Trade Credit

Theory and Evidence for Emerging Economies and Developing Countries

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Abstract

Trade credit remains an important source of finance for firms in developing countries and many firms in developed countries, especially those that are young, small, or informationally opaque for other reasons. This paper summarizes the literature and explains the pervasiveness of trade credit, detailing its potential advantages over formal credit in terms of the information that buyers and sellers have about each other and their ability to monitor one another. Because it requires less formal contract enforcement, trade credit can be especially relevant where the rule of law and the legal system are weak. At the same time, reliance on information from social networks and informal institutional arrangements limits the scale of trade credit, and thus moderate improvements to formal enforcement can expand trade credit beyond social networks and enable customers to switch suppliers, which improves their credit terms. The patterns suggest a sweet spot or “Goldilocks” region where mid-size firms and those in countries at middling levels of development tend to rely relatively more heavily on trade credit than others. Going forward, detailed data on the relationship between suppliers and customers are crucial to enable more direct tests of theoretical predictions regarding trade credit.

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Trade Credit: Theory and Evidence for Emerging Economies and Developing Countries

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1. Introduction

Although (local) context shapes its terms, at its core trade credit is about a relationship between a supplier of a good and a buyer who resells that good or uses it in producing something else that is eventually sold, but who needs or wants to use trade credit and not pay the supplier of the good immediately. These arrangements could arise, for instance, because buyers lack suitable access to formal credit as reflected, for example, in evidence showing that industries that rely more heavily on trade credit for financing exhibit higher rates of growth in countries with weaker formal financial institutions (Fisman and Love, 2003). While one might expect use of trade credit to decline as formal financial institutions develop, it has been described as “the single most important source of short-term external finance for firms in the United States” (Petersen and Rajan, 1997), accounting for about half of the short-term debt for samples of medium-sized firms in the UK and small-sized firms in the US (Cunat, 2007). Moreover, cross-country evidence has shown that, while small firms do benefit more from better property rights in terms of improved access to both bank finance and trade credit, the end result is not greater use of trade credit (as a share of total external finance) than for medium or large firms (Beck, Demirguc-Kunt, and Maksimovic, 2008). These patterns indicate that trade credit is pervasive across countries of all income levels and among firms of all sizes, which suggests that it provides financing that formal providers are unable or unwilling to provide.

In summarizing and clarifying the literature, this paper tries to explain the use and pervasiveness of trade credit by detailing its potential advantages over formal credit in terms of the information that buyers and sellers have about each other and their ability to monitor one another, which can both lead to long-term relationships that each side values. Formation of these relationships depends also on legal and institutional constructs, while the specific terms of contracts (which are also dependent on those foundations) are heavily dependent on the bargaining dynamics between buyers and sellers and competitive dynamics between the suppliers and the buyers themselves.

Section 2 therefore explores different theoretical rationales for the emergence of trade credit. Section 3 takes those theoretical justifications for trade credit as its starting point and summarizes the empirical evidence that supports or refutes those conjectures. Section 4 then illustrates how the underlying forces and dynamics in the previous two sections shape the
prevalence of trade credit arrangements and their terms in specific contexts, with emphasis on low and middle-income countries. Section 5 offers concluding remarks.

2. Theories of Trade Credit

While firms can obtain credit in various ways, the most important ones are via trade credit and bank loans, though studies of bank loans are an order-of-magnitude more prevalent than those of trade credit. Trade credit, which enables the buyer to postpone payment after obtaining the good, can be of two basic and widespread types (Ng et al. 1999). The first is the net-term type, referred to, for example, as “net 30.” Here the full payment is expected within the required period (e.g., within 30 days), after which the buyer is in default. The second type has ‘two-part’ terms referred to, for example, as “2/10 net 30,” meaning a 2 percent discount if payment is received within 10 days, and no discount if payment is made after day 10 and before day 30, after which the buyer is in default.

What explains the existence and prevalence of trade credit? Why does the use of trade credit vary by firm size and over time? Why do the benefits of trade credit differ across countries? To begin answering those questions, in this section we summarize the existing theories of trade credit.

2a. Trade credit to reduce transaction costs

One of the earliest theories posits that trade credit can reduce transaction costs by decreasing the frequency of payments by buyers, from payments as frequent as many times daily to paying monthly or quarterly (Ferris 1981). Regularly scheduled, less frequent payments can also reduce the risks faced by buyers (and suppliers) by locking in mutually agreed prices that are more stable than daily prices. While reduced transaction costs are a by-product of trade credit, its primary benefit is expanding trade by providing credit that enables buyers to purchase goods from suppliers that might otherwise go unsold. Most of the literature therefore focuses on informational and other advantages that suppliers have in extending credit to buyers who are credit-constrained, but creditworthy.

2b. Suppliers’ information

Banks have limited information about potential buyers, and thus fail to offer loans to many firms with positive net-present value (NPV) projects. Suppliers can potentially fill that gap because they have private information about their buyers’ creditworthiness (Biais and Gollier 1997). Their
information advantages stem from regular interactions with buyers from visiting the buyer’s premises and knowledge of the size and timing of the buyer’s orders and any failure to take advantage of early payment discounts (i.e., a potential indicator of financial troubles) (Petersen and Rajan 1997). Moreover, since they interact with and sell to multiple customers, suppliers can better assess the quality of any single buyer (Ng et al. 1999).

In the seminal model of Biais and Gollier (1997), a buyer can be either good (with positive NPV projects) or bad (negative NPV projects), and buyers know their own types. Consider the case where only banks can provide credit to buyers. Assuming banks’ information is coarse, and that there is a sufficient number of ‘bad’ buyers (such as many young and small firms), banks struggle to distinguish good from bad borrowers, which can result in credit rationing or market collapse.

Now suppose trade credit is an option. When suppliers have sufficient expected future cash flows that can be used as collateral, a separating equilibrium may obtain in which a supplier grants trade credit to a buyer only when it sees a good signal. The provision of trade credit also provides a credible signal to banks, which may now choose to lend to this ‘good’ customer. The supplier’s signal is credible because it bears the costs if the customer defaults, and the supplier’s informational advantage thus mitigates credit rationing due to the adverse selection problems faced by banks. Biais and Gollier’s theory of trade credit due to suppliers’ informational advantages explains why buyers often use both bank finance and trade credit even though trade credit tends to be more expensive: without trade credit, banks do not receive the supplier’s signal of the creditworthiness of the buyer and therefore do not lend to the buyer.

