

# Trade Credit:

## Why Do Production Firms Act as Financial Intermediaries?

BY MITCHELL BERLIN

**T**rade credit remains the single largest source of short-term business credit in the United States and other nations around the world.

Why do production firms act as financial intermediaries—a role usually reserved for banks? Mitchell Berlin focuses on explanations that view trade credit as a method of monitoring and enforcing loan contracts to relatively risky firms. He also examines explanations in which a firm's long-term supply relationship helps it to make better credit decisions than a bank would.

The United States has the most highly developed financial markets in the world. Yet, trade credit — credit granted by a selling firm to finance another firm's purchase of the seller's goods — remains the single largest source of short-term business credit. Despite its importance as a mechanism for financing inter-firm trade, trade credit receives less attention in the business press than developments in bank lending markets or corporate debt markets. But the key role of trade credit asserts itself whenever a well-known firm suffers severe

financial problems. When a firm's suppliers begin to demand cash on delivery, the business press begins to speculate on whether the firm is headed for bankruptcy.

The numbers attest that trade credit plays a large role in firms' finance. One way to measure this is to look at firms as borrowers. Mitchell Petersen and Raghuram Rajan's 1997 article shows that *accounts payable* — funds owed by the firms in their sample to trade creditors — average 4.4 percent of sales for a sample of small U.S. firms and 11.6 percent of sales for a sample of large U.S. firms.<sup>1</sup> Another way to measure

<sup>1</sup> The small firm sample is from the Fed's National Survey of Small Business Finance, conducted in 1988-1990, while the large firm sample is from Compustat. The median firm in the small business survey has sales of \$300,000. Although Petersen and Rajan don't report which vintage of the Compustat database they use, the median sales figure for all Compustat firms in 1989 was just over \$52 million.

this is to look at firms as lenders, that is, to look at *accounts receivable* — funds owed to the firms in the sample by their customers. Accounts receivable represent nearly 7.3 percent of sales for small firms and 18.5 percent of sales for large firms.<sup>2</sup>

Firms in most other industrialized nations are comparably reliant on trade credit. Raghuram Rajan and Luigi Zingales report that in the G-7 nations,<sup>3</sup> accounts payable of a sample of large firms range from 17 percent of assets in France to 11.5 percent of assets in Germany — compared with 15 percent of assets for U.S. firms.<sup>4</sup> Accounts receivable range from 13.0 percent of assets in Canada to 29 percent of assets in France and Italy — compared with 17.8 percent in the U.S.<sup>5</sup> Data from the less developed world suggest that trade credit may be even more important for such nations.

Remarkably, until Petersen and Rajan's empirical work in the 1990s, economists could offer only sketchy,

<sup>2</sup> As Petersen and Rajan note in their 1997 article, trade credit is not a source of net credit for firms, since receivables exceed payables. The difference is the amount of receivables financed by other sources, e.g., bank loans.

<sup>3</sup> The Group of Seven (G-7) nations are Canada, France, Germany, Great Britain, Italy, Japan, and the United States. Established in 1985, this organization fosters economic cooperation among the largest industrial nations.

<sup>4</sup> The remaining nations are Japan (15.4 percent), Italy (14.7 percent), the U.K. (13.7 percent), and Canada (13.3 percent).

<sup>5</sup> The remaining nations are Japan (22.5 percent), Germany (26.9 percent), and the U.K. (22.1 percent).



**Mitchell Berlin** is an economist and research officer in the Research Department of the Philadelphia Fed.

anecdotal answers to the most elementary questions about trade credit: Who offers trade credit? Who takes trade credit? While their work made a giant step forward, getting some of the facts straight is only the first, necessary step in answering a basic question that occurs to any economist who thinks about trade credit: Why should a firm that specializes in production or sales act as a financial intermediary when specialized intermediaries like banks can (and do) provide working capital finance? Most puzzling, why should a firm borrow short term from a bank, then provide short-term credit to its customers? Why not cut out the middleman?<sup>6</sup>

While financial economists have proposed a number of explanations, I focus on those explanations that view trade credit as a method of monitoring and enforcing loan contracts to relatively risky firms. I also examine the explanations that hinge on the benefits of long-term supply relationships as an underpinning for flexible and differentiated credit decisions.

