in the same industry, being an open network in the sense of allowing entry and exit, does not limit a firm's success in the way that a family-based network does.

2. Theories of Trade Credit

Trade credit provides firms with a source of finance when there is no financial market, as in present-day Vietnam or the colonial-era United States. But trade credit continues to be used even after financial institutions have developed, so it must serve some specific needs. In the United

States firms still receive much of their external short-term finance via trade credit (Petersen and Rajan, 1997). The finance literature offers two sets of explanations of why firms offer credit to their trading partners, rather than leaving financing to specialists like banks.

One set of explanations is based on industrial organization. When the banking sector is imperfectly competitive firms can use trade credit to avoid paying monopoly rents to the banks (Emery, 1987). On the other hand, trade credit might be needed when the banking sector is too competitive to allow ongoing relationships in which the banks lose money early in a relationship and earn profits later (Petersen and Rajan, 1995). The market power of the firms also is relevant: a firm might offer trade credit to achieve covert price discrimination, to evade legal sanctions against overt price discrimination or perhaps to hide price cuts from other customers (Brennan, Maksimovic, and Zechner, 1988; Schwartz and Whitcomb, 1979). In the event a borrower fails to repay a loan, a firm may be better equipped than a bank to resell repossessed merchandise (Mian and Smith, 1992). Trade credit can further function as a warranty for product quality (Long, Malitz, and Ravid, 1993).

A different set of explanations of trade credit rests on the advantages firms have over banks in the selection and monitoring of credit contracts. Information available as an outgrowth of day-to-day trading may allow the firms to make informed decisions about which trading partners are better credit risks. The merchandise transactions also allow a firm easily to monitor its creditors. If the customer has no access to bank loans, because of the adverse-selection problem, the seller might have to grant credit in order to make the sale.[3] Firms will therefore receive more trade credit when they are receiving less bank credit (Smith, 1987; Biais and Gollier, 1997).

These information-based explanations depend on the inability to write complete contracts enforceable by courts, as occurs even under a well-functioning legal system because of the size of the credits, the option of bankruptcy, and the inability to write down all of the actions which the

[3] Businesspeople we interviewed in Hanoi said they offer credit because without it there would be no sale.

lender would like the borrower to take. In a transition economy like Vietnam the inadequacy of the legal system is an additional reason for credit contracts to be enforced informally.[4]

Simultaneous transactions in goods and credit introduce a possible substitute for the legal system because, if the customer is in some way locked into the relationship, the supplier can cut off trade in goods if the debt is not repaid (Petersen and Rajan, 1997). Such repeated-game sanctions can be effective, in particular, when the customer would face high search costs of finding an alternative supplier. The two market frictions--the poorly developed legal system and inadequate market information--can offset each other (Kranton, 1996; Ramey and Watson, 1996). Firms that find it difficult to locate alternative trading partners will invest in maintaining their existing relationships. Poor market information helps make self-enforcing contracts workable.

The threat of no further trade if debts are not paid gains extra force if it comes not only from the firm that is owed the money but also from other firms in the same line of business (Milgrom, North, and Weingast, 1990; Kandori, 1992).[5] The routes for sharing information on trading partners' reliability in order to enact such community sanctions include gossip among the firms, meetings through business associations, and familial networks.

Vietnam is an extreme case. Interfirm credit is crucial, because most firms have no access to bank loans and equity markets do not exist; and credit is necessarily based on trust, because there is essentially no legal machinery to force debts to be repaid. Nevertheless, trade credit probably does not function qualitatively differently in Vietnam than elsewhere. The lending firm suffers the consequences, so an offer of credit is based on the expectation that the customer will "voluntarily" repay the debt.

By examining trade credit in the extreme case of an economy with unusually large frictions we provide a counterpoint to the existing empirical work on trade credit in advanced economies. We focus on the same phenomena as these studies. While we look primarily at information and

---

[4] Less than 10% of our respondents said a third party would help resolve disputes with customers or suppliers. On the irrelevance of Vietnam's legal system to firms, see Gillespie (1993), McMillan and Woodruff (1998).

[5] The key difference between informal contracting in the United States and Japan, according to Haley (1997), is that in the United States sanctions are purely bilateral whereas in Japan community sanctions are invoked.

enforcement costs as determinants of trade credit, we also ask how trade credit interacts with bank credit, whether it is used for price discrimination, how it is affected by firm size, and whether it is influenced by the ease of reselling repossessed merchandise.

Our study differs from existing empirical trade-credit studies in two ways.[6] First, we add a new explanatory variable, customer search costs, and ask if the degree the customer is locked in is associated with the supplier's willingness to offer credit to that customer. Second, we examine the workings of the ongoing interfirm relationships in more detail than before. Petersen and Rajan (1997), for example, explore supplier-creditor relationships among small US firms but their data, on the firms' aggregate credit position, allow them to do so only indirectly: they find that customers with negative profits but positive sales growth receive credit, which they interpret to mean that the credit is offered in anticipation of future business. Our data on the credit offered by a particular supplier to a particular customer enable us to examine the determinants of the cooperativeness, as measured by credit, of the specific relationship.

We expect to find more trade credit when customers face higher costs of locating new trading partners and when sellers have more information about customers. We will examine three sources of information. First, the seller might know the customer before the trading relationship starts: the customer might be managed by a family member or friend, or information might be available from other manufacturers. Second, the seller might learn about the customer during the course of the relationship. Third, the seller might learn about the customer by talking regularly with the customer's other trading partners. (The first and third of these sources of information also allow the possibility of community sanctions against customers that fail to repay.)

3. The Survey and the Data

Our data come from surveys of 259 nonstate firms undertaken in Hanoi in 1995-1996 and in Ho Chi Minh City in 1997. The surveyed firms were drawn from lists of members of the Vietnam Chamber of Commerce and Industry (VCCI) that reported having between five and 300

[6] In the concluding section we compare our findings on trade credit in Vietnam with the US studies' findings.

employees. The sample probably does not represent the Vietnamese manufacturing sector as a whole, as firms that join the VCCI are likely to be more successful than average.

The data are summarized in Table 1. The median firm size in the sample is 32 employees, with two firms reporting four and two reporting more than 300. Most are new, with 60% having started operations less than 4 years before the survey was administered. But 20% of the firms — most of them in Hanoi — began operating more than ten years before (that is, before Vietnam's reforms began), as collectives in the planned economy; half of those reported themselves as still being collectives at the time of the survey.[7] All of the firms are manufacturers, with roughly 17% producing garments/footwear, 10% producing in each of the categories of metal products, wood products, food, construction materials and paper/packaging, and the remainder representing diverse industries. Metal and food-products companies typically have 50 or fewer workers and garment/footwear companies typically have more than 50.