Implications of this theory are that buyers facing financial constraints are more likely to rely on trade credit, and suppliers with financial resources are more likely to use their informational advantages to provide it, incentives which were captured in some of the earliest theories of trade credit (Schwartz, 1974). Note that the foundation for resource redistribution between suppliers and buyers is the information advantage of suppliers (about buyers). Otherwise, suppliers would lend to banks, and banks would then use their expertise to lend to buyers. In short, under this resource redistribution view, resource-rich suppliers exploit their informational advantage to lend to creditworthy buyers.

The screening, or price discrimination theory of trade credit, is a specific version of the supplier information advantage theory under which suppliers can design trade credit terms and use
them to screen buyer creditworthiness (Meltzer 1960; Schwartz and Whitcomb 1979; Smith 1987; Brennan, Maksimovic and Zechner 1988; Ng et al. 1999). In what follows, we borrow heavily from Ng et al. (1999) in illustrating this theory.

According to the transaction costs theory of the firm (Williamson, 1971), contractual choices are shaped by relationship-specific investment. Such investments can also characterize supplier-buyer relationships, which are used to cement a relationship in order to secure sales or to enable suppliers to tailor their products to meet specific needs of buyers. With relationship-specific investments, suppliers have an implicit equity stake in the buyer, and therefore a greater interest in knowing about the financial status of that buyer.

According to Ng et al. (1999), trade credit terms are used to increase suppliers’ total surplus from both the profits from selling the good and the profit from extending trade credit and, as noted, can be used to screen for buyer creditworthiness. Buyers pose different credit risks, and trade credit allows the supplier to evaluate that risk based on the buyer’s choice of how to pay for goods (Smith 1987). When buyers do not avail themselves of the discount that early payment affords under most trade credit arrangements, it reveals that they are of higher credit risk, information which the suppliers can use to better structure future dealings with the buyer. Suppliers have additional advantages over financial institutions in assessing credit risks for many reasons: their past sales to a buyer naturally yield information about its financial health; they may know similar buyers, which allows them to better assess the financial health of a particular buyer (i.e., they can distinguish firm-specific health problems from industry shocks); and the supplier can more easily repurpose or resell the good sold to the buyer, which acts as collateral for the credit.

Failure to take advantage of the early payment option implies that buyers pay much higher interest rates to obtain credit, which directly undermines their financial health and increases their risk. In sum, by observing the trade credit repayment behavior of buyers, suppliers are able to infer information about the financial health of buyers, and thus partly safeguard their relationship-specific investment (Petersen and Rajan 1997).

Another extension of the supplier information advantage theory is the input monitoring theory proposed by Burkart and Ellingsen (2004), which starts from the observation that suppliers’ lending is tightly linked with the value of buyers’ inputs, and yet trade credit displays less intertemporal variability than bank credit. Under this theory, suppliers still have an advantage in
monitoring buyers, but it comes exclusively from input transactions because they automatically have information about them, while other lenders must spend resources to find out such information. Information on input transactions is special because it sheds light on whether the resources lent by the supplier to the buyer are being diverted, under the assumption that inputs are harder to divert for non-productive uses (because of ‘input illiquidity’) than the easily diverted cash that banks lend. Obtaining trade credit can be understood as a commitment to production (rather than diversion of resources for non-productive uses), and thus banks may be more willing to lend to borrowers that have trade credit. For firms whose resources, including from debt, constrain their investment, trade credit and bank loans are likely to be complements. For firms with sufficient resources to fund investment, trade credit and bank loans are substitutes.

This theory can help explain cross-country variation in trade credit usage. In countries with good protection of creditors, cash diversion is less of a problem, and thus suppliers have less need to monitor how inputs are used. Trade credit therefore loses this advantage in signaling the customer’s creditworthiness. And indeed, Demirguc-Kunt and Maksimovic (2001) find that countries with worse legal institutions have greater usage of trade credit.

This theory also provides an interpretation for the fact that firms often both extend and receive trade credit. For some firms, receiving trade credit might send a good signal of their creditworthiness, and this assists them in obtaining bank loans. For the same firms, granting trade credit might assist their customers in obtaining bank credit, enabling them to survive and prosper (and thus helping the supplier’s business as well). Still, suppliers facing credit constraints will likely extend less trade credit than others: accounts receivables (from trade credit) can be used as collateral for bank loans, but the amount of the loan tends to be lower than the value of the collateral, imposing some “crowding out” in total investable funds. Even if they have ample investment opportunities, such constrained suppliers are thus less likely to extend trade credit. However, suppliers that lack investment opportunities but enjoy large cash flows would be more likely to extend trade credit.

2c. Supplier advantages in liquidation

Many scholars have posited that suppliers of trade credit have an advantage over other financial providers because they can extract greater value from the goods they sell to buyers in cases of default and thus face less credit risk (Mian and Smith, 1992; Petersen and Rajan, 1997;
Frank and Maksimovic, 1998). Suppliers can, for instance, conveniently resell the goods that they sold to the buyer if the goods are returned due to buyer financial difficulties. Suppliers may also have a comparative advantage in utilizing customers’ collateral, perhaps due to economies of scale in handling inputs (Mian and Smith 1992). This type of supplier advantage is further emphasized by Fabbri and Minichini (2010), who argue that since the supplier’s advantage in liquidation/salvaging assets is more pronounced in goods than in services, trade credit provision should be more prevalent for goods. Moreover, since the supplier’s advantage in this area is only relevant for inputs, they offer inputs rather than cash on credit. Finally, since creditor protection reduces the supplier’s advantage over other lenders due to asset liquidation in case of default, better creditor protection should reduce the use of trade credit.

2d. Suppliers’ market power (over buyers)

The trade credit literature has also explored how the market structure of the supplier’s industry shapes its incentives to provide trade credit. In an industry where there are few suppliers available to buyers, those suppliers have a greater degree of control over them (Petersen and Rajan 1997). Traditional theories of trade credit therefore suggest a negative relationship between supplier competition and trade credit provision (Petersen and Rajan 1997). Under this view, only when suppliers have sufficient market power would they provide trade credit because they can threaten to cut off goods to customers that lack viable alternatives for obtaining them. Because the supplier’s threat is credible, customers are prevented from defaulting intentionally.

