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Firms as Financial Intermediaries

Evidence from Trade Credit Data

Trade credit can be an important complement to lending by financial intermediaries.

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Summary findings

Demirgüç-Kunt and Maksimovic argue that nonfinancial firms act as intermediaries by channeling short-term funds from the financial institutions in an economy to their best use. Nonfinancial firms act in this way because they may have a comparative advantage in exploiting informal means of ensuring that borrowers repay.

These considerations suggest that to optimally exploit their advantage in providing trade credit to some classes of borrowers, firms should obtain external financing from financial intermediaries and markets when this is efficient. Thus the existence of a large banking system is consistent with these considerations.

Using firm-level data for 39 countries, the authors compute turnovers in payables and receivables and examine how they differ across financial systems. They find that the development level of a countryís legal infrastructure and banking system predicts the use of trade credit. Firmsí use of bank debt is higher relative to their use of trade credit in countries with efficient legal systems. But firms in countries with large, privately owned banking systems offer more financing to their customers and take more financing from them.

The authors' findings suggest that trade credit is a complement to lending by financial intermediaries and should not be viewed by policymakers as a substitute.

This paper—a product of Finance, Development Research Group—is part of a larger effort in the group to understand firm financing constraints. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Kari Labrie, room MC3-456, telephone 202-473-1001, fax 202-522-1155, email address klabrie@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at ademirguckunt@worldbank.org or vmaksimovic@rhsmith.umd.edu. October 2001. (47 pages)

Firms as Financial Intermediaries:

Evidence from Trade Credit Data

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1. INTRODUCTION

A key question in development economics is the relation between a country's financial system and its economic development. The empirical literature addressing this question has focused on the role of banks and stock markets in providing the financing to the commercial sector. This approach is motivated by the fact that in a perfectly functioning financial market the financing should be from financial intermediaries and markets that specialize in the supply of external finance.

In this paper, we broaden the focus and ask whether the state of development of a country's financial system and its legal system affect the provision of short-term capital by corporations.

Even in well developed market economies, such as the United States, the supply of capital is frequently bundled with the supply of goods, in the form of trade credit, and vendor financing more generally. Lee and Stowe (1993) calculate that the amount of trade credit in 1985 "far exceeded the business lending of the entire banking system." Rajan and Zingales (1995) present evidence that 18% of the total assets of US firms in 1991 consists of accounts receivable --- funds loaned to customers. In countries such as Germany, France and Italy, trade credit exceeds a quarter of total corporate assets.

While the use of trade credit is wide-spread, the reasons for its use is not well understood. Much of the existing theoretical literature on trade credit has focused on explaining its use in developed economies, such as that of the United States. The research question has been to explain why it is efficient for non-financial corporations in a well developed market system to act as financial intermediaries and advance credit when there exists a financial sector that already specializes in the provision of capital.

Several theoretical papers have analyzed the advantages and disadvantages of bank over trade credit financing.[1] The literature has suggested that the trade credit (a) confers a product market advantage on sellers who have access to capital --- especially in markets that are not competitive; (b) allows superior allocation of credit when the financial system is not informationally efficient; and (c) provides implicit guarantees to customers if the legal system is sufficiently inefficient so that explicit guarantees are not credible. However, the existing literature does not explore the role of trade credit in economic development.

Our focus is on exploring whether the use of trade credit between firms is a substitute for borrowing from the financial intermediaries, or whether the use of trade credit is an efficient complement to the lending by financial intermediaries. The latter might be the case if it is efficient to have non-financial firms partially take on the role of financial intermediaries in connection with transactions with which they are engaged in.

To examine the role of trade credit in the financial systems of developing countries we will explore how the use of trade credit is related to the development of a country's banking system and its legal infrastructure. Using firm-level data for 39 countries, the questions we seek to answer are:

- Is the use of trade credit greater in countries with inefficient legal systems?
- Is the use of trade credit greater in countries with large banking systems?
- How does the competitiveness and the concentration of the banking sector affect the use of trade credit?
- Do specific legal rules on repossession affect the use of trade credit?

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[1] We discuss the literature on trade credit in the next section.

The rest of the paper is organized as follows. We motivate our investigation in Section 2. We discuss our data in Section 3 and our empirical design in Section 4. Section 5 contains empirical results, Section 6 examines the robustness of our results, and Section 7 concludes.

2.0 THE MOTIVATION

The explanations of trade credit prevalent in the literature fall into one of two categories. Several authors focus on the "business" motivations for trade credit, seeing it as a way to minimize transactions cost (Ferris 1981), to allow firms to practice price discrimination Brennan, Maksimovic and Zechner (1988), and or to offer implicit quality guarantees (Lee and Stowe (1993), Long, Malitz and Ravid (1993), Emery and Nayar (1994), and Deloof and Jegers (1995).). Recently, Frank and Maksimovic (1998) argue that the legal system, at least under common law, allows trade creditors to repossess their collateral more easily than financial intermediaries.

A second category of explanations focuses on the "financial" aspects of trade credit. Emery (1984) argues that when the borrowing and lending rates faced by firms differ, trade credit can serve to arbitrage the difference.

Smith (1987) and Biais and Gollier (1997) argue that in the normal course of business a seller obtains information about the true state of a buyer's business that is not known to financial intermediaries. The latter may not have detailed knowledge of industry conditions and are forced to rely excessively on accounting information. Since this information is potentially valuable, seller acting on this information extend credit to buyers on terms that they would not be able to receive from financial intermediaries.