While all the respondent firms are nonstate, state-owned enterprises account for some of their sales and supplies, though most -- nearly three-quarters of sales and two-thirds of supplies -- involve nonstate customers and suppliers. We consider only relationships between the respondent firms and nonstate trading partners.[8]

Most firms are owner-managed, with two-thirds being more than half-owned by the top manager and his family and 40% having no owners outside the family. Fourteen percent of firms are 100% collectively owned. The primary source of start-up capital was the entrepreneur's own savings, though 47% of firms report some contribution to start-up capital from non-family partners and 10% report contributions from banks. Bank credit is received by 22% of the firms, but trade credit is much more common: 57% of ongoing customer relationships and 53% of ongoing supply relationships involve some delay in the payment for goods delivered.[9]

Most sales are made to customers located in the same city as the manufacturer. This is not true for large firms, however, that export more than a third of their production on average.

---

[7] These firms are included in the regressions reported below. However, the results are not changed much when either collectives, firms older than 10 years, or both of these groups, are excluded.

[8] Preliminary analysis of the data suggests relationships with state-owned enterprises have a different character. Differences between private and state-owned trading partners are left to future research.

[9] One of the hindrances to bank financing is the ill-defined nature of land-use rights, which often prevents real estate from being used as a source of collateral for securing loans (Riedel (1997, p.63). Interestingly, our Vietnamese firms have roughly the same degree of access to banks as firms in poor US neighborhoods: Bond and Townsend (1996) report that 12% of firms in Chicago's South Side had bank loans at start-up.

Although exports account for 20% of production, 73% of firms export nothing. Nine percent (24 firms) export all of their production. Two-thirds of the exporters are in the wood products and garment/footwear industries.

The heart of the survey is a series of questions about the firm's relationships with its first customer and its most recently added customer; and with it longest running supply relationship and its newest supply relationship. For each of these four specific relationships, firms were asked what proportion of the sales price is paid in advance of delivery, at the time of delivery, and after delivery. In open-ended interviews accompanying the survey, several firms said that it is common practice to pay for one order when the next order is delivered.[10] Others said a typical credit term is a month, with no explicit interest charged. Since any buyer offered such a schedule would certainly find delaying payment to be optimal, we interpret the portion of the bill paid after delivery as a measure of credit supply.

In general, observed trade credit is the outcome of the supply of credit offered to the customer and the customer's demand for credit. As noted, we interpret the amount of delayed payments as our measure of credit supply. Most of our results would be unaffected, however, if the equations were interpreted as reduced-form mixtures of supply and demand factors. Firms receiving bank loans might be given more credit by suppliers either because the bank loan is a signal of creditworthiness (a supply factor) or because they have a greater need for credit (a demand factor). But a customer's demand for credit should not be affected by the amount of knowledge his supplier has about him, or the cost of searching for alternative suppliers.

The survey contains information on 518 manufacturer-customer relationships. Eliminating state-owned trading partners and relationships no longer ongoing leaves a sample of 242 customer relationships and 254 supplier relationships. Complete data are available for 224 customer and 243 supplier relationships.[11]

While our data do not include information on the overall credit position of the firms, they do allow us to examine credit decisions in individual relationships. We have several measures of bilateral and community information gathering. We know the source of first information about the

---

[10] The same custom of paying for previous purchases when new goods were purchased was followed in the United States before the Civil War, when, as in present-day Vietnam, financial institutions were underdeveloped (Long, Malitz, and Ravid, 1993, p.119).

[11] We make no claim that the relationships represent a random sample of all the firms' trading partners. The longest running relationships, in particular, are almost certainly more successful than average relationships.

trading partner, the duration of the relationship, whether the trading partner is managed by a family member or friend, and whether the respondent manufacturer regularly talks with other suppliers of the customer. We have measures of friction in the market: how long it would take the respondent firm to find alternative sources of supplies and the number of similar manufacturers located within a kilometer of the respondent firm. We will use these data to estimate whether the availability of bilateral and community sanctions affects the granting of trade credit.[12]

4. Customer Credit

Cooperation might build up gradually, as the supplier learns through trading about the customer's reliability (Ghosh and Ray, 1996; Watson, 1996). The survey provides some information on the time between the start of the trading relationship and the granting of credit. For 62 relationships involving credit to customers, the majority of the firms report dealing with the customer for some time before granting credit. Trade credit is granted more quickly when the manufacturer has some previous knowledge of the customer. Credit was offered with the first transaction in 5 of 9 cases where the customer is managed by a family member or friend, and in 5 of 9 cases where the manufacturer learned of the customer through business associates. Absent prior information such as this, credit was granted immediately in only 8 of 44 cases.

In this section we examine the determinants of the surveyed firms' willingness to offer credit to their customers. We run regressions that take as the dependent variable the proportion of the payment made after delivery of the goods. In 47% of the cases, no portion of the amount due is paid after delivery. In 21%, the entire bill is paid after delivery. The data are treated as being censored at both 0 and 1, and the regressions are two-tailed tobits. The means of the dependent and independent variables are shown in Table 2 and the regression results in Table 3. We use two sets of independent variables suggested by the theory sketched above, representing the customers' search costs and the manufacturers' information about their customers. We also include some variables that represent alternative explanations of credit behavior.

---

[12] While our data tell us about the possibility of community sanctions, the survey gives no data on their actual use. In McMillan and Woodruff (1998) we offer some anecdotal evidence that community sanctions are in fact used.

The first set of independent variables are proxies for customer search costs. The prediction is that, when customers can find an alternative suppliers more easily, credit relationships are harder to sustain. We measure the customer's search cost with two variables. First, the survey asked how many other producers of similar products were located within one km. of the respondent firm. Almost two-thirds of the firms indicated there was at least one similar manufacturer nearby, and 38% said there were 3 or more such firms. The survey also asked where the respondent firm's most important competitor was located, and one-third of the firms indicated their main rival was located in the same neighborhood. More manufacturers of similar goods nearby or an important competitor located in the same neighborhood both lower the customer's cost of finding an alternative supplier.[13] In the regressions, both of these variables have the expected negative sign, and both are significant at the .05 level (see the first three columns of Table 3). Customers with lower search costs do receive less credit from manufacturers.