An opposing view is presented in Fisman and Raturi (2004) who argue that, at the beginning of a trading relationship, a new customer may need to incur a relationship-specific investment (to demonstrate creditworthiness or establish trust). However, when suppliers have strong market power, buyers will not be able to switch from them if the trading relationship does not work out, that is, they face a hold-up problem. A new buyer would therefore be reluctant to make such an initial relationship-specific investment, and trade credit will not be extended. In contrast, when suppliers do not have strong market power, the threat of buyer hold-up is reduced. Buyers are more willing to make initial relationship-specific investments, and trade credit is more likely to be extended. This view thus suggests a positive relationship between supplier competition and trade credit provision.
2e. Trade credit as a guarantee of suppliers’ product quality

Trade credit can be used by customers to deal with information asymmetry as well. Suppliers can be new, small, and without reputation or a warranty for their products, making potential buyers wary of product quality (Ng et al. 1999). By allowing buyers to delay payment until after delivery, the buyers can verify suppliers’ product quality, which acts as a quality warranty (Long, Malitz and Ravid 1993). To increase demand, suppliers therefore can use trade credit as a signal of product quality (Smith 1987; Lee and Stowe 1993; Emery and Nayar 1998). Trade credit can thus be an especially useful product quality guarantee for younger, smaller firms. We note that in this age of large e-commerce wholesalers and retailers (think of Wal-Mart), small, relatively unproven suppliers are likely to be increasingly prevalent.

2f. Buyers’ bargaining power

Some scholars have also argued that the bargaining power of buyers over suppliers can partly explain trade credit provision. For instance, a buyer can be a key source of the supplier’s profits, making the supplier dependent on that buyer. In times of crisis, dependent trade creditors have an incentive to assist an important buyer in financial distress (Wilner 2000). Anticipating such renegotiation concessions and also the dynamics of countercyclical lending by banks (which reduce their lending during crises), buyers agree to pay higher rates for trade credit. Here, the trade credit provision stems from buyers’ desire for relief in times of financial distress, not only their bargaining power. This theory partly explains why the terms of trade credit have lower intertemporal variability than bank loan rates, as shown in Petersen and Rajan (1994, 1995, 1997) and emphasized by Wilner (2000).

Figure 1 provides a summary of the theories of trade credit discussed here. Some of the theories are from the suppliers’ perspective, and others from the buyers’ perspective.

3. Empirical Tests of Theoretical Predictions

As noted in the introduction, buyers’ lack of access to external finance often motivates the need for trade credit arrangements (Biais and Gollier 1997). But suppliers must be able and willing to provide that finance for trade credit to work. A part of that ability and willingness stems from their informational advantages regarding customers as discussed above. The trade credit for information perspective suggests that when suppliers have a greater advantage in
information about buyers (over traditional financial intermediaries), those with sufficient resources use that advantage to offer more trade credit in line with the redistribution view. For example, Nilsen (1994) found that during monetary contractions (when uncertainty is greater), small, likely financially constrained firms receive more trade credit from suppliers. In contrast, where relationships between banks and firms are strong such as in Germany, suppliers’ information advantages (over banks) are not as great, and trade credit is used less (Breig 1994).

But, as noted, suppliers also must have resources to extend. They can extend their own resources to buyers, and there is evidence that profitable suppliers provide more trade credit than others in multiple contexts. For example, the influential study by Petersen and Rajan (1997) was among the first to test theories of trade credit on a large set of firms, using a dataset of small firms in the U.S. compiled by the U.S. National Survey of Small Business Finance (NSSBF) in 1988-89. They found evidence that firms with more assets and greater longevity, both indications of past profitability, and higher gross profit margins, an indication of greater cashflows, extended significantly more trade credit than others (as reflected in a higher ratio of accounts receivable to sales). In a very different context, Cull, Xu and Zhu (2009) used data from over 100,000 industrial firms (including all SOEs) in China from 1998 to 2003 to show that profitable private domestic firms were significantly more likely to extend trade credit than unprofitable ones, credit which provided a substitute for loans for these firms’ customers that were shut out of formal credit markets.

Suppliers need not fund trade credit only from their internal resources. Under the redistribution view of trade credit, firms with better access to external finance redistribute the credit they receive to less advantaged firms (Meltzer 1960; Nilsen 2002). For example, in the U.S. context Petersen and Rajan (1997) argue that firm age and size, strong correlates of trade credit extension in their sample of small U.S. firms, are also proxies for firms’ access to external finance. And their comparison with the larger U.S. firms covered in the Compustat dataset (which had better access to external finance than the NSSBF firms), shows that small firms are much less likely to extend trade credit. In the Chinese context, Cull, Xu, and Zhu (2009) show that unprofitable SOEs were more likely to extend trade credit to their customers, many of which were already in arrears, than other SOEs and private firms. Regardless of performance, the SOEs 2

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2 The average ratio of accounts receivable to sales for firms in the NSSBF sample was 7.3% compared to 18.5% for Compustat firms (Petersen and Rajan, 1997, pp.669-670).
in their sample were more likely to receive formal loans through the state-dominated banking system, and thus in a position to redistribute that credit to their customers, though SOEs that had extended more trade credit in the past received more bank credit than others (which was then presumably on-lent to their faltering customers). Though the mechanisms and motivations differed between U.S. firms and Chinese SOEs during these periods, access to external credit enabled suppliers in both countries to extend more trade credit to their customers than reliance on their own resources would have permitted.3

In addition, we recognize that disputes could arise about the quality of goods that are supplied or the reclaiming and liquidation of those goods if buyers do not repay. For trade credit to function well, legal, judicial, and perhaps other institutions capable of resolving these trade disputes are required. While only a small share of cases need be resolved via these means, parties to trade credit agreements must be assured that such remedies are viable if they call upon them. In section 4, we will return to the importance of supporting legal and judicial institutions and possible substitutes for them in discussing specific country contexts. In this section of the paper, however, we start from the propositions that buyers lack credit, suppliers are in a position to provide it (in terms of information and resources), and the underlying legal and institutional frameworks are adequate to support trade credit arrangements. Under those assumptions, the following sub-sections address the empirical evidence for specific theoretical predictions about the extension of trade credit.