## HOW TRADE CREDIT WORKS

Consider Stocking Out, a fast-growing retail hosiery emporium with six outlets in the Philadelphia suburbs, and one of its major input suppliers Run/Don't Run (R/DR), a manufacturer of top-of-the-line athletic socks. R/DR makes a large monthly delivery of socks, and it may take anywhere from a few hours to a few weeks to sell the socks once they are on the shelves. Until the socks are sold, Stocking Out counts them as inventory on its books. How might Stocking Out pay for the unsold goods until the

<sup>6</sup> Rajan and Petersen are not, of course, the first economists to examine trade credit empirically. Notable early contributions that explicitly view bank loans and trade credit as substitutes include Alan Meltzer's article and Dwight Jaffee's book.

revenues from selling them arrive? The main possibilities are illustrated in the figure.

**Banks Offer Working Capital Loans.** One possibility is that Stocking Out takes out a working capital loan — a loan to finance inventories — from a bank and pays R/DR directly. The most typical

arrangement is a revolving loan commitment, in which the bank sets a credit limit and the firm draws down and repays loans at prearranged terms, much like a credit card. For example, the loan commitment might stipulate a credit limit of \$500,000 and a loan rate of prime plus 2 — that is, the prevailing prime rate plus 2 percent — when the borrower draws down \$100,000 for three months. Until this loan is repaid,

Stocking Out could still borrow up to \$400,000, the unused balance of the loan commitment. Unlike credit card agreements, loan commitments must be renewed or renegotiated at fixed intervals. For example, a common arrangement for risky borrowers is a loan commitment with a one-year maturity, and in many cases, the inventories purchased with the bank loan serve as collateral for the borrowings. The most notable feature of a loan commitment is its flexibility; the borrower has substantial discretion over the amount it borrows, the maturity of its borrowings, and how to use the funds it borrows.

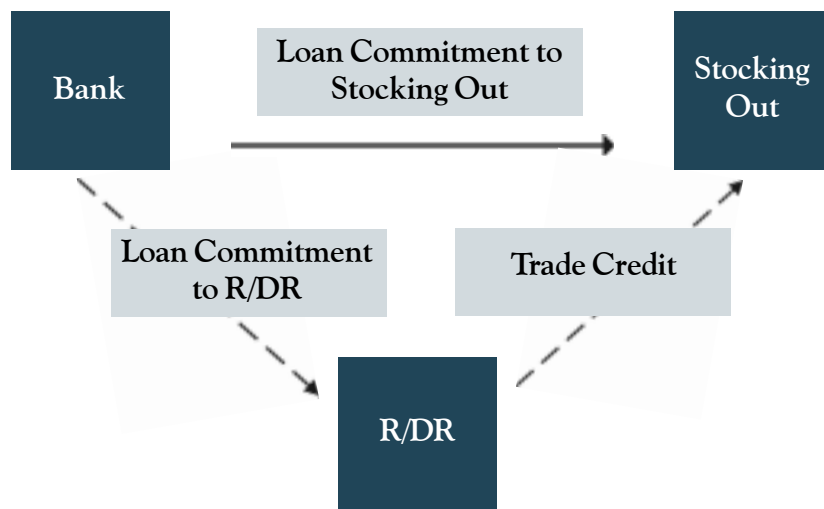
**Supplier Trade Credit Is Expensive If Not Repaid Quickly.** A second possibility is that R/DR provides

## Why should a firm borrow short term from a bank, then provide short-term credit to its customers?

cases, the inventories purchased with the bank loan serve as collateral for the borrowings. The most notable feature of a loan commitment is its flexibility; the borrower has substantial discretion over the amount it borrows, the maturity of its borrowings, and how to use the funds it borrows.