The second set of independent variables measures the quality of information our manufacturers have about their customers. The prediction is that better information means more credit. One source of information is direct experience trading with the customer. We find that a longer duration of trading relationship is significantly associated with larger credit, at a rate which diminishes with time. The survey also asked firms about the source of their first information about the customer. Although the most common response (51% of the firms) was simply the firm's "own research," 20% of the firms responded that their first information was from other producers of similar goods or other suppliers of the customer, and 17% indicated a family member was the source of information.

Where manufacturers' first information comes from other manufacturers, credit is significantly increased. Customers identified in this manner pay an average of 54% of their bill some time after the goods are delivered, compared with 34% paid after delivery by customers identified through other channels. This effect is statistically significant at the 5% level in the first regression in Table 3. There is no significant relationship, however, between getting information from family members and granting credit. In the raw data, customers managed by a family member or friend pay 42% of their bill after delivery, compared with 38% paid by customers

---

[13] A more direct measure of customer search cost comes from asking the manufacturers for their estimate of how long it would take the customer to find an alternative supplier. This variable is available for a subset of the sample, 195 of the observations. Customers taking longer than a week to find a new supplier are more likely to get credit. In unreported regressions available from the authors, the variable is significant at the .05 level.

managed by others. The respondents were asked how frequently they talk to other suppliers of the particular customer. Talking to other suppliers not only potentially generates information about the customer's reliability, but also perhaps gives stronger sanctions against any customer that fails to pay its debts: the punishment for failure to pay might not merely be the inability to buy again from the particular manufacturer, but a blacklisting from other manufacturers as well. (We shall refer to this as community sanctions.) Both the raw data and the regressions indicate that the 14% of manufacturers that talk to other suppliers of the customer at least monthly grant their customers significantly more credit (with 61% vs. 35% of the bill paid after delivery).

The foregoing results are consistant with a story of cooperative relationships sustained by market frictions. The third set of independent variables are included to test for three other explanations of trade credit. The results are shown in column 2 of Table 3. The initial set of search and information variables are little affected by the inclusion of these additional variables.

We find mixed support for the effectiveness of credit constraints. Receiving credit from banks has no effect on the propensity to grant credit, but receiving credit from one or both of the two suppliers identified in the survey significantly increases the likelihood of offering customers credit. This proxy for credit from suppliers is clearly imperfect, since we do not know how important these suppliers are beyond that they each represent at least 3% of the firm's procurement bill. Moreover, although the equations all include eight industry dummies, the positive association between receiving credit from suppliers and granting credit to customers may be picking up differences in credit practices in different product lines.

In the event of non-payment, manufacturers may be able to repossess and resell the merchandise delivered to the customer. Manufacturers have an advantage over financial institutions in this regard when the goods are not immediately transformed by the customer. Petersen and Rajan (1997) test this proposition on US data. An increase in the fraction of the customer's inventory that are finished goods (that is, goods that the customer has already transformed and cannot so easily be resold by the supplier) decreases the amount of credit supplied. From our Vietnam survey, we know whether the customers are individuals, other manufacturers, or retailers/wholesalers. We posit that the last group is least likely to transform the goods delivered by the manufacturer. If the repossession option exists, credit should be more frequently granted to customers that are retailers/wholesalers. We do find a positive relationship here, but it is not statistically significant.

Trade credit has also been seen as a means of achieving covert price discrimination. While antitrust policy does not prevent firms in Vietnam from price-discriminating, manufacturers might still use credit to hide price cuts from other customers. Petersen and Rajan (1997) test the price-discrimination story for US firms by asking whether a firm's gross profit margin is associated with giving credit and find a positive relationship. We do not have data on profits, but we did ask the firms for the two most important factors in setting their prices. Just over a third said the cost of their inputs and competitors' prices were the most important considerations in their pricing, responses which are consistent with competitive pricing and which therefore suggest no leeway for price discrimination. But 45% responded that either "bargaining with the customer" or "relationship with the customer" was important in determining prices. We take these reponses as indicating an ability to charge different prices to different customers. The results in column 2 show that firms giving these responses offer no more credit. Hence the data provide no support for the hypothesis that the manufacturers offer trade credit as a means of achieving price discrimination.

The size and age of the firm can have ambiguous effects on trade credit. If trade credit is used as a means of providing assurance of product quality, then bigger and older firms will offer less credit because their own reputations will will serve to guarantee product quality, making trade credit unnecessary (Long, Malitz, and Ravid, 1993; Deloof and Jegers, 1996). On the other hand, size and age might proxy for access to formal sources of credit, and therefore bigger and older firms will offer more trade credit (Petersen and Rajan, 1997). Our results are consistent with the quality-assurance view: we find that both age and size are negatively associated with providing credit to customers, though only the size effect is statistically significant (column 3).

We checked the robustness of the results by adding a series of firm and manager characteristics. About 10% of the sample is lost when the manager characteristics are added. Less diversified firms grant less credit: an increased percentage of sales coming from the firm's main product is significantly associated with a lower level of credit. This might be explained by the less diversified firms being more risk averse. We also included a variable indicating whether or not the manager speaks Chinese to test for ethnic network effects; we find no effect.[14] The column 3 regressions also control for firm ownership type, age and schooling of the manager, and

---

[14] In precommunist Vietnam, according to Barton (1983), interfirm networks were a specifically ethnic-Chinese phenomenon; the ethnic-Vietnamese merchants were unable to establish trust among themselves. The lack of effect of our Chinese-language dummy in the estimation equations suggests--though it is not a conclusive test--that these relationships are not shaped by ethnic ties.

relationships with state-owned enterprises. Inclusion of these controls has little effect on the search and information variables of interest, though the coefficients on both the number of local firms producing similar products and the duration of the relationship are decreased somewhat in magnitude and significance.

Columns 4 through 7 of Table 3 examine whether these determinants of the willingness to offer credit vary depending on whether the manufacturer is selling domestically or overseas, or whether the manufacturer is large or small.

One-third of the customers in the data are foreign-owned.[15] The determinants of credit in export relationships may differ from those in domestic relationships. Social sanctions are not likely to be effective for export clients, and trading companies and other middlemen may play a bigger role in exporting. The fourth and fifth columns split the sample into domestic and foreign customers. The most direct community sanction--talking to other suppliers of the customer--is important only for domestic customers; there is no association between local gossip and giving credit to foreign customers. However, foreign trading partners receive more credit if the initial contact came through manufacturers of similar goods, an effect that is insignificant when the customer is a domestic firm. The variables measuring the duration of the relationship retain their sign but lose their significance in both equations.