Frank and Maksimovic (1998) have posited a direct mechanism to explain a relation between the informational efficiency of the financial system and the use of trade credit. In their

model, a supplier and a buyer access the financial system to obtain capital to fund a transaction. As in the classic paper by Myers and Majluf (1984), external financing is costly because of potential adverse selection in the market for capital. If the buyer faces greater adverse selection risk, it is more efficient for the seller to obtain external financing and advance trade credit. By contrast, if the buyer faces smaller adverse selection risk, it is more efficient for the buyer to obtain external financing, and the purchase is a cash transaction. The model by Frank and Maksimovic (1998) thus explains why a firm may extend trade credit to some customers, while at the same time it also obtains trade credit from some of its suppliers.

The business and financial motivations for trade credit explored in the literature do not imply direct predictions on the relative use of trade credit across countries. Moreover, the models cannot be directly extended to yield unambiguous predictions about the prevalence of trade credit financing across countries with different legal and financial systems. Thus, for example, to the extent that explicit quality guarantees are hard to enforce in countries with inefficient legal systems, one would expect more use of implicit quality guarantees that are created when firms extend trade credit. However, in the absence of the ability to repossess goods, suppliers in countries with inefficient legal systems may not be willing to supply goods on trade credit, and may require cash payments. This suggests that there may be less use of trade credit for the purpose of providing implicit guarantees in countries with less efficient legal systems. Which of those effects predominates depends on the relative reputation of the buyer and the seller, and this may differ across countries.

The traditional financial theories of trade credit also yield ambiguous predictions. They suggest that the relative use of trade credit is lower in financial systems that are more efficient in acquiring and processing information. The trade credit theories themselves, however, do not

predict whether a concentrated or a dispersed, and therefore more competitive, banking system is superior in financing transactions which firms would otherwise finance on trade credit.

The review of the existing literature suggests two broad approaches to the use of trade credit, which we term "the substitution hypothesis" and the "complementarity hypothesis."

The Substitution Hypothesis

The substitution hypothesis holds that trade credit is a substitute for financing by financial intermediaries. Reliance on trade credit is likely to be highest in countries where financial systems are undeveloped. In that case it is likely that potential borrowers are constrained from access to capital, and they will turn to substitute sources of financing, in particular non-financial corporations. In this sense, trade credit and bank credit are substitutes, and trade credit is expected to be used more heavily in countries with undeveloped financial systems. Since financial contracts are more likely to be enforceable in countries with efficient legal systems that guarantee creditor rights, the substitution hypothesis predicts a negative relation between the efficiency of the legal system and the use of credit. For the same reason, the use of trade credit by firms is expected to be negatively related to the specific protections captured in Laporta, Lopez-De-Silanes, Shleifer, and Vishny's (1998) creditor rights index.

The Complementarity Hypothesis

While it may seem natural to conclude that borrowers are likely to view bank and trade credit as substitutes, the supply of trade credit may be greater if supplying firms have access to bank loans. Moreover, following Biais and Gollier (1997) and Frank and Maksimovic (1998), the use trade credit may be viewed as complementary with financing by financial intermediaries. Firms obtain capital from financial intermediaries and financial markets. For transactions where direct monitoring by financial intermediaries is efficient, financial intermediaries and markets

provide capital directly to firms. However, in cases where suppliers are more efficient at monitoring, or in enforcing contracts, it may be optimal for financial intermediaries to lend to suppliers, who then relend to the buying firms. Such efficiencies may arise because suppliers have proprietary information about buyers, because they can threaten to suspend future deliveries, or because they have a higher opportunity cost of any repossessed inventory than do financial intermediaries.

In this view we would expect the total amount of trade credit to be positively related to the amount of lending to the private sector by financial intermediaries. The use of trade credit is also greater if the financial intermediaries are inefficient at monitoring private borrowers and enforcing loan contracts. These inefficiencies can arise in several ways. In some countries there exist legal restrictions on the ability of intermediaries to enter into optimal contracts with borrowers. Thus, for example, restrictions on owning stock in, or controlling, non-financial corporations may prevent banks from optimally safeguarding their loans in instances where borrowers become financially distressed. The possibility of such outcomes may make it efficient for banks to make some of their loans indirectly, by lending to a firm's suppliers, who then relend the funds through trade credit. Thus, we would expect a positive relation between the use of trade credit and the existence of restrictions on bank ownership of equity securities. Other potential sources of inefficiency are the use of the the banking system to achieve non-economic goals or monopolistic practices.

In summary, the 'complementary view' holds that the use of trade credit is greater in countries which have a large and efficient system of financial intermediaries. In such systems non-financial corporations act as 'agents' for financial intermediaries. They lend and borrow from other corporations when they have a comparative advantage in enforcing those contracts,

and borrow from financial intermediaries when the latter's advantage of access to funds and monitoring ability are sufficiently great. Thus, we would expect a large intermediary sector to be associated with the use of more trade credit. Holding size constant, factors that reduce the competitiveness of the banking sector, such as restrictions on stock ownership or high concentration, should increase the use of trade credit. The role of the legal variables is more ambiguous. To the extent that an efficient legal system benefits financial intermediaries, we would expect a negative relation between the quality of the legal system and the use of trade credit, holding the size of the intermediary sector constant.

The Empirical Design

In order to explore the empirical validity of the two views of the relation between the financial system and intermediation by firms, we address the following questions:

First, we wish to find out whether there is a relation between the level of development of a country's financial system and the use of trade credit. The financial theories above suggest the existence of a negative relation.

Second, we wish to investigate whether there is a relation between the effectiveness of the legal system and the use of trade credit.

Third, we examine whether specific characteristics of the financial system affect the use of trade credit. In particular, we focus on the effect of state ownership, the concentration of the banking sector, and of the restrictions on banks' ownership of nonfinancial corporations on the use of trade credit.

Fourth, we investigate the role of legal origins and specific legal provisions, such as the ability to repossess assets on the use of trade credit.