3.a. Bargaining power and competitive dynamics

A substantial literature investigates how bargaining power affects trade credit relationships, starting from the simple proposition that a buyer’s importance to a supplier affects whether trade credit is extended to that buyer and on what terms. Wilner (2000) hypothesized that if a seller relies heavily for its profits on the purchases of a buyer, the seller is more likely to extend trade credit and thus that model predicts more trade credit to customers whose purchases are a larger share of the supplier’s sales. In short, upstream firms (suppliers) provide more trade

3 Trade credit extension by unprofitable firms and enterprises is not a distinctly Chinese phenomenon. Petersen and Rajan (1997) also show that, controlling for other factors, firms with a negative ratio of current profits to sales extended more trade credit in their sample. They speculate that those that also had positive sales growth were extending credit to “buy” sales and further their growth, while those that had negative sales growth were distressed firms that were extending additional credit to customers that had not repaid them. In any event, the NSSBF firms are relatively small ones, whose trade credit patterns might differ from larger firms, and even within that sample proxies for past profitability and creditworthiness are strongly correlated with extension of trade credit.
credit when they are in a relatively weaker bargaining position which is supported by evidence from Fisman and Raturi (2004) for Africa, Fabbri and Klapper (2016) for China and Dass et al. (2015) for U.S. firms. For example, Fabbri and Klapper (2016) find not only that weak-bargaining-power suppliers are more likely to extend trade credit, providing a larger share of their goods on credit, but that they also offer longer payment periods before imposing penalties and, even then, their most important customers are likely to have overdue payments.

An alternative to the market power view builds from the notion above that trade credit is used to redistribute credit to buyers who lack cash and are credit-constrained by banks, and thus more profitable sellers (who have better access to bank credit) are more likely to extend trade credit. Petersen and Rajan (1997) go further suggesting that these more profitable sellers, who may also enjoy market power as reflected in high margins between sales price and variable costs:

“…may have a long-term interest in the survival of the customer firm. This is especially true if the supplier has no potential substitutes for the customer. The supplier then factors in not only the net profit margin on current sales but the present value of the profit margins on future sales when deciding whether to help the customer with credit. In other words, the supplier may want to protect the value of its implicit equity stake in the customer by providing it temporary short-term financing.” Petersen and Rajan (1997), pp. 664-665.

And in their sample, the trade credit offered by a firm increased with the size of its margin on sales. However, this notion of stronger suppliers offering more trade credit would appear to be at odds with the idea that a supplier in a weak bargaining position (relative to its buyers) is more likely to help a buyer with temporary financial problems because its own prospects are positively related to those of that customer (Wilner, 2000), and with the evidence above showing that suppliers with greater relative bargaining power are less likely to provide trade credit to customers in multiple contexts.

Petersen and Rajan (1997) also emphasized, however, that more detailed data on the relationships between suppliers and customers was crucial for testing theoretical predictions regarding trade credit. And recent empirical evidence using new data sources and more detailed information about the nature of supplier/buyer relationships does help reconcile the supplier market/bargaining power hypothesis with the supplier equity stake hypothesis. For example,
Chod et al. (2019) offers a theory of trade credit and supporting empirical evidence that starts from the proposition that, in the presence of multiple suppliers, the benefit of providing trade credit is not fully internalized by a trade creditor. After obtaining trade credit, a retailer can use freed-up liquidity to buy more goods from other suppliers as well as the one who provided the credit. This leads to a free rider problem because a given supplier bears the full cost of providing trade credit, but the benefits of larger spending by the retailer are shared among all suppliers. Thus, Chod et al. (2019) hypothesize that a supplier that is responsible for a larger share of the retailer’s purchases internalizes a larger part of the benefit and is therefore willing to offer a larger proportion of its goods on credit. This is similar to the equity stake idea from Petersen and Rajan (1997) except that it emphasizes the importance of the supplier’s position among firms selling to the same customer rather than its competitive position (market power) among all firms in its industry.

Using annual data from Compustat, complemented with the Compustat Industry Segment data set, which identifies firms’ principal customers and is used to identify customer-supplier relationships (following the method in Cohen and Frazzini, 2008), for a sample of U.S. retailers from 1996 to 1999, Chod et al. (2019) find a significant positive relationship between (a) the amount of trade credit extended by a supplier and its average share of retailers’ purchases and (b) the amount of trade credit that a retailer receives and the concentration in its suppliers, as reflected in the Herfindahl index of supplier shares of the retailer’s purchases. These findings provide support for a modified version of the Petersen/Rajan equity stake hypothesis, which highlights the importance of a buyer’s retail platform for a supplier in relation to that of other competing suppliers.

Suppliers may compete with each other not only for space on a buyer’s retail platform, but also in product markets, and evidence indicates that this competition, too, impacts trade credit relationships. In Chod et al. (2019), product market competition between suppliers to the same retailer exacerbates the free rider problem described above. Specifically, when suppliers offer substitutable products, “the additional output sold by the competing suppliers reduces the residual consumer demand for the trade creditor’s own product and, therefore, the price at which it can be sold.” (Chod et al, 2019, p. 489). Their model therefore predicts that as product substitutability increases, the disadvantage of providing trade credit becomes more pronounced and suppliers therefore offer less of it. To measure the degree of substitutability between
suppliers’ products, they rely on a measure of textual similarity between firms’ product
descriptions in 10K filings for each pair of Compustat firms (from Hoberg and Phillips 2010,
2016), and confirm that the amount of trade credit provided by a supplier to its retailers is
significantly negatively associated with product substitutability among suppliers selling to the
same retailers.

A related line of research examines the importance of supplier product differentiation and
its implications for the strength and exclusivity of their trade credit relations with buyers.
Starting from the theoretical conjecture of Burkart and Ellingsen (2004) that differentiated goods
are more difficult to divert for private benefits, which makes the supplier more willing to sell on
credit, Cunat (2007) posits that suppliers are better able to enforce debt repayment than banks
because they hold the threat of stopping the supply of intermediate goods to their customers. As
long as there is a surplus that is split between a supplier and its customer if they continue to do
business, it is costly for the customer to find alternative suppliers and for the supplier to lose the
customer. In that model, this link takes the form of intermediate goods being specific to the
buyer, and Cunat (2007) offers suggestive evidence from a large sample of UK firms that the
levels of trade credit build up as the relationship between a supplier and customer evolves, and
that suppliers provide more trade credit when customers experience temporary liquidity shocks
(presumably to safeguard the relationship).

Dass et al. (2015) take this intuition further, focusing on investments that are made by a
supplier that are specific to a relationship with a customer. Such relationship-specific
investments (RSI), defined generally as investments that increase asset-specificity, can take the
form of “building a factory close to a downstream customer, purchasing special machinery,
developing specific human capital, or acquiring specific technology” (Dass et al., 2015, pp.
1872-3). A key insight is that trade credit can act as a guarantee if the level of RSI made by a
supplier can be ascertained by the customer only over time, and thus the upstream firm has an
incentive to underinvest. Through delay in payment and the risk of nonpayment by the customer
(if the RSI has not been made), trade credit can make it incentive-compatible for the upstream
firm to invest sufficiently in the relationship. In this way, and similar to Cunat (2007), RSI
generates a surplus that is specific to the relationship.