### FIGURE

#### Direct Bank Finance vs. Indirect Bank Finance of Trade Credit



trade credit to Stocking Out. On R/DR's balance sheet, the dollars owed by Stocking Out are an asset called accounts receivable, while the trade credit appears on Stocking Out's balance sheet as a liability called accounts payable. Trade credit comes in a wide variety of terms, but there are two broad types of agreements.<sup>7</sup>

Under a *net contract*, Stocking Out promises to repay R/DR after a fixed period of time; 30 days is the most common maturity, according to Chee Ng, Janet Smith, and Richard Smith's survey results. This contract would be described as "net 30." Although the price Stocking Out pays for the goods will clearly be affected by R/DR's cost of providing credit to its customer, the net contract doesn't include an explicit loan rate.

Alternatively, Stocking Out and R/DR may use a more complicated two-part contract, in which Stocking Out receives a discount for paying within a fixed period, but then must pay the full price for the remaining term of the contract. For example, if the terms of the trade credit are "2/10 net 30" — the most common two-part contract in Ng, Smith, and Smith's survey — Stocking Out receives a 2 percent discount if it pays within 10 days of delivery (the *discount period*) but pays full price between days 11 and 30 (the *net period*).

This sounds like a good deal for Stocking Out, and it is if the credit is repaid within the first 10 days. But this is a *very expensive* form of borrowing if the firm takes longer than 10 days to repay.

---

<sup>7</sup> Ng, Smith, and Smith's article documents the wide variety of trade credit terms. Interestingly, their survey data indicate that trade credit terms are much more standardized within industry groups than across industry groups. However, they don't make much progress in explaining cross-industry variation in contract terms.

The implicit annual interest rate for such borrowings is nearly 45 percent. To see this, think about Stocking Out's cost of missing its payment on the 10th day and paying 20 days later. It has effectively chosen to pay 2 percent for 20 days. Thought about differently, if Stocking Out had paid on the 10th day, it could have invested the 2 percent discount on the pricing of goods for 20 days.<sup>8</sup> For the sake of comparison, the annualized interest rate on my credit card is 16.25 percent if I don't pay off the loan balance before the 15<sup>th</sup> of the month. We might also make a comparison with the rate on a bank loan to a firm without broad access to financial markets. At a time when the prime rate was 4.25 percent, a collateralized loan with a face value of less than \$100,000 carried a loan rate of 5.35 percent per year.<sup>9</sup>

Thus, trade credit is expensive compared with a bank loan for any borrower who doesn't pay within the discount period. Not surprisingly, the evidence indicates that firms strongly prefer to borrow from a bank if bank credit is available. For example, in their 1997 article, Mitchell Petersen and Raghuram Rajan show that firms with unused bank credit lines have significantly lower accounts payable — that is, they use less trade credit. Also, firms with long-term relationships with a bank use less trade credit.

**Suppliers Are Financial Intermediaries.** How does R/DR finance its provision of credit to

---

<sup>8</sup> The formula for the annual interest rate is  $[1/(1-\text{discount rate})]^{(\text{days in the year}/\text{days borrowed})} - 1 = (1.02)^{(365/20)} - 1$ .

<sup>9</sup> Survey of Terms of Business Lending, March 20, 2003. A small "prime plus" loan is a relevant basis for comparison because firms that borrow above prime don't have access to broader financial markets and view a commercial bank as their cheapest source of funds.

Stocking Out? To a significant extent, R/DR's bank actually finances this credit.<sup>10</sup>

Petersen and Rajan report that larger and older firms typically have larger accounts receivable; that is, they are large suppliers of trade credit. It is reasonable to view a firm's age and size as indicators of its creditworthiness.<sup>11</sup> One interpretation of Petersen and Rajan's results is that larger and older firms have easier access to external finance; they, in turn, act as intermediaries and extend trade credit to other, riskier firms. An even more explicit link between R/DR's access to bank credit and its provision of trade credit is Petersen and Rajan's finding that firms with larger credit lines also have larger accounts receivable. In particular, firms that have drawn down a larger share of their credit lines have even larger accounts receivable, consistent with the view that creditworthy firms effectively finance their provision of trade credit with bank loans.<sup>12</sup>

Jeffrey Nilsen's article examines different firms' use of trade credit during periods of monetary contraction,

---

<sup>10</sup> See Loretta Mester, Leonard Nakamura, and Micheline Renault's paper for an account of banks' comparative advantage in providing financing for accounts receivable.