3. DATA AND SUMMARY STATISTICS

3.1 Description of Sample

The firm-level data consist of financial statements for the largest publicly traded manufacturing firms in 40 countries (SIC codes 2000-3999). Our sample of firms contains 45,598 annual observations over the period 1989-1996. The sample is from Worldscope and contains data from both developed and developing countries as listed in Table AI in the Appendix. For each of the countries we also use data on financial system development compiled by Beck, Demirgüç-Kunt and Levine (1999).

In Table 1 we present pertinent facts about the level of economic and institutional development in the sample countries. The countries in the sample exhibit a great deal of variation in development level, economic conditions, and institutional arrangements. They range from Switzerland, with average per capita gross domestic product in 1990 dollars of $27,157 to Pakistan, with a per capita income of $302. The countries also vary in the amount of inflation, from a low average rate of 2 percent per year in the case of Japan, up to 234 percent in the case of Brazil.

We use several descriptors of a country's banking system. Our principal measure of the general development of the banking sector, PRIVATE/GDP, is the ratio of the claims on the private sector by deposit money banks to the GDP. The average value of this ratio during our sample period ranges from 0.06 in the case of Peru, to 1.63 in the case of Switzerland.[2] Countries

[2] Beck, Demirguc-Kunt and Levine (2000) discuss this measure of financial system development.

with a large banking sector include Japan, Germany and Hong Kong, whereas Mexico, Turkey and Columbia have small banking sectors relative to their GDP.

We also include several more specialized descriptors of each country's banking system. Laporta, Lopez-de-Silanes, and Shleifer (1999) find that the extent of public ownership of a country's banking system is a proxy of the banking system's efficiency in financing the private sector. Thus, we would expect state ownership to be a potential determinant of the use of trade credit. One the one hand, inefficient loan policies will direct lending away from the most efficient uses, and provide incentives for the use of trade credit to reallocate capital to the most productive uses. On the other hand, to the extent that lending by state banks is politically driven and is not driven by commercial considerations, state banks may be willing to direct inefficient loans to enterprises, reducing their need to rely on credit. Which of these effects predominates is an empirical question.

We use their measure of public ownership, PUBLIC, which is the proportion of assets of the ten largest banks in each country owned by the government. The proportion varies from zero, in the case of several countries, such as Australia and Belgium, to 0.8 in the case of Indonesia.

Inefficiencies in lending to corporations may arise because of the structure of the financial intermediaries. For example, if the banks are highly concentrated, then they may be able to use their market power to extract value from some categories of borrowers. Such borrowers may then find it optimal to obtain financing at the margin from non-financial firms in the form of trade credit. However, a concentrated banking system also makes it more likely that financial intermediaries have banking relationships with both the buyer and the seller, as well as other firms in their industries. This multiplicity of relationships may provide banks in

concentrated financial systems with information advantages that offset the knowledge of customer possessed by sellers.

The countries in our sample also vary in the extent to which their banking systems are concentrated. Our indicator of concentration, CONCENTRATION, measures the three largest banks' assets to the total assets of the banking sector. The ratio is lowest for the United States, at 0.18, and highest in the case of Sweden, at 0.89.

Banking systems vary in the extent to which banks are to own and control nonfinancial firms. Such restrictions are significant because they affect the ability of banks to enter into optimal contracts with non-financial borrowers. Barth, Caprio and Levine (1999) build an index that measures such restrictions. We use this index, REST, in which 1 indicates "unrestricted," 2 indicates "permitted," 3 indicates "restricted," and 4 indicates "prohibited."

Following Laporta, Lopez-De-Silanes, Shleifer and Vishny (1998), several recent studies have argued that the efficiency of the legal system is an important determinant of the availability of external financing (e.g., Demirgüç-Kunt and Maksimovic 1998). All types of borrowing, including trade credit, are facilitated by legally enforceable commitments to repay the loan. Thus, one might expect the amount of trade credit to be positively related to the efficiency of a country's legal system. However, the efficiency of the legal system is likely to have a greater effect on lending by financial intermediaries than on suppliers of trade credit. This is because trade creditors may be able to punish debtors without resort to the legal system by withholding further deliveries. This substitution effect suggests that the supply of trade credit is negatively related to the efficiency of the legal system. In a regression of the use of trade credit that includes both the size of the banking system and the efficiency of the legal system as independent variables, the coefficient of legal efficiency variable will pick up the substitution effect. Thus, we

expect the use of trade credit, controlling for the size of the banking system, to be negatively related to the efficiency of the legal system.

As an indicator of the ability of firms to enter into financial contracts we use a commercial index of experts' evaluations of the efficiency of the state in enforcing property rights within each country. This measure, LAW & ORDER, produced by the International Country Risk rating agency, reflects the degree to which the citizens of a country are willing to accept the established institutions to make and implement laws and adjudicate disputes. It is scored on a zero to six scale, with higher scores indicating sound political institutions and a strong court system. Lower scores indicate a tradition of depending on physical force or illegal means to settle claims. This indicator has been used in previous studies comparing institutions in different countries (e.g., Knack and Keefer 1995, Demirgüç-Kunt and Maksimovic 1998).

Another potential determinant of the use of trade credit is the extent to which firms' creditors possess the right to safeguard their claims in the event that the firm fails to meet its obligations. However, while the existence of strong creditor rights facilitates the writing of enforceable contracts both by financial intermediaries and by trade creditors, it is not clear whether the strong rights leads to relatively more or less use of trade credit. In countries with strong creditor rights, financial intermediaries are more willing to provide financing to firms, which are, in turn, able to offer trade credit to their customers. However, strong creditor rights also facilitate direct lending by banks to customers. Thus, net effect of a high creditor rights score on the amount trade credit depends on which of two effects predominates.