Small firms might be expected to to rely more than large firms on community sanctions to support credit relationships. Bilateral sanctions are a more powerful threat coming from larger firms. Moreover, larger firms are more likely to have alternative means of enforcing contracts: for example, 12% of firms with more than 50 employees and only 5% of firms with 50 or fewer employees said there is a third party that can enforce contracts with their customers. Columns 6 and 7 report tobits for credit given by firms with more than 50 workers and firms with 50 or fewer workers, respectively.[16] For small firms, significantly more credit is given to customers managed by family members or friends, and credit is also significantly associated with talking regularly with other suppliers of the customer. Neither of these holds for large firms. The duration of the relationship is significant for small but not large firms. Large firms give more credit to customers that are retail stores. This suggests the recovery/resell option may be important for large firms,

---

[15] Of the 71 export customers in the sample, 11 are described as being located in the same city as the respondent. These may represent either local buying offices for export customers or local operations of foreign companies.

[16] While there is a positive correlation between being big and having export clients, 42% of exporters have 50 or fewer employees and almost half of the customers of big firms are domestic.

since retail stores are less likely to have transformed the merchandise than customers that buy the goods for use as inputs. Finally, large firms give more credit in relationships where prices are determined by the "relationship with the customer;" this result is consistent with large firms using credit to price-discriminate. The consistent pattern of these results, then, is that large firms tend to follow industrial-organization rationales for granting credit; and small firms rely more heavily than larger firms on community-based information and enforcement.

These results suggest there are differences in how small and large firms use networks. Networks of other manufacturers are used by both small firms and large, though for different purposes: large firms use other manufacturers as sources of initial information about new suppliers; small firms use them for ongoing monitoring of their current suppliers. Family connections affect the offering of credit by small firms but not by large firms. This raises the possibility, to be further explored later in the paper, that reliance on family networks may limit growth.

In summary, the Table 3 regressions show that the granting of credit is determined by the quality of information the seller has obtained about the customer from other firms dealing with that customer. The granting of credit also is determined by the seller's ability to punish its customer if the debt is not paid, either by the seller itself refusing to deal with the customer or, more effectively still, by other sellers also blacklisting the customer. The data further show that informal sanctions have more force when customer search costs are higher. The informal mechanisms matter more for small firms than for larger firms, and when the customer is domestically owned.

5. Credit from Suppliers

Credit received from suppliers is similar in magnitude to that granted to customers. The respondent manufacturers pay an average of 45% of their bills from private-firm suppliers after goods are delivered (see Table 4). The survey contains information on each manufacturer's longest continuing supply relationship and newest supply relationship. In the regressions reported on Table 5, we explore how the manufacturer's search costs and the information available to the supplier affect the credit the manufacturer receives from the supplier.

Data on the manufacturers' search costs are provided by responses to a question on how long it would take them to find alternative supplies in the event a supplier failed to deliver goods as

promised. One quarter of the respondents said it would take less than a day to find an alternative source of supplies, while 38% said it would take longer than one week (Table 4). We find that manufacturers with very low search costs receive significantly less credit from suppliers, indicated by the negative coefficient on the variable identifying supplies that can be replaced in a day or less. Given the low search cost identified by the first variable, this is perhaps best viewed as suggesting that spot market transactions seldom involve credit. The variable identifying relationships with larger search costs, however is statistically insignificant.

Several questions provide measures of the information available to the supplier about the manufacturer. Among these we find that relationships of longer duration involve more credit, an effect which diminishes across time (though the duration effect is significant at the 10% level in only the fifth column). We find that personal relationships matter in the credit decision. Suppliers managed by a family member or a friend provide significantly more credit. A more direct measure of creditworthiness is receiving loans from banks. Suppliers might get information by observing the manufacturers' relationships with banks. Manufacturers that currently receive credit from banks also receive significantly more credit from suppliers than those that do not get bank loans.[17] This result contrasts with a finding of Petersen and Rajan (1997), who find that US firms with longer relationships with financial insitutions do not receive more credit from suppliers. Since only 20% of the firms in the Vietnam sample receive loans from banks, a bank loan might serve as a stronger signal of creditworthiness for our Vietnamese firms than for US firms.

Each manufacturer was asked whether its suppliers talked among themselves. Those who agreed with the statement "If I have a dispute with one of my suppliers, my other suppliers will surely find out about it" receive significantly more credit from their suppliers (the variable is coded 0 for disagree, 2 for agree, and 1 for indifferent). Because of the questionable reliability of responses to subjective questions like this, we omit this variable from the regression reported in column 1 of Table 5. But its inclusion has little effect on the size or significance of the other variables. Its significance suggests that credit is supported by community sanctions.

The regressions in the third through sixth columns of Table 5 test for robustness of the results in the first two columns. The equation in the third column makes just one change: it uses an

[17] We interpret the data as representing the supply of credit, on the presumption, as discussed above, that firms accept all the credit they can get. If demand factors also matter, then the positive association between receiving loans from banks and receiving credit from suppliers might indicate that the manufacturer has a higher demand for credit.

alternative manufacturer search cost variable--whether or not the manufacturer has an alternative supplier for these inputs. Having an alternative supplier reduces the provision of credit as expected, but the coefficient is not significant. The fourth column adds three characteristics of the firms--age, size and the percentage of sales which come from the firm's main product. As with customer credit, larger and older firms receive less credit from their suppliers, though only the size effect is significant. Firms with sales concentrated in one product are subject to greater risks from market fluctuations, which is reflected in a lower level of credit received from suppliers. The fifth column adds other variables measuring characteristics of the manufacturer and its manager. Managers who speak Chinese receive no more credit. Finally, as with customer credit, a significant minority--20%--of the supply relationships are with foreign-owned suppliers. Removing the foreign suppliers from the sample has only a minor effect on the results (column 6). The variable indicating supplies which can be replaced in a day or less is slightly smaller in magnitude, but is now insignificant.

In summary, the results for supplier credit are similar to the main results for customer credit. There is weak evidence that the manufacturer's search costs affect credit. Information available to the supplier is positively associated with credit. Communication among the suppliers allows for community sanctions, and this communication is more common in relationships involving credit. Buyers receive more credit from their suppliers if they are already receiving loans from banks.

6. The Costs of Informality

Firms need credit in order to function. We have offered find evidence that both bilateral and multilateral infomation-gathering and sanctions facilitate interfirm credit. But while information-rich communities may be enabling, they may be limiting as well. The corollary of ongoing relationships is a reluctance to deal with firms outside the relationship. Exclusion can result in inefficiencies. Two additional survey questions provide some evidence that the informal networks are limiting. Informal mechanisms have costs as well as benefits.