<sup>11</sup> See Aubhik Khan's article for a summary of the evidence from the manufacturing sector that a firm's probability of survival increases with age and size.

<sup>12</sup> Bank financing is not the sole external funding source through which R/DR might finance this credit. Large firms also bypass the banking system altogether by selling securities backed by the cash flows from their receivables; that is, they also act as intermediaries between financial markets and the firms to which they grant trade credit. In some industries, providers of trade credit also sell their receivables at a discount to firms known as factors, which specialize in enforcing repayment. See Shehzad Mian and Clifford Smith's article about the variety of institutions involved in financing trade credit.

when banks become stingy and bond markets dry up for all but the most creditworthy firms. William Lang and Leonard Nakamura's article shows that monetary tightness leads to a "flight to quality," in which banks reduce their lending to risky firms. Nilsen demonstrates that in such tight conditions, trade credit usage increases for small firms but not for large firms that have credit ratings from agencies such as Moody's — firms that have the greatest access to bank loans and other sources of outside finance. Firms with access to outside sources of funds continue to tap these sources when credit is tight; they, in turn, provide credit to firms unable to borrow from a bank or sell bonds. That is, firms' role as intermediaries increases during tight financial conditions.

But this account raises a serious question: Why not cut out the middleman? Think about R/DR's bank. As a specialist in collecting funds from savers, the bank almost certainly has a lower cost of funds than the sock manufacturer. Also, banks are specialists in evaluating borrowers' credit risk. Why doesn't the bank simply use its funding advantage to lend *directly* to Stocking Out?

### TRADE CREDIT IMPROVES MONITORING AND ENFORCEMENT

In normal times, R/DR's managers don't lose much sleep over the possibility that Stocking Out will not pay for socks already delivered. But many contracts and institutions are best understood if we think about how well they deal with the stresses and strains of abnormal times. During the last year, Sam's Socks, which offers an entire line of hosiery and socks at discount prices, has placed an outlet within a mile of each of Stocking Out's locations. The Philadelphia economy has entered a downturn as the Christmas season approaches, and the combination of

hard economic times and bare-knuckles competition has shrunk Stocking Out's revenues to the point where it is having difficulties meeting its payroll.

**It's Hard to Control How a Borrower Uses Money.** Assume first that Stocking Out has signed a loan commitment with a bank. The flexibility of a loan commitment is one of its main attractions to the borrower. Although the firm must establish that it

buy lots of festive socks in the Philadelphia region this Christmas.

Of course, it is the bank's business to attempt to foresee situations like these when the initial commitment is signed and to design the commitment accordingly. Had Stocking Out and its banker foreseen Sam's take-no-prisoners business plan before the loan commitment was negotiated, the loan commitment would have been smaller, its

## It's hard to control how a borrower uses money...Diverting goods is harder than diverting money.

is creditworthy when the loan commitment is signed — and the loan contract usually contains covenants that require the firm to maintain evidence of financial stability to stay in compliance — the firm has a lot of discretion about how to use the borrowed funds. It can respond quickly and efficiently to opportunities that require funds as they arise.

In normal times, this flexibility is beneficial to the firm and to the bank — notably because the firm is willing to pay for it through the commitment fee and the loan rate. But under mounting financial pressure, Stocking Out might be tempted to exploit this flexibility to avoid cost cutting that may be necessary for the firm to cover its debts. For example, Stocking Out might be tempted to draw down the unused balance of its loan commitment to cover payroll costs when it should be laying off workers and shutting its worst performing stores.