We also investigate the relation between creditor rights and trade financing using the Creditor Rights Index compiled by Laporta, Lopez-De-Silanes, Shleifer, and Vishny (1998). The variable CREDITOR RIGHTS is an index that ranges from 0 to 4 and aggregates creditor

rights in the following way: (1) the country imposes restrictions, such as creditors' consent or minimum dividends to file for reorganization; (2) secured creditors are able to gain possession of their security once the reorganization petition has been approved (no automatic stay); (3) secured creditors are ranked first in the distribution of the proceeds that result from the disposition of assets of a bankrupt firm; and (4) the debtor does not retain the administration of its property pending the resolution of the reorganization.

While in principle the extent of creditor rights are important in determining a firm's ability to borrow, an index of specific legal protections, such as CREDITOR RIGHTS, that may not fully proxy for the underlying differences between countries. A comparison of specific rights across countries does not take into account the fact that firms may be able to compensate for the absence of specific legal protections by altering the provisions of contracts. By contrast, it is likely to be more difficult to compensate for the systemic failures of the legal system to adjudicate claims captured by the law and order indicator. In Demirgüç-Kunt and Maksimovic (1999), we show that the index is a good predictor of the use of long-term debt by large firms in our sample of countries. We found less evidence that the indicators of specific legal protections identified by Laporta, Lopez-De-Silanes, Shleifer and Vishny (1998) predict the use of long-term debt. As result, we place more weight on the LAW & ORDER indicator than on the comparison of specific differences in the legal codes across countries in CREDITOR RIGHTS.

The origin of a country's legal system is believed to be an important determinant of whether the legal system facilitates firms' access to external finance (Laporta, Lopez-De-Silanes, Shleifer, and Vishny 1998, Demirgüç-Kunt and Maksimovic 1998, 1999). Systems based on common law are considered to offer better protection to external financiers. However, the existing literature primarily focuses on the additional protections common law systems provide

to direct investors. The literature does not analyze the comparative advantage of common law or civil law systems in providing protections to creditors who are also suppliers. Thus, effect of legal origin on the amount of trade credit is an empirical question.

Our COMMON LAW Dummy takes the value one for common law countries and the value zero for others. As argued by Laporta, Lopez-De-Silanes, Shleifer and Vishny (1998), common law legal systems are more likely to offer protections to outside investors than civil law systems.

Table 1 shows that our sample contains countries with legal systems of very diverse levels of effectiveness. It contains highly effective common law legal systems (such as the United States and Canada) and less effective legal systems (such as India and Pakistan), as well as highly effective civil systems (such as Switzerland) and less effective systems such as those in Columbia and Peru.[3]

4. THE EMPIRICAL MODEL

Trade credit is granted by the sellers to the purchasers of merchandize. Normally, the grant of trade credit is related to the sale of specific items and is granted on a short-term basis. The seller normally either allows the buyer to delay payment for a specified number of days, or offers the purchaser the choice of delaying payment or settling for cash immediately and taking a "cash discount." [4]

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[3] Our sample of countries does not contain economies with very weak banking systems and legal infrastructure, such as those in early stages of transition between communism and capitalism. Thus, our findings may not generalize to such economies.

[4] The terms of the contracts may vary by industry and by the creditworthiness of the parties involved. In the United States a popular credit contract gives the purchaser the choice of taking a two percent cash discount if the account is settled within ten days, or delaying payment for thirty days.

In this paper, we use two standard measures of trade financing used by financial analysts.[5] The commonly used measure of extended credit is Receivables Turnover, RECTURN, defined as the Total Sales, divided by the Accounts Receivable. More precisely, RECTURN in year *t* is computed by dividing a corporation's total sales by the average of its Accounts Receivables at the end of year *t* and at the end of year *t-1*. A high measure indicates that the credit a firm is extending to customers is a small proportion of total sales. This may occur if the firm only extends credit for a short period, or if it extends longer term credit to only a fraction of its customers.

The extent to which a firm borrows from its suppliers is measured by Payables Turnover, PAYTURN. PAYTURN in year *t* is computed by dividing a as the ratio of total cost of goods sold, divided by the average of its Accounts Payable at the end of year *t* and at the end of year *t-1*. A high value of PAYTURN indicates that a firm does *not* borrow much from its suppliers in order to directly finance purchases of its inputs.

The variables RECTURN and PAYTURN measure how the firm finances the flow of output shipped to customers, and the flow of inputs received from its suppliers, respectively. Although RECTURN and PAYTURN are commonly used by finance practitioners, they differ from the familiar ratio measures of leverage used in corporate finance research. These ratio measures are typically computed by dividing the value of line item, such as short-term debt, on a firm's balance sheet by its total assets or total equity. While these measures are appropriate for studying some corporate finance policy decisions, such as the capital structure decision, they do not directly measure the use of trade credit, which primarily finances sales and purchases, not long-term assets. Furthermore, in a cross-country analysis measures that are computed by

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[5] The measures we use are described in most standard finance textbooks. See, for example, Ross, Westerfield, and

comparing contemporaneous variables, such as receivables and sales, are less likely to be subject to measurement error than measures that rely on the accurate measurement of a stock variable, such as total assets.

A firm that needs to obtain short-term financing of its purchases can, in principle, obtain the financing either directly from the seller, or from other sources, such as a financial institution or market for commercial paper. The firms in our sample comprise the largest manufacturing firms in their respective countries. By virtue of the fact that they have attracted the attention of Worldscope these firms are likely to be less financially constrained than other firms in their industries. As a result, they are more likely to act as financial intermediaries than other firms in the sample.

We measure the extent to which the firm relies on the financial system by the ratio of short-term debt to accounts payable. A high ratio indicates that the firm obtains most of its credit from the financial system.