One such cost is exclusion. Firms expressed a hesitancy to deal with trading partners with whom they had never dealt. Regarding both their longest-term supplier and their newest supplier, manufacturers were asked: "If another firm you have never purchased from offered to supply this

input for a price 10% less than your current supplier, would you purchase from the new firm?" Three possible answers were offered: buy entirely from the new supplier, reject the new supplier, and buy from the new supplier but continue buying from the existing supplier as well. While only 29% of our respondents gave the response that simple economics would suggest, saying they would accept the bargain, 53% said they would buy from the new supplier while continuing to buy at the higher price from their accustomed supplier, and 19% said they would reject the lower-priced offer outright. When the sample is divided into large and small firms (with the dividing line being 50 employees), we find that the larger firms are somewhat more likely to accept the offer than the smaller firms (32% vs. 27%) and somewhat less likely to reject it entirely (16% vs. 19%).

In evaluating these responses, the success of the relationship must be weighed against the failure of the market. In a hypothetical market with perfect information and complete contracting, the buyer would have no reason to be suspicious of a low-priced offer, and would always accept it. If there is uncertainty about the reliability of the new supplier, however, it could be rational to reject the apparently better deal. This situation could arise in any economy, but is especially likely in an economy like Vietnam's, where market imperfections abound and the risks of abandoning established relationships are therefore high. Firms are unwilling to take the risk of working with a new supplier even for a much lower price. But this means, some of the time, foregoing a genuinely better deal. The fact that only 29% of our respondents said they would switch to buying from a new supplier offering a 10% lower price implies that there are considerable inefficiencies in this market (although we cannot measure these inefficiencies).

If inefficiencies are entailed in relying on informal mechanisms, they might be seen in the form of lower growth. Firms that rely on trading partners managed by family members or friends, for example, may find their growth prospects limited as the supply of known trading partners is exhausted. Beyond the initial social circle, search costs increase markedly as trust in relationships with previously unknown trading partners is more difficut to establish. The customer-credit regressions for large and small firms, shown in the last two columns of Table 3, suggest that large firms are less reliant on trading partners managed by family members and friends. We explore this further here by looking at the determinants of firms' sales growth.

About half (54%) of the firms report that their sales grew 10% or more in the two years immediately preceding the interview. In Table 6 we report the results of two probit regressions predicting which firms will grow faster. We have information for specific trading partners only for

the two customers and two suppliers identified in the survey. In the majority of cases, the manufacturers deal with more than four trading partners. We view the information extracted from the four relationships as a proxy for the firm's behavior, but this should be kept in mind when interpreting the following results. The first three variables in Table 6 measure how much the four trading relationships identified in the survey rely on the bilateral or community information variables discussed above. The fourth variable measures how many of these trading patterns would take longer than a week to replace.

A caveat applies to the sales-growth equations in Table 6. Since we surveyed existing firms, our sample omits firms that entered and then failed. Imagine that a new entrant can pick one of two strategies: a risky strategy that generates high growth if it succeeds but has some probability of failure or a safe strategy that guarantees growth but at a low rate. All of the firms that chose the safe strategy would be represented in our sample, but of those firms that chose the risky strategy only the lucky ones would be represented. The estimation coefficients show the effects of the independent variables on growth conditional on the firm surviving. However, our point here is not to explain growth generally, but to ask whether the informal mechanisms we have been examining affect actual growth rates.

For 40% of the firms, at least one of the identified trading partners is managed by a family member or friend and for 7% of the firms three or four of the identified trading partners are so managed. Each additional familial trading partner decreases the probability of fast growth by nearly 6%. This effect is significant at the 10% level. The other information variables that are significant in the credit equations are talking regularly to other suppliers of the customers and learning of customers or suppliers from other manufacturers. Both of these appear to lower sales growth though neither effect is significant at the 10% level. Firms that are locked into their suppliers, as measured by their reporting that they would take more than a week to find alternative suppliers for goods not delivered, also grow slowly. An additional hard-to-replace trading partner results on average in a 5% reduction in the probability that a firms grows fast.

The second equation in Table 6 adds several variables that serve as controls. Two variables representing whether the firm receives credit from its suppliers and gives credit to its customers can be interpreted as measures of success in trading-partner relationships; if market friction helps sustain credit, then this might offset the negative effects of the friction. Both of the credit variables have positive signs, though neither is significant, and they have only slight effects on the other

variables. Also included as a control is receiving loans from banks, which is significantly associated with fast growth. Doubtless the causality goes both ways: bank loans promote growth, and fast-growing firms get bank loans. We do not investigate this issue further because of data limitations and because our aim is not to explain growth generally but just to examine whether the search-cost and customer-information variables affect realized growth. Among the other control variables: Older firms grow more slowly, with each additional year since the firm's founding reducing the probability of being in the fast-growing group by just over 1%. Having competitors located nearby, on the other hand, tends to lower growth; each additional competitor located within one km. of the manufacturer also reduces the probability of faster growth by 1%. Neither exporting nor dealing with state-owned enterprises is associated with fast growth. However, firms that procure a larger portion of their supplies from suppliers within the same city are more likely to be in the faster growing group.

In summary: firms tend to grow slowly if their trading partners are managed by family members or friends, or if they have high search costs for their inputs. Clientelism is associated with slow growth.

7. Summary and Comparisons

Trading relations in Vietnam's emerging private sector are shaped by two market frictions--the difficulty of locating trading partners and the absence of formal third-party enforcement of contracts--which, we have argued, offset each other. The high search costs impel firms to cooperate. While these market frictions are unusually large in Vietnam, they are likely to be present to some degree even in an advanced economy. We conclude by comparing our findings on trade credit in Vietnam with what is known about trade credit in advanced economies.

• *Search costs.* We find that the costs of finding alternative trading partners facilitate trade credit. Search costs are undoubtedly higher in Vietnam's transition economy, which lacks information-generating market infrastructure, than in advanced economies. Moreover, interfirm credit is more needed in Vietnam than in advanced economies because firms have less access to banks; and it is necessarily informal because the legal system offers little protection to creditors. Nevertheless we conjecture that, even in advanced economies, this lock-in effect might apply so that variations in the use of trade credit might be explained in part by variations in customers' search costs.