This illustrates a problem stressed by Mike Burkart and Tore Ellingsen in their discussion paper. Cash is relatively easy to divert from its intended purpose.<sup>13</sup> Stocking Out's bank may find itself with an uncollectible loan unless lots of mothers-in-law

covenants would have been tighter, and it would have had a shorter maturity. All of these would have limited Stocking Out's discretion to misuse funds. But the bank can't foresee every contingency. And if the bank had foreseen Stocking Out's troubles, it might simply have decided that the risks were too large to make a loan at all.

**Diverting Goods Is Harder Than Diverting Money.** Now assume that, in place of signing a bank loan commitment, Stocking Out finances its purchases from R/DR using trade credit provided at 2/10 net 30. Instead of lending money, R/DR provides credit in the form of goods, which are harder to divert than money, according to Burkart and Ellingsen. For example, most employees would refuse to accept hosiery in place of a paycheck, so Stocking Out could not use trade credit to meet payroll costs, and its ability to keep unprofitable stores operating is more limited than it would be with a loan commitment.

<sup>13</sup> The problem of diversion of funds is more pervasive than this extreme example suggests. Diversion can refer to any use of funds that would reduce a lender's expected repayments.

Stocking Out may actually increase its access to credit by borrowing from its supplier rather than its bank, because borrowing goods instead of money permits the firm to make a credible commitment not to divert the loan for unprofitable purposes. So, trade credit may be the lowest cost way for Stocking Out to borrow, even though its bank has a lower cost of funds than R/DR. If a firm's temptation to divert funds for unprofitable purposes is greatest when it faces financial difficulties, Burkart and Ellingsen's model may help explain the empirical evidence that less creditworthy firms rely on trade credit and that trade credit usage increases when economic conditions are

difficult and financial markets are tight.<sup>14</sup>

The structure of the two-part contract may also facilitate monitoring. The sharp rise in the cost of borrowing at 10 days acts as a tripwire: R/DR will notice immediately if payment isn't made by the 10th day, especially if Stocking Out seldom borrows into the net period. This view finds support in suppliers' responses to a survey conducted by Ng, Smith, and Smith. They

<sup>14</sup> In Burkart and Ellingsen's model, firms can also borrow using a mixture of bank loans and trade credit when potential diversion problems are moderate.

report that one-half of the respondents from firms that offer two-part trade credit view payments beyond the discount period as a sign of financial difficulty.<sup>15</sup>

I've been comparing a standard bank lending arrangement to supplier-provided trade credit. See *Why Can't a Bank Duplicate Supplier-Provided Trade Credit?* for a discussion of why the

<sup>15</sup> The usefulness of payment beyond the discount period as a tripwire assumes that firms do not routinely make payments beyond the discount period. Petersen and Rajan's 1994 article shows that, in most industries, a significant majority of firms take advantage of the early payment discounts over 90 percent of the time.

## WHY CAN'T A BANK DUPLICATE SUPPLIER-PROVIDED TRADE CREDIT?

Consider the following imaginary "bank loan." The bank gives Stocking Out a check written out to R/DR, and the retailer must repay the bank the face value of the check within 30 days. If Stocking Out pays back the bank within 10 days, it receives a 2 percent discount on the amount of the loan.

Note, this arrangement is essentially identical to the 2/10 net 30 credit described in the text, except that the bank provides the credit rather than R/DR. Providing the loan in the form of a check payable to R/DR ensures that the loan can't be used for anything but purchasing goods from the manufacturer. This overcomes the problem that money is easier to divert than goods. The two-part structure of the contract provides identical incentives

to Stocking Out for early payment, and the 10-day tripwire provides the bank with identical information about the retailer's financial health. Finally, since Stocking Out must get a new check to pay for the next delivery of goods, R/DR would have the same incentive to continue making shipments — or to refuse to make further shipments — in the event Stocking Out can't repay the bank within 30 days.

This contract won't work for two main reasons. The more important reason is that a single firm will have many different suppliers; that is, for *each* borrower the bank must monitor a *portfolio* of contracts, rather than a single contract. Supply arrangements differ across different types of suppliers: Some typically use a net 30 contract, others use 2/10 net 30, and yet others use 2/10 net 20. Firms also change

suppliers. The amount of information required for the bank to appropriately design and monitor a constantly shifting portfolio of contracts for each firm in its loan portfolio would be prohibitive.