Figures 1-3 show how the average values of PAYTURN, RECTURN and STD/ACCTS. PAYABLE vary by country. As Figure 1 shows, firms in Pakistan, Brazil, and Peru have the highest receivables turnover, whereas firms in Italy, Greece, France and Japan have the lowest turnover. Thus, the initial evidence does not support the notion that trade financing is used as a substitute for other types of financing by firms in countries with underdeveloped banking systems. This finding is strengthened by evidence on level of between payables turnover in Figure 2. As Figure 2 shows, firms in Italy, Japan, Luxemburg and France are among the largest users of trade credit. By contrast, firms in Brazil, Malaysia, and Pakistan have the highest payables turnover.

Jordan (1999).

Consistent with these findings, Figure 3 shows firms in Canada, US, Ireland, and the United Kingdom are heavy users of trade credit relative to short-term debt, whereas firms in developing economies such as Thailand, Korea, Indonesia, and Pakistan rely more heavily on bank financing.

Figures 1 to 3 suggest that trade credit is not a form of financing that substitutes for bank financing in cases where the firms are credit rationed by the financial system. Instead, consistent with Frank and Maksimovic (1998), lending by non-financial firms may be an efficient method of allocating credit even in countries with relatively effective financial systems. In order to determine whether any specific characteristics of firms or countries' financial systems affect the propensity to use trade credit, we proceed to multivariate analysis.

Table II contains the sample statistics of the variables we consider. In addition to the variables discussed above, we also control for two macro-economic and three potential firm-specific determinants of trade credit use.

We also include two macroeconomic variables that have been found by Demirgüç-Kunt and Maksimovic (1998, 1999) to predict the use of external finance: the rate of inflation and the growth rate of the Gross Domestic Product. The rate of inflation may proxy for willingness to enter into long-term financial contracts that may be a substitute for short-term trade credit. Firms in fast growing economies may have a higher demand for credit than firms in economies that are not expanding.

Demirgüç-Kunt and Maksimovic (1999) find that firm size is an important determinant of cross-country differences in the use of long-term financing. Small firms in both developed and developing countries rely primarily of short-term financing, whereas large firms in more developed economies use more long-term debt than large firms in developing financial systems.

Thus, in our multivariate analysis we control for firm size by calculating SIZE, the ratio of a firm's total assets by the GDP of its country.

Rajan and Zingales (1995) and Booth, Aivazian, Demirgüç-Kunt and Maksimovic (2001) show that the use of debt by firms in a sample of developed and developing countries is negatively related to their profitability. This finding is consistent with findings on the relation between reported profitability and leverage in the US by Bradley, Jarrell, and Kim (1984). Accordingly, we control for the return on equity, ROE, of each firm in our sample.

Finally, the use of trade credit may depend on a firm's capital intensity, NSNFA, which we measure by the ratio of a firm's net sales to its net fixed assets. This relation can arise because net fixed assets may serve as collateral for long-term loans. Thus, firms that have a low ratio of net sales to net fixed assets may be able to obtain a large quantity of long-term financing relative to their sales and purchases. Such firms may be able to extend a large quantity of credit to their customers (thus, they will have a low RECTURN ratio) and may not need to obtain credit from their own suppliers (thus, they will have a high PAYTURN ratio). Demirgüç-Kunt and Maksimovic (1999) find that NSNFA predicts the use of short-term debt by firms.

Panel B of Table II shows the correlation matrix for the variables in our study. There is a high and significant correlation between RECTURN and PAYTURN: firms that obtain trade credit also extend trade credit to their own customers. This relation may arise in two ways. First, firms that have trouble collecting from their own customers may be forced to delay paying their suppliers. Alternatively, granting and accepting trade credit may be an efficient means of using allocating credit in the economy. There exists a negative relation between RECTURN and RATIO, suggesting that firms which extend a large amount of trade credit also borrow relatively less from banks than firms.

There is a negative relation between GDP/CAP and both RECTURN and PAYTURN, suggesting that firms in developed countries rely more on trade financing than firms in less developed countries. High growth is associated with more use of trade financing relative to the level of transactions (i.e., lower PAYTURN and RECTURN). However economic growth is also associated with more reliance on short-term debt relative to the use of accounts receivable. By contrast, high rates of inflation are associated with less use of trade credit.

A large banking sector, as measured by PRIVATE/GDP, is associated by greater use of trade credit to finance transactions between firms. Thus, the use of trade credit is complementary to the use of bank financing. By contrast, ownership of the banking sector by the government is associated with less use of trade credit and more reliance on short-term debt.

The relation between the use of trade credit and restrictions on bank ownership of non-financial firms and of the concentration of the financial sector is more difficult to interpret. In our sample, firms in countries with concentrated banking sectors tend to extend less trade credit to their customers, they appear to use relatively more trade credit themselves. By contrast, in countries where banks face restrictions in the ownership of non-financial corporations, firms extend more trade credit but take less.

This asymmetry in the association between the characteristics of the banking system and PAYTURN and RECTURN may occur because the firms in our sample comprise the largest corporations in their respective countries. Such firms are most likely to act as intermediaries between the financial sector and the buyers of their products in the manner suggested by Frank and Maksimovic (1998). Thus, for example, when there exist restrictions on the ownership of non-financial corporations by banks, banks may be less likely to lend directly to smaller firms. Instead they may lend more to the larger firms in the economy (i.e., the positive and significant

relation between REST and RATIO). These larger firms may finance smaller firms (i.e., the negative and significant relation between REST and RECTURN) and take less trade credit from these smaller firms themselves (i.e., the positive and significant relation between REST and PAYTURN).

There is significant association between the efficiency of country's legal system and the use of trade credit. In countries with efficient legal systems, firms rely less on trade credit to finance transactions. This contrasts sharply with results for the relation between GDP/CAP and the use of trade credit reported above, despite the high correlation between the efficiency of a country's legal system and GDP/CAP. Interestingly, the negative correlation between the efficiency of the legal system and RATIO suggests an even smaller use of short-term bank credit to finance transactions in countries with good legal systems.