• *Ongoing relationships.* Our regression results show how reputational mechanisms work in allowing contracting without laws in Vietnam. We find that a firm trusts its customer enough to offer credit when (a) the customer faces high costs in finding alternative suppliers; (b) the firm has access to information about the customer from its other trading partners or (to a lesser degree) from family members; and (c) community sanctions are possible should the customer renege on the deal. These results add detail to the indirect evidence from advanced economies of Petersen and Rajan (1997) that ongoing relationships support trade credit.

• *Bank credit.* We find no relationship between offering trade credit to customers and receiving a bank loan, though we find that a firm receives more trade credit if it is the recipient of a bank loan. The opposite holds in the United States, where firms that are not credit-rationed tend not to use trade credit (Petersen and Rajan, 1997). This difference in findings might be explained by the inefficiency of Vietnam's banking system and the inability of creditors to invoke the law. Although some private banks exist, finance is still dominated by the state bank. Less than a quarter of the sampled firms received bank credit. Perhaps the knowledge that a customer is the recipient of a bank loan gives a seller some assurance that trade credit will be repaid.

• *Industrial-organization effects*: US studies have shown that trade credit is sometimes used to achieve covert price discrimination: Petersen and Rajan (1997) find that firms with higher profit margins offer more credit. For Vietnam we find evidence, for large firms but not for small firms, suggesting price discrimination could be a motive for offering trade credit: large firms that price competitively grant less credit than firms that set prices by bargaining with their customers. In the United States the trade-credit decision is influenced by the relative ease of reselling the goods in the event of their being repossessed (Mian and Smith, 1992; Petersen and Rajan, 1997). We find similarly, for large firms but not for small firms, that more credit is offered when the customer is a retail store. Studies of advanced economies find mixed results on the effects of firm size on credit. According to Petersen and Rajan (1997), trade credit is used less by small firms than by large firms in the United States. According to Long, Malitz, and Ravid (1993) and Deloof and Jegers (1996), larger firms extend less trade credit than smaller firms in respectively the United States and Belgium. Our results for Vietnam are unambiguous: larger firms both grant and receive less credit as a fraction of sales than smaller firms.

While we find that reputation is a workable basis for contracting in Vietnam, substituting for the missing legal system, we also find some shortcomings of the informal mechanisms.

Informal contractual enforcement comes at a cost. Maintaining ongoing relationships means excluding outsiders, which entails inefficiencies. Small firms rely more heavily than large firms on family connections and on gossip from the customer's other trading partners. Firms dependent on trading partners run by family members grow slowly. These observations suggest that to be successful, rather than just to survive, a firm must somehow escape its reliance on the family-based clientelistic links. Interfirm networks remain significant even for large firms, however, in that they use other manufacturers of similar goods as sources of information about new suppliers, suggesting that a network of firms in the same industry, being an open network, does not limit a firm's success in the way that a family network does.

References

Barton, Clifton A., "Trust and Credit: Some Observations Regarding Business Strategies of Overseas Chinese Traders in South Vietnam," in Linda Y. C. Lim and L.A. Peter Gosling, editors, *The Chinese in Southeast Asia*, Vol. 1, Singapore, Maruzen, 1983.

Biais, Bruno, and Gollier, Christian, "Trade Credit and Credit Rationing," *Review of Financial Studies* 10, Winter 1997, 903-937.

Bond, Philip, and Townsend, Robert, "Formal and Informal Financing in a Chicago Ethnic Neighborhood," *Economic Perspectives* 20, 4, July/August 1996, 3-27.

Brennan, M., Maksimovic, V., and Zechner, J., "Vendor Financing," *Journal of Finance* 43, 1988, 1127-1141.

Deloof, Marc, and Jegers, Marc, "Trade Credit, Product Quality, and Intragroup Trade: Some European Evidence," *Financial Management* 25, Autumn 1996, 33-43.

Dore, Ronald, ""Goodwill and the Spirit of Market Capitalism," *British Journal of Sociology* 34, 1983, 459-482.

Emery, G. W., "An Optimal Financial Response to Variable Demand," *Journal of Financial and Quantitative Analysis* 22, 1987, 209-225.

Geertz, Clifford, "The Bazaar Economy: Information and Search in Peasant Marketing," *American Economic Review Papers and Proceedings* 68, May 1978, 28-32.

Ghosh, Parikshit, and Ray, Debraj, "Cooperation in Community Interaction without Information Flows," *Review of Economic Studies* 63(3), July 1996, 491-519.

Gillespie, John, "The Evolution of Private Commercial Freedoms in Vietnam," in *Vietnam and the Rule of Law*, ed. C. A. Thayer and D. G. Marr, Canberra, Australian National University, 1993.

Grabher, Gernot, and Stark, David, eds., *Restructuring Networks in Post-Socialism*, Oxford, Oxford University Press, 1997.

Granovetter, Mark, "Economic Action and Social Structure: The Problem of Embeddedness," *American Journal of Sociology* 91, November 1985, 481-510.

Greif, Avner, "Contract Enforceability and Economic Institutions in Early Trade: The Maghribi Traders' Coalition," *American Economic Review* 83 (3), June 1993, 525-548.

Greif, Avner, "Contracting, Enforcement, and Efficiency: Economics Beyond the Law," unpublished, Stanford University, June 1996.

Greif, Avner, Milgrom, Paul, and Weingast, Barry R., "Coordination, Commitment, and Enforcement: The Case of the Merchant Guild," *Journal of Political Economy* 102 (4), 1994, 745-776.

Haley, John O., "Relational Contracting: Does Community Count?" in Harald Baum, ed., *Japan: Economic Success and Legal System*, Berlin: deGruyter, 1997, pp. 167-183.

Kandori, Michihiro, "Social Norms and Community Enforcement," *Review of Economic Studies* 59, 1992, 63-80.

Kranton, Rachel, "Reciprocal Exchange: A Self-Sustaining System," *American Economic Review* 86, September 1996, 830-851.

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

Macauley, Stewart, "Non-Contractual Relationships in Business: A Preliminary Study," *American Sociological Review* 28 (1963), 55-70.

McMillan, John, "Markets in Transition," in *Advances in Economics and Econometrics: Theory and Applications*, ed. David M. Kreps and Kenneth Wallis, Cambridge: Cambridge University Press, 1997.

McMillan, John, and Woodruff, Christopher, "Networks, Trust, and Search in Vietnam's Emerging Private Sector," unpublished, UCSD, February 1998.

Mian, S., and Smith, C. W., "Accounts Receivable Management Policy: Theory and Evidence," *Journal of Finance* 47, 1992, 169-200.