In addition, Dass et al. (2015) posit that the relative bargaining power of the upstream
and downstream firms affects their shares of the surplus and that, the greater the bargaining
power of the upstream firm, the larger is its share of the RSI-induced surplus. It also stands to lose more if it does not make the appropriate level of RSI and thus the disciplining effect of its large share of future surplus makes trade credit less needed as a commitment device. Thus, *ceteris paribus*, Dass et al. (2015) predict less trade credit from suppliers with greater bargaining power but for a different reason than in other papers. And, if trade credit is used as a commitment mechanism when there is uncertainty about the level of RSI, its use should be less prevalent when information frictions between supplier and customer are less severe.

Because RSI are not easily observable or measurable within a large sample of firms, Dass et al. (2015) follow previous literature which measures RSI using proxies such as firms’ research and development expenses (R&D), patent citations and advertising expenses. The intuition is that a firm that conducts research that yields well-cited patents is more likely to be making RSI and producing output that is specialized input for its downstream customer. Previous research also suggests that firms that make RSI and produce unique products are also more likely to advertise than firms that produce commodities (Titman and Wessels, 1988).

Using data on all available firms in Compustat over the period 1997–2008, Dass et al. (2015) find a significant positive relationship between R&D expenditures and the amount of trade credit extended by upstream suppliers, one which is stronger if the supplier patents its research or cites patents of downstream industries in its own patent applications. In addition, they confirm that trade credit is less prevalent when information frictions between supplier and customer are less severe and thus credit is less necessary as a commitment device. Specifically, suppliers extend less trade credit when their relationship with the customer is longer, they are in closer geographic proximity to the customer, or they have a listing on the New York Stock Exchange (and thus information about them is readily available). Moreover, those authors also control for the market power of suppliers (using price-to-cost margins as reflected in the Lerner Index and measures of industry concentration) in their regressions and find that those with greater market power extend less trade credit to downstream customers (in line with the findings, e.g., in Fabbri and Klapper, 2016). Thus, Dass et al. (2015) provides evidence in support of both the equity stake and the market power hypotheses of suppliers’ trade credit behavior within the same theoretical and empirical models.

In sum, Chod et al. (2019) and Dass et al. (2015) illustrate the importance of data that capture more details of the relationships between suppliers and their customers, which have
enabled refinements of concepts from prior literature (and their measurement) with respect to relationship-specific surplus/profits streams between suppliers and customers and the dynamics between suppliers. Such refined studies have led to new insights supporting both the market power and equity stake views of trade credit.

3.b. Trade credit as a guarantee of product quality

While Dass et al. (2015) conceive of trade credit as a means of guaranteeing investments specific to a relationship between suppliers and buyers, early models posited that trade credit is used to guarantee the quality of the product itself since buyers are able to experience the supplier’s product before deciding to accept the merchandise and repay their debt (Long, Malitz, and Ravid, 1993), and thus the supplier’s willingness to extend trade credit could be seen as a signal of product quality (Lee and Stowe, 1993; Long et al., 1993; Emery and Nayar, 1998). The issue of the buyer’s trust in the supplier has therefore been foundational in this literature, but the lack of detailed data on the nature of supplier-buyer relationships (as revealed in trade credit contracts) made it difficult to test these conjectures empirically. However, using a sample of 30,000 contracts between suppliers and a set of large, investment-grade buyers in the U.S., Klapper, Laeven, and Rajan (2012) show that less trusted suppliers (as reflected in their smaller size and lack of an investment-grade rating) had to extend longer terms to buyers which they interpreted as “a means for small suppliers to warranty quality to their large buyers.” In addition, Fisman and Love (2003) find that the growth-supporting effects of trade credit in countries with weaker formal financial institutions were not evident when growth was measured as the creation of new establishments. This suggests that start-up firms, which lack a reputation and are less likely to be trusted by other firms, benefit less than others from trade credit. We return to the importance of trust and reputation in facilitating trade credit when we discuss specific country contexts in section 4.

3c. Trade credit, bank credit, and crisis

To this point, the focus has been on the willingness of suppliers to extend trade credit to customers that lack access to bank credit. In this way, firms with better access to external

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4 Because a firm could have multiple contracts in the dataset, Klapper, Laeven, and Rajan (2012) incorporates buyer and seller fixed effects in their regressions to control for time-invariant firm characteristics that might affect the choice of credit terms. This is another data innovation in the study of trade credit brought about by information on the details of the relationships between suppliers and their customers.
finance redistribute the credit they receive to less advantaged firms. Early empirical findings confirmed that firms that were more likely to be credit rationed by banks were more likely to receive trade credit. For example, Petersen and Rajan (1994, 1995) found evidence of the corollary to that proposition – firms that were less likely to be credit constrained relied less on trade credit – and Biais, Hillion, and Malécot (1995) found that small firms in France, which were more likely than others to be credit constrained, tended to rely more heavily on trade credit for financing. The theory and much of the empirical evidence in support of this view therefore operates at the level of individual suppliers and customers.

At the country level, a related view holds that: “trade credit can offer a viable substitute for formal bank credit in countries with low levels of financial development.” (Fabbri and Klapper, 2016, p. 67). Consistent with that view, and as mentioned above, Fisman and Love (2003) find that in countries with lower levels of financial depth, the prevalence of trade credit is associated with swifter growth at the industry level. In this way, it can be said that there is both firm-level and country-industry-level evidence consistent with the idea that trade credit can act as a substitute for bank credit for constrained firms.

Building on the notion that suppliers provide more trade credit when customers experience temporary liquidity shocks to sustain a relationship that both supplier and customer value (Cunat, 2007; Petersen and Rajan, 1995), researchers have hypothesized that trade credit could become more prevalent during periods of economic stress as banks pull back from lending. For example, early evidence indicated that small U.S. firms, which again were more likely to be credit constrained, relied more heavily on trade credit in response to monetary contractions (Nilsen, 1994). Other authors also found evidence consistent with the notion that trade credit acted as a substitute for bank credit during periods of monetary tightening in the U.S. (Calomiris et al., 1995; Choi and Kim, 2005). Thus, the early evidence from the U.S. suggested increased substitution of trade credit for bank credit among credit-constrained firms.