Creditor protection is positively related to both to the use of trade credit and to short-term borrowing from banks. By contrast, firms in common law countries tend to lend less to other firms and to engage in less short-term borrowing from banks, perhaps because financial markets are better developed in such countries.

Taken together, the simple correlations between the legal variables and the measures of the use of trade credit suggest that efficient legal systems lead to less reliance on short-term financing.[6] By contrast, specific strong creditor protections lead to more short-term financing, both by banks and by non-financial firms.

Turning to firm-specific variables, high return on equity, high ratio of sales to fixed assets and large size is significantly associated with less trade credit financing of transactions (higher RECTURN and PAYTURN).

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[6] This is consistent with the findings of Demirgüç-Kunt and Maksimovic (1999).

In sum, the simple correlations reported in Table II, Panel B indicate that there exist statistically significant relations between the use of credit and the suggested explanatory variables. However, the panel also indicates that there is a high degree of correlation between many of the suggested determinants. To reach a more definitive conclusion we need to control for these correlations.

The regression equations we estimate are of the form:

$$y = \beta_0 + \beta_1 \text{ NSNFA} + \beta_2 \text{ ROE} + \beta_3 \text{ SIZE} + \beta_4 \text{GROWTH} + \beta_5 \text{ INFLATION} + \beta_6 \text{GDP/CAP} + \beta_7 \text{ PRIVATE/GDP} + \beta_8 \text{ PUBLIC} + \beta_9 \text{ CONCENTRATION} + \beta_{10} \text{ REST} + \beta_{11} \text{ LAW \& ORDER} + \beta_{12} \text{ CREDITOR RIGHTS} + \beta_{13} \text{ COMMON-LAW DUMMY} + \varepsilon,.$$

For each dependent variable we present two specifications. The first specification is estimated using firm level pooled data over the 1989-1996 period using firm and year random effects.[7] The use of firm-level random effects is a conservative estimation procedure, in that some of the differences in the use of trade credit by firms in different financial systems may be picked up by the firm-level effect. An alternative procedure is to use industry-level random effects, thereby implicitly assuming that the differences in the use of trade credit by firms in the same industry are not caused by unobserved firm-level heterogeneity across countries. We have also estimated a pooled regression using an industry-level random effect (at the four-digit SIC code level). We do not report these results because they are similar to those reported in Table III. However, we note any material differences below. To address the possibility that our independent variables primarily explain cross-sectional variations in the data, a second specification is estimated using cross-sectional firm level data averaged over the sample period.

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[7] Moulton (1987) shows that random effects are more likely to yield consistent estimates than fixed effects estimators when variables are subject to measurement error.

The three dependent variables of interest: PAYTURN, RECTURN and STD/ACCTS. PAYABLE are heavily skewed. Since our analytical framework does not predict the precise functional form, we analyze the variables transformed by taking natural logarithms.[8] This transformation induces a more symmetrical distribution of the dependent variables.

Previous cross-country studies of financing choices by Demirgüç-Kunt and Maksimovic (1996, 1998, and 1999) have found different financing patterns for small and large firms. Petersen and Rajan (1997) find that firm size is important in explaining trade credit flows in the US. Accordingly we report our results separately for large and small firms. Each year firms are classified as large or small, depending on whether their sales exceed or are below the sales of the median firm in our sample from that country.

5.0 RESULTS

5.1 The Financing of Sales

Panel A of Table III shows how the amount lent to customers, RECTURN depends on country and firm-specific variables. The table reveals that the amount of trade credit extended by both large and small firms depends on both the characteristics of the financial system and on the legal systems of the countries.

Firms extend more trade credit in countries with larger banking systems, as measured by PRIVATE/GDP: The coefficient of PRIVATE/GDP is negative and highly significant across all specifications, for both large and small firms. These results suggest that the financing of sales using trade credit by firms in our sample complements the existence of a well functioning banking sector, as suggested by Frank and Maksimovic (1998) and Biais and Gollier (1997).

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[8] The use of raw data results in similar findings, albeit with a lower explanatory power.

The coefficients of the other banking variables and the legal variables lend support to this conclusion. Receivables turnover is lower in countries where banks are restricted from controlling non-financial firms. There exists evidence of a negative relation between the proportion of the banking sector owned by the state and the provision of trade credit by firms. This relation may arise if publicly funded banks do not make economically rationale loans, either by not lending enough to firms that can efficiently relend to their customers, or by making inefficient loans to directly to customers, thereby displacing efficient provision of trade credit. We investigate these possibilities further below.

By contrast, the concentration of the banking system, does not appear to be consistently related to the provision of trade credit to finance sales in our sample. In cross-section, large firms extend more credit in countries with concentrated legal systems. However, this effect is reversed in the panel.

The efficiency of a country's legal system is positively related to receivables turnover. Thus, in countries with efficient legal systems suppliers lend, on average, for a shorter period. This suggests that, controlling for the magnitude of bank lending extended to the private sector, an efficient legal system favors direct lending by banks to finance purchases over financing of goods sold by sellers.

The coefficients for common law dummy are significant across the specifications and the two size categories. Less trade credit used in common law countries. By contrast, evidence on the relation between creditor rights and RECTURN is mixed.

Inspection of the coefficients of the control variables shows that high rates of inflation are associated with an unwillingness to extend credit. By contrast, economy-wide growth is associated with increased willingness to extend trade credit.

More profitable firms extend less trade credit than less profitable firms. While this finding appears across specifications, its provenance is unclear. It may be that, as suggested by Brennan, Maksimovic and Zechner (1988), trade credit is used to provide price breaks to marginal customers. In that case, other things being equal, large accounts receivable balances would indicate that a large fraction of the firm's customer base has a low valuation for its product. Such firms are likely to be unprofitable.