Milgrom, Paul R., North, Douglass C., and Weingast, Barry R., "The Role of Institutions in the Revival of Trade: The Law Merchant, Private Judges, and the Champagne Fairs," *Economics and Politics* 2, March 1990, 1-24.

Petersen, Mitchell A., and Rajan, Raghuram G., "The Effect of Credit Market Competition on Lending Relationships," *Quarterly Journal of Economics* 110 May 1995, 407-444.

Petersen, Mitchell A., and Rajan, Raghuram G., "Trade Credit: Theories and Evidence," *Review of Financial Studies*, Fall 1997, 10, 661-692.

Podolny, Joel M., and Page, Karen L., "Network Forms of Organization," unpublished, Graduate School of Business, Stanford University, 1997.

Posner, Richard, "A Theory of Primitive Society with Special Reference to Law," *Journal of Law and Economics* 23, 1980, 1-56.

Ramey, Garey, and Watson, Joel, "Bilateral Trade and Opportunism in a Matching Market," unpublished, University of California, San Diego, 1996.

Riedel, James, "The Vietnamese Economy in the 1990s," *Asian-Pacific Economic Literature* 11 (2), November 1997, 58-65.

Schwartz, R. A., and Whitcomb, D., "The Trade Credit Decision," in J. Bicksler, ed., *Handbook of Financial Economics.* Amsterdam, North-Holland, 1979.

Smith, Janet Kihom, "Trade Credit and Informational Asymmetry," *Journal of Finance* 48, September 1987, 863-869.

Uzzi, Brian, "The Sources and Consequences of Embeddedness for the Economic Performance of Organizations: The Network Effect," *American Sociological Review* 61, August 1996, 674-698.

Watson, Joel, "Building a Relationship," unpublished, University of California, San Diego, July 1995.

Table 1
Summary of Survey Data

Category	All Firms	≤50 Employees	> 50 Employees
Number of firms	259	186	73
Hanoi	149	108	41
Ho Chi Minh City	110	78	32
Number of employees			
Median	32	25	94
Mean	52	25	122
Standard deviation	60	14	75
Age			
1-4 years	60%	60%	60%
5-10 years	20%	19%	23%
>10 years	19%	20%	16%
Industries:			
Metal	12%	15%	5%
Wood products	12%	12%	14%
Food	10%	11%	7%
Garments and footwear	17%	13%	29%
% of sales to private sector firms:	73%	71%	77%
% of sales to customers located:			
Within same city	56%	63%	40%
Outside city, in Vietnam	23%	24%	23%
Exports	20%	13%	37%
% of supplies from private sect firms:	68%	71%	60%
% of supplies from suppliers located:			
Within same city	54%	58%	44%
Outside city, in Vietnam	32%	30%	38%
Exports	14%	12%	18%
Ownership--% of firms			
100% family owned	40%	43%	33%
Have outside owners	43%	40%	49%
Collectively owned	14%	15%	14%
Start-up finance--% of firms			
100% family financed	41%	43%	34%
Some finance from partners	47%	46%	52%
With bank loan at startup	10%	9%	14%
% of firms with current bank loan:	22%	17%	37%

Table 2
Customer Credit, Variable Means

	All Firms	Domestic Customers	Export Customers	≤ 50 Employees	>50 Employees
Number of observations	224	153	71*	148	76
% Paid after delivery	38%	39%	37%	35%	44%
% firms w/ no payment after	47%	44%	54%	49%	43%
% firms w/ all paid after	21%	20%	23%	20%	22%
% of sales made to this customer	37%	29%	55%	34%	43%
Customer is firm's first customer	41%	39%	45%	41%	42%
Manufacturer located in Hanoi	34%	31%	42%	32%	39%
# Similar firms w/in 1 km	3.4	3.3	3.8	3.6	3.1
Most important competitor w/in 1 km	33%	33%	32%	38%	22%
Duration of relationship (months)	25.5	26.1	24.2	24.7	27.1
First info from other manufacturers	20%	18%	25%	19%	22%
Managed by family or friend	16%	15%	18%	16%	17%
Talk to other suppliers of cust at least monthly	14%	11%	13%	9%	16%
Firm receives credit from bank	21%	17%	31%	18%	38%
# of two identified suppliers providing credit	0.82	0.82	0.82	0.82	0.82
Customer is retail store/wholesaler	42%	46%	32%	44%	45%
Manufacturer sets prices by relationship w/ cust	45%	40%	56%	41%	47%
Foreign customer	32%	0%	100%	20%	54%
Age (Years)	5.2	5.8	3.7	5.6	4.3
% sales main product	85%	84%	88%	88%	81%
Size (hundreds of workers)	57.8	40.1	96.0	23.3	125.1
Manager speaks Chinese	32%	30%	35%	29%	37%

Table 3 Customer Credit Tobits

Variable	(1)	(2)	(3)	(4) (domestic)	(5) (export)	(6) (big)	(7) (small)
Customer search:							
# Similar firms w/in 1 km	-0.027**	-0.035***	-0.27**	-0.19	-0.081**	-0.069***	-0.019
	(2.04)	(2.69)	(1.99)	(1.43)	(2.38)	(3.09)	(1.14)
Most important competitor w/in 1 km	-0.40**	-0.42**	-0.51***	-0.47***	-0.34	0.070	-0.60***
	(2.36)	(2.48)	(2.69)	(2.74)	(0.79)	(0.27)	(2.98)
Manufacturer Info:							
Duration of relationship	0.019***	0.021***	0.018**	0.009	0.047	0.023	0.015*
	(2.64)	(2.68)	(2.10)	(1.38)	(1.45)	(1.16)	(1.73)
Duration ^2	-0.0001**	-0.0001**	-0.0001*	-0.0001	-0.0003	-0.0002	-0.0001
	(1.97)	(2.03)	(1.80)	(1.34)	(0.95)	(0.72)	(1.59)
First information from other manufacturers	0.47**	0.49***	0.73***	0.22	1.22***	0.50*	0.24
	(2.51)	(2.69)	(3.56)	(1.13)	(2.82)	(1.89)	(1.01)
Managed by family or friend	0.15	0.045	0.16	-0.040	0.64	-0.16	0.49*
	(0.75)	(0.22)	(0.74)	(0.18)	(1.25)	(0.54)	(1.87)
Talk to other suppliers of cus at least monthly	0.63**	0.69***	0.77***	0.86***	0.58	-0.59	1.18***
	(2.54)	(2.77)	(2.87)	(3.27)	(0.86)	(1.54)	(3.29)
Alternative Explanations							
Receives credit from bank		-0.087	-0.23	-0.10	-0.066	-0.040	0.30
		(0.46)	(1.15)	(0.56)	(0.16)	(0.15)	(1.11)
Get credit from suppliers		0.41***	0.44***	0.37***	0.56**	0.29**	0.37***
		(4.48)	(4.46)	(3.89)	(2.15)	(2.21)	(3.29)
Customer is retail store/ wholesaler		0.16	0.042	0.19	-0.14	0.61**	-0.084
		(1.09)	(0.27)	(1.24)	(0.39)	(2.38)	(0.46)
Manufacturer sets prices by relationship w/ cust		0.008	0.087	0.078	-0.47	0.43*	-0.13
		(0.05)	(0.53)	(0.45)	(1.01)	(1.78)	(0.64)
Log firm age+1 (Years)		-0.15	-0.21				
		(0.86)	(0.94)				
Log employment		-0.085	-0.18*				
		(1.02)	(1.96)				
Firm/manager Chars: [1]							
% sales main product			-0.87**				
			(2.21)				
Manager speaks Chinese			0.13				
			(0.71)				
Number of Obs	224	224	204	153	71	76	148
χ^2	78.0	102.5	121.5	78.2	46.5	59.0	84.9
p-value	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