More recent evidence from periods of economic distress in less advanced economies indicates, however, that trade credit may not always be a viable substitute for bank credit. Using

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5 This view therefore suggests that trade credit is a substitute for firms that lack access to formal credit from banks. However, under the informational view of trade credit provision, the extension of trade credit by a supplier can act as a signal to banks that a customer is creditworthy and thus ‘crowd in’ bank credit to that firm (Biais and Gollier, 1997). To our knowledge, rigorous empirical evidence supporting such a complementarity between trade credit and bank credit is not available in the literature.
data from the 1990s for firms in six emerging economies that experienced a financial crisis (Indonesia, Malaysia, Mexico, the Philippines, the Republic of Korea and Thailand), Love, Preve, and Sarria-Allende (2007) find that firms with high short-term debt levels, an indicator of financial vulnerability due to the increased interest rates and difficulties in rolling over debt during a crisis, reduced their provision of trade credit significantly more than other firms in response to the aggregate contraction in bank credit. In comparing the crisis episodes across countries, they found that the countries that experienced a sharper decline in bank credit also experienced a sharper decline in trade credit. Their interpretation is that firms with better access to capital will redistribute the credit they receive to less advantaged firms via trade credit only if they able to, and that under the extreme scenarios imposed by financial crises, all potential sources of funds including bank credit tend to dry up. Thus, trade credit cannot serve as a substitute for other types of formal credit during extreme financial distress because there are very limited funds that could be redistributed.

4. Trade Credit in Advanced versus Lower Income Economies

In the discussion in section 3, an assumption was that underlying legal and institutional foundations were sufficient to support trade credit arrangements when business disputes arise (e.g., with respect to customer repayment or supplier product quality). Much of the evidence in that section therefore focused on advanced economies, though even there, smaller, less-established suppliers extend longer trade credit terms to buyers (Klapper, Laeven, and Rajan, 2012) and the growth-supporting effects of trade credit were not evident for start-up firms (Fisman and Love, 2003). In the absence of reliable supporting legal and institutional foundations, the issue of trust between supplier and customer becomes even more salient and thus less developed countries provide useful laboratories to investigate how this challenge is overcome in practice.

4a. Trust or institutions?

Knowledge of, and trust in, each other enables suppliers and customers to enter into trade credit agreements when supporting legal, judicial, and other institutions are inadequate. However, this is not an either/or choice and a combination of informal arrangements based on trust and formal institutions enable trade credit to flourish in very different contexts as illustrated by empirical evidence from Vietnam, post-Communist transition economies, and China.

Vietnam
For a sample of 259 nonstate firms in Hanoi in 1995-1996 and in Ho Chi Minh City in 1997, McMillan and Woodruff examine trade credit arrangements in Vietnam. They argue that the Vietnam of the late 1990s:

“provides a stringent test of the workability of relational contracting, for Vietnamese private firms do not yet have a formal legal system to fall back on. The development of formal institutions to support a market economy failed to keep pace with the growth of the private sector via the entry of new firms that started with the reforms of the mid-1980s.” (McMillan and Woodruff, 1999, p. 1289)

And indeed, 91 percent of the firm managers in the sample said that they could not rely on courts to enforce a contract with a customer. They use the amount of trade credit it grants (more specifically, the fraction of payment made after delivery of goods) as their measure of a supplier's trust in its customer, finding it to be positively associated with (a) suppliers having information about a customer's reliability gained through either prior investigation or past business dealings with it (as reflected in a longer relationship), and (b) the supplier belonging to a network of similar firms, which provides both information about customers' reliability and a means of sanctioning customers who renege on deals. Thus, in the absence of formal market-supporting institutions such as courts, detailed information about customers’ track records was crucial for enabling trade credit to work in the Vietnamese context.

Although their primary aim was to test theories about relational contracting, McMillan and Woodruff (1999) also recognized that dynamics regarding bargaining power, which as noted have been prominent determinants of trade credit arrangements in more advanced countries with functioning legal and court systems, could also have been at play in Vietnam in the 1990s. In their regressions, they therefore included variables suggested by theories and advanced-economy empirical studies of trade credit from the early finance literature described above. A key finding was that customers that lacked alternative suppliers received more trade credit, indicating that a supplier’s trust that a customer would repay depended on how much bargaining power it had over the customer. These findings are reminiscent of those supporting the modified version of the equity stake hypothesis for U.S. firms in Chod et al. (2019). Thus, even in a setting with rudimentary supporting institutions, there is evidence of bargaining dynamics between suppliers and customers like those found in advanced economies.
Post-Communist Transition Economies

After the fall of the Berlin Wall, the transition economies of Eastern Europe and the former Soviet Union provided a unique setting to study the influence of both relationships and market-supporting institutions on trade credit:

“The governments in these countries have attempted to build market-oriented legal systems to replace the bureaucratic controls of the old planned economy. At the same time, firms have been entering and developing new relationships among themselves replacing the networks that broke down with the end of the planned economy.” (Johnson, McMillan, and Woodruff, 2002, p. 222).

In this context, trade credit helped jump start the private sector. For example, it has been argued that despite (or perhaps because of) a dysfunctional formal banking system, credit redistribution through private trade credit markets played a key role in Poland’s economic transition, relying upon “a minimum set of market institutions.” (Coricelli, 1996, p. 645).

Based on detailed surveys similar to the one used in Vietnam in McMillan and Woodruff (1999) of about 300 firms in five countries (Poland, Romania, the Russian Federation, the Slovak Republic, and Ukraine), Johnson, McMillan, Woodruff (2002) (Hereafter JMW) examined how trade credit worked and the role of courts in ensuring that customers paid their suppliers and that suppliers’ products were of acceptable quality. At the time of the surveys, these countries had “functioning but relatively weak court systems” with cross-country indicators ranking their courts well below most advanced countries but above those in very poor countries (JMW, 2002, p. 222).

Similar to the results for Vietnam, JMW (2002) found that suppliers were more likely to extend credit to customers in the five transition economies when they had personal knowledge of them or could obtain information about their past business dealings. For example, 15 percent more of a supplier’s goods were paid for after delivery if the customer was a family member or a friend; and 12 percent more was paid with delay if the trading relationship between supplier and customer was at least two months old. Suppliers received payment after delivery for 15 percent more of their goods when transacting with customers whom they had obtained information about from other manufacturers, and those that belonged to trade associations that provided
information about customers or arbitration services extended 4 percent more of their goods on trade credit.