The remaining two control variables, NSNFA and SIZE are significant in some specifications only. There is limited evidence that for large firms there exists a negative relation between NSNFA and the financing of sales. SIZE appears to be positively related to receivables turnover.

In sum, large banking systems that are restricted from owning non-financial corporations are associated with the provision of trade credit. In countries with an efficient legal systems and in common law countries firms lend less to their customers. Large and profitable firms lend less to their customers. Firms in rich, growing economies, with low rates of inflation lend more.

5.2 The Financing of Purchases

Panel B of Table III shows how the amount borrowed from suppliers, PAYTURN depends on country and firm-specific variables. As revealed in Panel B, the estimates are consistent with the results on receivables in Panel A.

There exists a highly significant positive relation between the PRIVATE/GDP and borrowing on credit. Trade payables are higher when banks are restricted in their ability to own stock in nonfinancial corporations. Public ownership of banks is associated with less, rather than more, borrowing on trade credit.

Holding the banking system's loans to the private sector constant, trade payables are lower when the legal system is efficient. There is also evidence that firms in countries whose legal system has a common law origin have lower amounts of payables.

Taken together these results are consistent with the complementarity hypotheses: firms in countries with large, private banking systems borrow more from non-financial intermediaries. Holding the financial system constant, firms in countries with efficient legal systems, particularly of common law origin, borrow less from their suppliers.

Focusing on the control variables, there is a positive relation between ROE and borrowing on trade credit. Similarly, payables are lower when the inflation rate is high. Similarly, when the ratio of net sales to net fixed assets is high, firms finance a smaller proportion of their purchases on trade credit.

The coefficient of GDP/CAP is negative and highly significant in most specifications, indicating that firms in more developed countries rely more on trade credit to finance their purchases than firms in less developed countries, even after controlling for our financial and legal variables. This finding suggests that there are other relevant differences in financial systems between countries that are correlated with development but have not been captured by our banking and legal variables.[9]

In the large firm sample, firm size is not related to the use of trade credit to finance purchases. For small firms there is a negative relation. While it is possible to provide an economic rationale for the finding that the smallest and the largest firms rely more on trade credit than mid-size firms (smallest firms have no choice, whereas the largest firms may have the bargaining power to use late payment of accounts as a form of favorable price discrimination),

the finding is nevertheless unexpected. However, it is not robust to the alternative specification of the random error below.

5.3 The use of Short Term Debt and Accounts Payables by Firms

Short-term debt and accounts payable are alternative forms of external financing. In this sub-section we investigate the determinants of the choice between them. Our dependent variable is RATIO, the log of the ratio of the firm's short-term debt to accounts payable. As in previous panels, we present both panel and cross-sectional results.

Firms in countries with large and concentrated banking sectors borrow relatively more from banks than from their suppliers. For smaller firms, extensive public ownership of banks also leads to a higher values of RATIO.[10]

In countries with legal systems of common law origin there is a relatively higher degree of reliance on accounts payable than on bank credit. However, this heavier reliance on trade credit cannot be explained by arguing that common law gives creditors greater protection or is associated with more efficient legal systems. In countries with higher creditor rights protection, firms borrow more from banks then from their suppliers, suggesting that the enforcement of trade credit contracts relies more on informal mechanisms. The efficiency of the legal system is associated with a greater use of short-term debt by large firms.

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[9] Demirgüç-Kunt and Maksimovic (1998) show that the level of activity of the stock market and the level of government intervention in the economy are both predictors of the use of external financing.

[10] Interestingly, restrictions on bank ownership of non-financial corporations are associated with higher values of RATIO. As Panels A and B of Table III indicate, these restrictions are associated with more borrowing and lending on trade credit. These results, together with the finding that restrictions lead to higher values of RATIO, suggest that firms in banking systems with restrictions have a higher usage of trade credit financing, but that their reliance on short-term bank debt is relatively higher. It is likely that in countries where banks are constrained there is a substitution from bank to trade credit financing (this consistent with Panels A and B). Relatively heavier reliance on bank financing over accounts payable may occur if the publicly traded firms in this sample are conduit for short-term funds the banking sector to the non-financial corporations.

Firm profitability is negatively associated with RATIO, suggesting that profitable firms cut their bank borrowing more than their accounts payable borrowing. Firm size is positively related to RATIO, suggesting that size plays a larger role in access to bank financing than trade credit. Short-term bank financing plays a relatively less significant role than trade credit financing in economies that are growing fast, are experiencing inflation, and have higher level of income per capita. This last finding suggests that there that trade credit financing is not an adaptation for obtaining finance in the absence of a formal banking sector, but is highly prevalent in developed economies.

5.4 Industry Composition and Trade Credit

The results in Table III are derived using an estimator that takes into account firm-specific differences in the use of trade financing by using a firm-specific random component. This may understate the role of legal and financial variables because the selection of firms that operate in an economy may itself be a function of the economy's institutions. An alternative specification, is to estimate the specification that replace the firm-level random effects by industry-level random effects. This is line the findings by Ng, Smith and Smith (1999) who document wide variation in the credit terms across industries but little variation within industries.

In unreported regressions we have also tested the specification using industry-level random effects. In this specification the error component takes into account differences in the use of trade financing by firms in different industries, but takes those differences as being constant across all countries. The results of the new specification are broadly similar. The principal differences are as follows: In the receivables regressions the Creditor Rights variable is now positive and significant in both the large-firm and small-firm equations. Size is also positive and significant in the large firm equation. In the PAYTURN regression, the Creditor Rights variable

is now not significant in either the small or large equation. Size is again positive and significant in the large firm equation. In the RATIO equation, Law and Order is now positive and significant in the small-firm equation.