Notes: Regressions are two-tailed Tobits, t-values in parentheses.
Regressions also include industry dummies (8), and indicators of first customer and location in Hanoi.
* — Significant at .10 level ; ** — Significant at .05 level; *** — Significant at .01 level.
[1]Regression also includes % sales to SOEs, % supplies from SOEs, 100% family owned, collective, manager formerly worked for SOE, age of manager, manager attended univerisity

Table 4
Supplier Credit, Variable Means

	All Firms	Domestic Suppliers	Import Suppliers
Number of Observations	243	195	47
% Paid after delivery	45%	42%	57%
% of cases w/ no payment after	43%	47%	28%
% of cases w/ all paid after	30%	29%	36%
Supplier is oldest continuing	49%	48%	55%
Manufacturer is located in Hanoi	42%	49%	10%
<1 day to find alternative supplier	25%	29%	9%
>1 week to find alternative supplier	38%	31%	66%
Currently have no alternative supplier	22%	13%	57%
Duration of relationship	30.9	32.2	25.3
Managed by family member/friend	21%	23%	13%
Manuf currently has bank credit	21%	20%	28%
If manuf cheated supplier, other suppiers find out	1.22	1.24	1.17
Age (Years)	6.5	7.0	4.3
% sales main product	84%	85%	82%
Size (hundreds of workers)	47.9	43.6	65.8
Manager speaks Chinese	24%	22%	32%

Table 5 Supplier Credit Tobits

Variable	(1)	(2)	(3)	(4)	(5) [1]	(6)
Manufacturer search:						
Less than 1 day to find	-0.43*	-0.47*		-0.43*	-0.56**	-0.44
alternative supplier	(1.67)	(1.83)		(1.73)	(2.19)	(1.47)
More than 1 week to find	0.016	0.014		0.012	-0.020	-0.072
alternative supplier	(0.07)	(0.06)		(0.06)	(0.09)	(0.24)
Currently have no			-0.23			
alternative supplier			(0.94)			
Supplier Information:						
Duration of relationship	0.010	0.006	0.006	0.010	0.15**	0.007
	(1.44)	(0.96)	(0.90)	(1.38)	(1.98)	(0.92)
Duration ^2	-0.00004	-0.00003	-0.00003	-0.00004	-0.0001*	-0.00004
	(1.61)	(1.37)	(1.26)	(1.53)	(1.94)	(1.33)
Managed by family or	0.43*	0.50**	0.47*	0.39	0.32	0.57*
friend	(1.70)	(2.00)	(1.89)	(1.59)	(1.31)	(1.91)
Manufacturer currently	0.98***	0.91***	0.88***	0.92***	0.75***	0.82***
has bank credit	(3.79)	(3.64)	(3.54)	(3.68)	(3.01)	(2.60)
If man. cheated supplier,		0.52***	0.49***	0.48***	0.62***	0.50**
other sups. find out		(3.22)	(3.05)	(3.11)	(3.80)	(2.53)
Firm Characteristics:						
Log firm age+1 (Years)				-0.23	-0.017	
				(1.12)	(0.71)	
% sales main product				-1.49***	-1.82***	
				(3.20)	(3.72)	
Log employment				-0.23**	-0.21*	
				(2.05)	(1.94)	
Manager Characteristics:						
Manager speaks Chinese					-0.22	
					(0.87)	
Number of Obs	243	243	243	243	228	195
χ^2	45.0	56.5	53.2	72.2	81.2	41.6
p-value	0.0001	0.0000	0.0000	0.0000	0.0000	0.0008

Notes: Two-tailed tobits, t-values in parentheses.
Regressions also include industry dummies (8), and indicators of oldest supplier and location in Hanoi.
[1] Regression also includes % sales to SOEs, % supplies from SOEs, supplier located in same city, manufacturer collectively owned, manufacturer family owned, manager formerly worked for SOE, age of manager, manager attended university.

Table 6
Probits for Sales Growth Rate Greater than 10%

Variable	(1)	(2)
# of identified sups/custs:		
Managed by family or friend	-0.059*	-0.057*
	(1.75)	(1.66)
Talk to other suppliers or customers monthly	-0.054	-0.052
	(0.81)	(0.81)
First information from manufacs of similar goods	-0.030	-0.041
	(1.01)	(1.31)
Take longer than 1 week to find alternative	-0.077***	-0.057*
	(2.85)	(1.92)
Firm Characteristics:		
Receive credit from suppliers		0.051
		(1.14)
Give credit to customers		0.013
		(0.29)
Receive bank credit		0.18**
		(1.98)
% of sales within city		-0.16
		(1.07)
% of supplies within city		0.24**
		(2.14)
age	-0.010**	-0.012***
	(2.50)	(2.83)
Number of similar firms w/in 1 km		-0.014**
		(2.08)
% sales to SOEs		-0.23
		(1.13)
% Supplies from SOEs		-0.090
		(0.75)
% Sales exported		-0.073
		(0.45)
% Supplies imported		0.11
		(0.66)
Number of Obs	227	227
χ^2	25.1	42.9
p-value	0.0335	0.0103

Notes: Probits, robust t-values in parentheses.
Regressions also include industry dummies (8), and indicator for location in Hanoi.