Unlike the Johnson and Woodruff (1999) results for Vietnam, JMW (2002) finds evidence that the court systems in the five transition economies did sustain additional trade credit. Specifically, suppliers who said that courts were effective extended 5 percent more of their products on trade credit. However, this significant increase held only for relationships with new customers, not those with which the supplier already had a relationship. Moreover, JMW found that customers who had greater faith in courts expressed greater willingness to switch suppliers, even when the supplier was its only current one or when goods were customized to the customer. Their evidence indicates that functioning courts are crucial because they enable trade between partners who are unfamiliar with one another, and thus expand arms-length contracting in an economy.

**China**

As described above, trade credit in China in the late 1990s and early 2000s operated on two tracks: along one track, profitable private firms extended trade credit to their customers who lacked access to external funding, which could be viewed as supportive of the equity stake view of trade credit; along the other track, state-owned enterprises, which enjoyed favored access to credit from the state-dominated banking system regardless of their profitability, extended credit to prop up their failing customers, which had piled up arrears, in line with the redistribution view (though this was not redistribution that supported productivity and growth). The disciplining effect of partial privatization of some Chinese SOEs was intended to improve their financing decisions and operating performance, though Huyghebaert et al. (2014) still found that publicly listed SOEs that issued new shares and borrowed more from banks had significantly higher levels of accounts receivable than others, which they interpreted as evidence that these SOEs used better access to external funding to ease the financial constraints of their trading partners. It seems likely that a large share of this trade credit was still used to prop up struggling customers.

Not surprisingly, the drivers of these two types of trade credit were very different. For example, Fabbri and Klapper (2016) provides evidence from the ‘private firms’ track indicating that suppliers with weak bargaining power over their customers extended more trade credit and
on better terms. Ge and Qiu (2005) provide survey evidence indicating that non-state-owned firms received more trade credit than state-owned firms and were more likely to use that funding to support investment, which likely helped those firms to grow. Thus, the bargaining dynamics and growth-supporting aspects of trade credit arrangements found in advanced economies were also evident in China during this period, at least among private firms.

Absent reliable courts and other institutions to support contracting, trade credit among private firms was supported by personal relationships between suppliers and customers as in other contexts. This was also true of relatively well-established private firms as late as the mid-2010s. For example, using a sample of Chinese firms listed on both the Shanghai and Shenzhen securities exchanges from 2007 to 2016, Kong et al. (2020) provide evidence that CEOs’ ‘hometown connections’ with suppliers exerted a strong influence on their firms’ access to trade credit. Using the shares of inputs that listed firms purchased from suppliers in their CEOs’ home province as their measure of connections, they show that its positive relationship with use of trade credit is stronger for non-state-owned firms located in provinces with less developed financial institutions, in regions with stronger informal institutions such as merchant guilds, and for firms whose CEOs held an important position in their hometown chamber of commerce. For suppliers facing high levels of information opacity about customers and low levels of social trust at the provincial level, the positive relationship between CEOs’ hometown connections and trade credit was also stronger, which the authors interpret as further evidence that these connections eased credit risks by providing information about customers and a higher degree of social trust in them stemming from homophily – the sociological principle that individuals tend to associate and interact with others who have similar backgrounds and characteristics (Granovetter, 2005).

This lack of arms-length contracting could also help explain why some authors have concluded that trade credit was not a first-best method of funding private firms, but a work-around that was not a key driver of China’s explosive growth during this period (Cull, Xu, and Zhu, 2009).

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6 Note that Fabbri and Klapper (2016) used a smaller cross-section of firms for which market power and bargaining dynamics may have been especially important influences on trade credit dynamics. Cull, Xu, and Zhu (2009) used a much larger sample of firms over multiple years but lacked good proxies for the relative market/bargaining power of suppliers and customers. Neither paper was therefore able to test adequately the bargaining power and equity stake hypotheses in the same regressions, as in Dass et al. (2015) for U.S. firms, though we suspect that both affected trade credit extended by private firms in China during this time.
4b. Which firms and countries benefit most? Conjectures about ‘the middle’

We have argued that trade credit is a pervasive form of firm financing, which is found in both advanced and lower income countries, and among firms of all sizes. And yet, for reasons illustrated in the short case studies of different countries above, trade credit could be relatively more important in certain contexts and among certain types of firms. Greater reliance on trade credit could be driven by a lack of reliable market-supporting institutions or underdeveloped formal financial institutions in a country, but even the early literature on trade credit in the U.S. suggested that it was better suited to the financing needs of some types of firms:

“[T]rade credit represents a substantial fraction of corporate liabilities, especially for middle-market companies. For example, Mian and Smith (1994) report that ‘for the 3,550 non-financial NASDAQ firms covered by COMPUSTAT, accounts payable were 26% of corporate liabilities, at the end of 1992.’” (Biais and Gollier, 1997, pp. 903-904)

Our conjecture is that trade credit may be somewhat better suited to medium-sized firms and to firms in countries that are not very poor and have a reasonable level of institutional and financial development. With respect to firm size, this is because informational frictions (related to, for example, lack of credit histories) and lack of collateral imply that smaller firms have less access to bank finance (see, e.g., Beck, Demirguc-Kunt, and Maksimovic, 2008), which makes it harder for them to extend trade credit to customers. And in the absence of reliable courts and other institutions that enable arms-length contracting, small firms are limited by their personal relationships or other informal mechanisms to signal their creditworthiness, which are likely more binding than for larger firms, and thus limit the amount of trade credit they receive. On the other hand, large firms are less subject to informational frictions and are likely to have collateral. They are more likely to receive external finance from multiple sources (but especially banks) and are therefore likely to rely less on trade credit to finance themselves. Better access to external finance might put them in a stronger position to extend trade credit than other firms, but the bargaining dynamics with customers described above may make them less compelled to do so. For example, large firms are more likely to have market power in product markets and/or have bargaining power over customers because they are the primary (or only) supplier to a customer.

For these reasons, medium-sized firms may be more reliant on trade credit than others. Using a sample of 3,000 firms from 48 countries from 1999, Beck, Demirguc-Kunt, and
Maksimovic (2008) found patterns consistent with these conjectures. Specifically, they found small firms were more financially constrained than others, and that they were unable to use trade credit and other informal sources of credit to alleviate those constraints. While trade credit could, in principle, be used as a substitute for lacking external finance, in practice credit from suppliers represented a smaller percentage of the total investment of small firms than of other firms. In regressions controlling for other relevant factors, the ratio of supplier credit to total investment was highest among medium-sized firms, though the coefficient was not significant across all specifications. Still, these patterns are suggestive of greater reliance on trade credit by medium-sized firms.