The second reason is that the firm and its suppliers will have incentives to collude against the bank. For example, a supplier may be willing to provide inputs to a firm — perhaps at an artificially high price — knowing the firm has a large risk of not repaying. The risk of default is shifted to the bank, while the supplier gains the benefits of the sale. Again, the bank would need a prohibitive amount of knowledge about each transaction to prevent collusion.\*

\*This argument is slightly misleading because any three-party interaction can generate incentives for two parties to shift risks to a third. In particular, a variant of this problem arises any time a firm uses both bank loans and trade credit. Bruno Biais and Christian Gollier's article examines the incentives for a firm and its trade creditors to act collusively against the firm's bank or for a firm and its bank to act collusively against trade creditors.

bank can't profitably duplicate R/DR's contract.

**Empirical Evidence.** To a large extent, the enforcement advantage of trade credit flows from the supplier-customer relationship, rather than from formal recourse to legal institutions and debtor-creditor law. For this reason, some researchers call trade credit a type of *informal finance*, in contrast to bank loans. Some of the most interesting empirical evidence that monitoring and enforcement concerns are central to understanding trade credit comes from recent cross-national studies of firms' borrowing patterns.

Asli Demircug-Kunt and Vojislav Maksimovic's working paper finds that firms are more likely to rely on trade credit in countries where legal institutions are less efficient. So, in a country where judges are easily paid off or where the police powers of the state are weak, firms can't rely on the state to enforce loan contracts. Thus, they tend to rely more heavily on trade credit. Raymond Fisman and Inessa Love's article finds that industries that tend to depend on trade credit grow faster than other industries in nations with weak financial institutions.<sup>16</sup> The authors interpret this to mean that in the absence of factors associated with well-developed financial institutions — for example, transparent accounting standards and incorruptible legal institutions — industries less dependent

---

<sup>16</sup> The authors use the financial structure of firms in the U.S. as the standard for ranking industries according to their reliance on trade credit, arguing that firms in the U.S. secure funds in the most highly developed financial markets in the world. The view that the financial structure of U.S. firms is a reasonable standard for ranking firms relies on empirical evidence that industry group is the most important determinant of a firm's capital structure. That is, a textile manufacturer in one country tends to have a capital structure similar to that of a textile manufacturer in another country with very different financial laws and institutions.

on bonds or bank loans face fewer barriers to growth.

Nilsen's finding that small, unrated firms in the U.S. increase their use of trade credit during a monetary contraction also supports the view that enforcement concerns are important for explaining the use of trade credit. One reason that large, creditworthy firms take over a greater share of the job of providing credit to small, riskier firms is that they have an advantage in monitoring these firms when incentive

## A study of Vietnamese firms shows that firms are more likely to provide trade credit to customers with whom they have exclusive buyer-seller relationships.

problems are greatest. In effect, banks delegate the task of monitoring the riskiest firms. When financial conditions are less difficult, close monitoring is less important, and banks increase their share of the financing of working capital for riskier firms.

### LONG-TERM SUPPLY RELATIONSHIPS ARE IMPORTANT

The option to cut off shipments for nonpayment is a potentially powerful means for a trade creditor to force repayment, especially if a supplier provides its customer with a product that has no close substitutes. Even if a firm could find ready substitutes, the threat to withhold shipments will carry weight, since other suppliers may not provide credit if word gets out that the retailer's troubles are serious enough to affect its payments to trade creditors.

But a firm with a long-term supply relationship with its customer will not carry out this threat lightly because it has a natural interest in the long-term health of its customers. While R/DR doesn't want to throw money down the drain in a hopeless attempt to keep the retailer afloat, it also knows that Stocking Out provides R/DR more prominent shelf-space than it could ever hope for with Sam's. Its own profits are likely to be larger if Stocking Out retrenches to cut costs but stays in business and continues to purchase R/DR's goods in the future. In these circumstances, a supplier's interest in the long-term profitability of its important customers can be compared with owning shares of stock in a customer's firm.