In terms of countries, poorer ones and those with low levels of financial and institutional development may be less likely to rely on trade credit than others. Financial underdevelopment could mean that there are fewer funds (notably bank credit) to redistribute via trade credit, while less developed market-supporting institutions imply heavy reliance on relational contracting to support trade credit arrangements, which limits their reach as illustrated again in the country case studies. For their part, advanced economies tend to have more formal financial development and better-developed courts and formal institutions that support arms-length contracting. These advantages can help to expand trade credit, but again those advantages also translate into greater access to many (formal) sources of external funding, and thus trade credit may not feature as heavily as a source of firm finance in those contexts.

Recent evidence from Reyes, Roberts, and Xu (2021) is consistent with the idea that trade credit is associated with productivity growth, especially in middle income countries. Using data from the World Bank Economic Surveys (WBES) from 709 cities in 128 countries, those authors find a significant positive relationship between the city-industry average for accounts payable (scaled by total sales) and growth in labor productivity, after controlling for a comprehensive set of firm characteristics and descriptors of the business environment (including infrastructure quality, human capital, access to bank finance, barriers to firm entry/exit, labor regulation, and the tax environment). The positive link between the prevalence of trade credit and productivity growth is significant for lower middle-income countries, but not for the poorest countries (i.e., those with per capita incomes below $US1,000 measured in 2005), or relatively rich countries (those with per capita incomes above $US3,500). In addition, the significant link between trade
credit and productivity growth holds for all but small firms, those that have fewer than 50 employees, which is similar to the patterns in Beck, Demirguc-Kunt, and Maksimovic (2008).

These findings suggest a sweet spot or ‘Goldilocks’ region where mid-size firms and those in countries at middling levels of development tend to rely relatively more heavily on trade credit as a source of finance that can help spur productivity.

5. Conclusions

Though trade credit is often as important as bank loans in terms of firms’ short-term financing, our understanding of it remains rather limited. In this paper we survey existing studies of trade credit, especially those related to economic development. The evidence suggests that trade credit plays an important role in many developing countries as well as for many credit-constrained firms in developed countries, especially during monetary contractions.

In most countries/regions, there are many firms, especially those that are young, small, or informationally opaque for other reasons, that cannot obtain adequate bank credit. The informational advantages of suppliers (and sometimes customers) allow them to use and benefit from such decentralized and dispersed knowledge (Hayek 1945), and to direct firm resources in the form of trade credit to trading partners that are worthy of such resources. For instance, there is reasonably consistent evidence—from the US, Africa, China, and other transitional countries—that suppliers grant more trade credit to their customers when they have (1) a larger stake in their customer’s financial success (e.g., when the customer accounts for a larger share of the supplier’s profit; when the supplier sells differentiated products; or when the customer is in a strong bargaining position relative to the supplier so that the opportunity cost of losing such an important customer is a real threat to the profit of the supplier), (2) a stronger informational advantage, and (3) better access to finance (than their customers). In contrast, when informational frictions between suppliers and customers are less severe (e.g., when suppliers have a longer relationship with or are geographically close to the customer, or the customer is a publicly listed company), trade credit is found to be less prevalent (Dass et al. 2015).

Furthermore, both suppliers and customers use trade credit to signal hidden information—less established suppliers use trade credit to allow buyers to verify product quality (and thus facilitate trade); customers pay trade credit early to obtain a discounted price which also signals their
financial health; and suppliers of differentiated products use trade credit to signal their willingness to invest in relationship-specific capital.

Trade credit can be especially relevant in countries/regions where the rule of law and the legal system are weak. Weak institutions would, in principle, prompt greater use of trade credit, which requires less formal contract enforcement institutions and mechanisms than bank loans. Informal institutions such as belonging to the same social networks (such as hometown connections between CEOs of borrowing firms and their suppliers) or personal knowledge about suppliers/customers have facilitated trade credit relationships, as observed in Vietnam, Eastern European countries, and China. Such countries have relied more heavily on trade credit than others, and the positive effects on firm growth tend to be stronger where industry demand for credit is greater. Furthermore, where the level of social trust is low, informal institutions such as hometown connections loom even larger in facilitating trade credit. Countries with stronger formal legal foundations—for example, the court systems in Eastern European countries in the 1990s were further along than that in transitional Vietnam—can rely on those institutions to facilitate greater provision of trade credit by suppliers (Johnson, McMillan and Woodruff 2002). Better formal institutions also enable customers to switch suppliers, which facilitates competition among suppliers and thus improves trade credit terms for borrowers. Finally, in economic systems where bank credit allocation is heavily tilted toward (inefficient) state-owned enterprises, the trade credit extended by profitable private firms could improve credit allocation in the spirit of the Coase Theorem (Coase 1960) that resources would tend to flow to usages where efficiency improvement is possible.

The patterns that emerge from evidence around the world suggest a sweet spot or ‘Goldilocks’ region where mid-size firms and those in countries at middling levels of development tend to rely relatively more heavily on trade credit as a source of finance that can help spur productivity.

An implication for further studies is that better designs of firm surveys or better combinations of complementary datasets could facilitate more direct tests of various theoretical predictions regarding trade credit. Specifically, detailed data on the relationship between suppliers and customers are crucial.
References


Figure 1. Theories of trade credit

- **Suppliers**
  - **Transaction costs theory**
    - **Information advantage theory**: from regular interactions; can observe choices of TC terms and inform creditworthiness; signals to banks. Reduce fin constraint for disadvantaged firms.
    - **Liquidation advantage**: can salvage more values from liquidating buyers’ input.
    - **Market power**: use their market power to control buyers such as stopping input supply.
    - **Equity stake theory**: when suppliers benefit from supplier-buyer-specific relationship rents = having a stake in buyers, offer trade credit.
    - **Product quality guarantee**: when buyers unsure of suppliers’ good quality, use TC to verify product quality.
    - **Bargaining power**: when suppliers face strong competition, buyers have bargaining power, would invest in specific relationship, & demand TC and better terms.
  - **Information about buyers’ input uses**: have advantage in containing agency costs.

- **The redistribution view**: resource-rich suppliers, using info advantage, redistribute resources as TC.