R/DR may rationally continue to draw on its own sources of credit and provide trade credit when Stocking Out's bank wouldn't. Along with its long-run interest in the retailer's survival, R/DR may also have better information than a bank about some of Stocking Out's problems. For example, the producer will know better whether a decline in demand for R/DR's socks is an independent cause of the retailer's problems, since it sells through outlets other than Stocking Out.<sup>17</sup>

**Empirical Evidence.** Petersen and Rajan's article provides evidence that suppliers of trade credit are willing to continue to provide credit even to firms with negative profits, but only if their customers' sales are increasing. This is consistent with the view that

---

<sup>17</sup> It should be noted that Stocking Out gains bargaining power to the extent that R/DR sees no ready substitute for Stocking Out as an outlet for its goods. I emphasize the potential gains to both firms from a close bilateral relationship. But with no ready substitute, R/DR may find it difficult to credibly threaten to withhold future deliveries. Benjamin Wilner's article emphasizes this aspect of trade credit.

suppliers are willing to provide credit to financially troubled borrowers, but only if the customer is likely to provide a continuing and growing demand for the supplier's goods. Similarly, a significant number of the firms surveyed by Ng, Smith, and Smith report that they are willing to extend the discount period, especially for long-term customers. A study of Vietnamese firms by John McMillan and Christopher Woodruff shows that firms are more likely to provide trade credit to customers with whom they have exclusive buyer-seller relationships. This supports the view that it is helpful to think of the supply relationship as being similar to owning shares in a customer's firm.

I have concentrated on two explanations for the use of trade credit: monitoring and enforcement advantages and the potential gains from long-term supply relationships. But trade credit is widely used across a range of industries; thus, in practice, there are likely to be multiple reasons for its use. (See *Other Theories of Trade Credit*.)


## SUMMARY

When a firm provides trade credit to a customer, it is acting as an intermediary. The firm is using its own funds or funds provided by a specialized financial intermediary — for example, a bank line of credit — and passing the credit on to its customers. This raises a fundamental puzzle: Why shouldn't the bank and the firm receiving the trade credit cut out the middleman altogether? Why not leave financing to the financing specialists and leave production and selling to the producers and sellers of goods?

Actually, there are good reasons for creditworthy firms to combine the supply of credit and goods

to some of their less creditworthy customers. Suppliers may have advantages in monitoring and enforcing loan contracts. They may also be more flexible than banks when their customers face financial troubles because of the long-term nature of many supply relationships. These advantages may be particularly important in nations where creditors have difficulties collecting on debts because the rule of law is weak or the courts are easily corrupted. Recent cross-national studies — and a limited number of case studies — have shown that supplier-provided credit works comparatively well, even in countries where bank loans or other sources of finance are not easily available.

Since it is hard to transform a

country's legal environment or banking system over any time horizon—much less in the short run—it is very tempting to draw policy prescriptions from these cross-national studies. Some policy-makers view the empirical evidence as support for public policies to encourage trade credit in developing countries where it is not already prevalent. They hope that trade credit may offer a short cut to expand firms' access to finance in nations with weak legal institutions. But the evidence is only suggestive and offers no clear policy prescription. To address policy-related questions like these, researchers will have to understand in much more detail how and why trade credit works in those nations where it already flourishes. 

## OTHER THEORIES OF TRADE CREDIT

Michael Brennan, Vojislav Maksimovic, and Josef Zechner's article explains trade credit as a method for firms to engage in price discrimination by combining the good along with credit. By law, firms are precluded from offering identical goods at different prices; offering the product along with subsidized credit may permit a firm to lower its price to firms whose goods are sensitive to changes in price.

Bruno Biais and Christian Gollier's article suggests that firms and banks have different types of information about firms that can be aggregated. In their model, firms are

unable to secure a bank loan unless the bank lender sees that suppliers are willing to provide credit, because it needs the assurance the suppliers' information about the firm is favorable.

Murray Frank and Vojislav Maksimovic's working paper argues that trade creditors may have a comparative advantage over banks or other creditors in liquidating certain types of inventories. J. Stephen Ferris's article emphasizes that trade creditors can reduce transaction costs in the presence of uncertainties about delivery times and production needs. In particular, the use of trade credit reduces a firm's need to hold precautionary money balances.\*

\*See Petersen and Rajan's 1997 article for a discussion of some other theories.

## REFERENCES

- Biais, Bruno, and Christian Gollier. "Trade Credit and Credit Rationing," *Review of Financial Studies*, 10, 1997, pp. 903-37.
- Brennan, Michael, Vojislav Maksimovic, and Josef Zechner. "Vendor Financing," *Journal of Finance*, 43, 1988, pp. 1127-41.
- Burkart, Mike, and Tore Ellingsen. "In-Kind Finance," Discussion Paper 421, Financial Markets Group, London School of Economics (2002).
- Demirguc-Kunt, Asli, and Vojislav Maksimovic. "Firms as Financial Intermediaries: Evidence from Trade Credit Data," Working Paper, World Bank, 2001.
- Ferris, J. Stephen. "A Transactions Theory of Trade Credit Use," *Quarterly Journal of Economics*, 96, 1981, pp. 243-70.
- Fisman, Raymond, and Inessa Love. "Trade Credit, Financial Intermediary Development, and Industry Growth," *Journal of Finance*, 58, 2003, pp. 353-74.
- Frank, Murray, and Vojislav Maksimovic. "Trade Credit, Collateral, and Adverse Selection," Working Paper, University of Maryland (1998).
- Jaffee, Dwight. *Credit Rationing and the Commercial Loan Market*. Wiley Press, 1971.
- Khan, Aubhik. "Understanding the Life Cycle of a Manufacturing Plant," Federal Reserve Bank of Philadelphia *Business Review* (Second Quarter 2002), pp. 25-33.
- Lang, William, and Leonard Nakamura. "The Flight to Quality," *Journal of Monetary Economics*, 1995, pp. 145-64.
- McMillan, John, and Christopher Woodruff. "Interfirm Relationships and Informal Credit in Vietnam," *Quarterly Journal of Economics*, 114, 1999, pp. 1285-1320.
- Meltzer, Alan. "Mercantile Credit, Monetary Policy, and the Size of Firms," *Review of Economics and Statistics*, 1960, pp. 429-37.
- Mester, Loretta, Leonard Nakamura, and Micheline Renault. "Checking Accounts and Bank Monitoring," Working Paper 01-3/R, Federal Reserve Bank of Philadelphia (January 2003).
- Mian, Shehzad, and Clifford Smith. "Accounts Receivable Management Policy: Theory and Evidence," *Journal of Finance*, 1992, pp. 169-200.
- Ng, Chee K., Janet Kiholm Smith, and Richard Smith. "Evidence on the Determinants of Credit Terms Used in Interfirm Trade," *Journal of Finance*, 54, 1999, pp. 1109-29.
- Nilsen, Jeffrey. "Trade Credit and the Bank Lending Channel," *Journal of Money, Credit and Banking*, 34, 2002, pp. 226-53.
- Petersen, Mitchell, and Raghuram Rajan. "The Benefits of Lending Relationships: Evidence from Small Business Data," *Journal of Finance*, 49, 1994, pp. 3-37.
- Petersen, Mitchell, and Raghuram Rajan. "Trade Credit: Theories and Evidence," *Review of Financial Studies*, 10, 1997, pp. 661-91.
- Rajan, Raghuram, and Luigi Zingales. "What Do We Know About Capital Structure? Some Evidence from International Data," *Journal of Finance*, 50, 1995, pp. 1421-60.
- Wilner, Benjamin. "The Exploitation of Relationships in Financial Distress: The Case of Trade Credit," *Journal of Finance*, 55, 2000, pp. 153-78.