Thus, this alternative specification gives additional support to our principal conclusions. We find that a strong the legal infrastructure -- an efficient legal system and the guarantee of investor rights --- tends to reduce the use of trade credit (both payable and receivable) for all size firms. When the legal infrastructure is weak, more intermediation is performed by firms. There is also evidence that the smaller firms give and receive more trade credit.

6.0 SENSITIVITY ANALYSIS

The specification in Table III is designed to test the hypothesis that trade credit is a complement to the banking system as a channel by which short-term financing is allocated to non-financial corporations. The extent of such compelementarity depends on the characteristics of the banking system and legal systems. The right hand side variables in our regressions proxy for characteristics identified in the corporate finance literature as being relevant.

Inspection of Panel B, Table II, reveals that many of the explanatory variables are highly correlated with each other, and that some may be themselves endogenous. Thus, for example, Demirgüç-Kunt and Maksimovic (1999, 2000) argue that the size of the banking system depends on the quality and origin of a country's legal system, and on the protection of creditor rights. While Table III reveals regularities in the data, causal interpretations based on the equations must be treated with caution.

To check whether our results are sensitive to the endogeneity of the banking system, we reestimated the specification in Table III, replacing PRIV by its predicted value. This predicted value is itself estimated using variables more likely to be exogenous

Predicted values are derived from the following first stage equation:

$$PRIV/GDP = \gamma_0 + \gamma_1 GROWTH + \gamma_2 INFLATION + \gamma_3 GDP/CAP + \gamma_4 LAW \& ORDER + \beta_5 CREDITOR\ RIGHTS + \beta_6 COMMON\text{-}LAW\ DUMMY + \varepsilon.$$

We repeat our specification of Table III, dropping the creditor rights variable in order to ensure that the system is identified. In the interest of brevity, only cross-sectional results are reported in Table IV, for large and small firms separately. Results using panel estimation techniques are similar.

For the variables of interest, the results obtained using the two-stage procedure are mostly consistent with those reported in Table III. An efficient legal system leads to less reliance on trade credit, with no increase in the relative use of bank debt. In common law countries there is less reliance on trade credit than in other countries. However, there is an even smaller reliance on short-term bank debt.

A large banking system is associated with greater use of receivables and payables. However, a large banking system is also associated with a greater use of short-term debt relative to payables by the firms in our sample. Public ownership of the banking system reduces the use of trade credit, and promotes the reliance on short-term debt by the smaller firms in our sample.

The results on concentration are more mixed. In concentrated banking systems, large firms lend less to other firms and borrow a little more from them. Their use of short-term debt relative to accounts payable financing is not affected. Under the same conditions, the smaller firms in the sample borrow relatively more from banks. Again, restrictions on the banks' ownership of restricted non-financial corporations is associated with more short-term debt relative to accounts payable, but greater reliance on accounts payable and receivable.

Of the control variables, the relation between profitability and the use of trade and bank debt remains unchanged, and consistent with the previous results of Demirgüç-Kunt and Maksimovic (1999) and Booth, Aivazian, Demirgüç-Kunt and Maksimovic (2001). The other coefficients of the remaining control variables are consistent with the results reported in Table III.

In sum, the use of a two-stage procedure to address the endogenous nature of a country's financial system does not change our findings in any material way.

7.0 CONCLUSION

In this paper, we argue that non-financial firms act as intermediaries channeling short-term funds from the financial institutions in an economy to the their greatest use. Non-financial firms act in this way because they may have a comparative advantage in exploiting informal means of ensuring that their borrowers to repay. This comparative advantage may arise because the lending firms are better informed about their customers' situation (as discussed by Biais and Gollier 1997, and Frank and Maksimovic 1998), because they can take advantage of product market imperfections (Brennan, Maksimovic and Zechner 1988), because in some cases the supplier incurs lower adverse selection costs in the financial markets (Frank and Maksimovic 1998), or because they can withhold supplies from their customers.

These considerations suggest that to optimally exploit their advantage in providing trade credit to some classes of borrowers, firms should, when this is efficient, obtain external financing from financial intermediaries and markets. Thus, the existence of a large banking system is consistent with these considerations.

Our empirical results show that firms in countries with large banking systems borrow more on credit from their suppliers and lend more to their customers. These results are particularly pronounced when the banking system has a low proportion of public ownership, and is therefore likely to be commercially efficient.

There is less reliance on trade credit when the country's legal system is efficient. This may occur because the comparative advantage of non-financial firms as intermediaries is likely to be smaller when there exist efficient formal mechanisms for extracting payment. Interestingly, in countries where there exist restrictions on banks' ability to hold ownership stakes in their borrowers, firms rely on trade credit.

Taken together, our results suggest that the development of informal credit arrangements between firms is complementary with the development of banking system that responds to commercial incentives, especially in countries in which the legal system is not efficient. Since the efficiency of a country's legal system is difficult to affect by policy means in the short-run, these results point to the importance of promoting the development of trade credit, even among the larger corporations in an economy.

Given trade credit is one of the important sources of financing for smaller firms, understanding determinants of trade credit and how it is related to the development of the financial system and the legal system also has important policy implications for the design of small and medium enterprise (SME) financing programs. Development institutions generally focus on helping local banks and financial intermediaries to provide financing to SMEs through directed credit programs - which has not been all that successful in the past. So one potential result of this work could be that perhaps large firms have a role to play in intermediating funds to smaller firms.

Several puzzling results remain, in particular regarding the role of the banking sector restrictions on the relative short-term borrowing by firms from financial intermediaries and their own suppliers. In particular, such restrictions lead to relatively more short-term borrowing from banks. Part of the explanation may be that in countries with banking restrictions, banks may substitute short-term for long-term financing, confounding our results. Similarly, in countries with efficient legal systems lenders may be willing to lend long-term, rather than providing relatively more short-term credit. Both of these interpretations are consistent with Demirgüç-Kunt and Maksimovic (1999).

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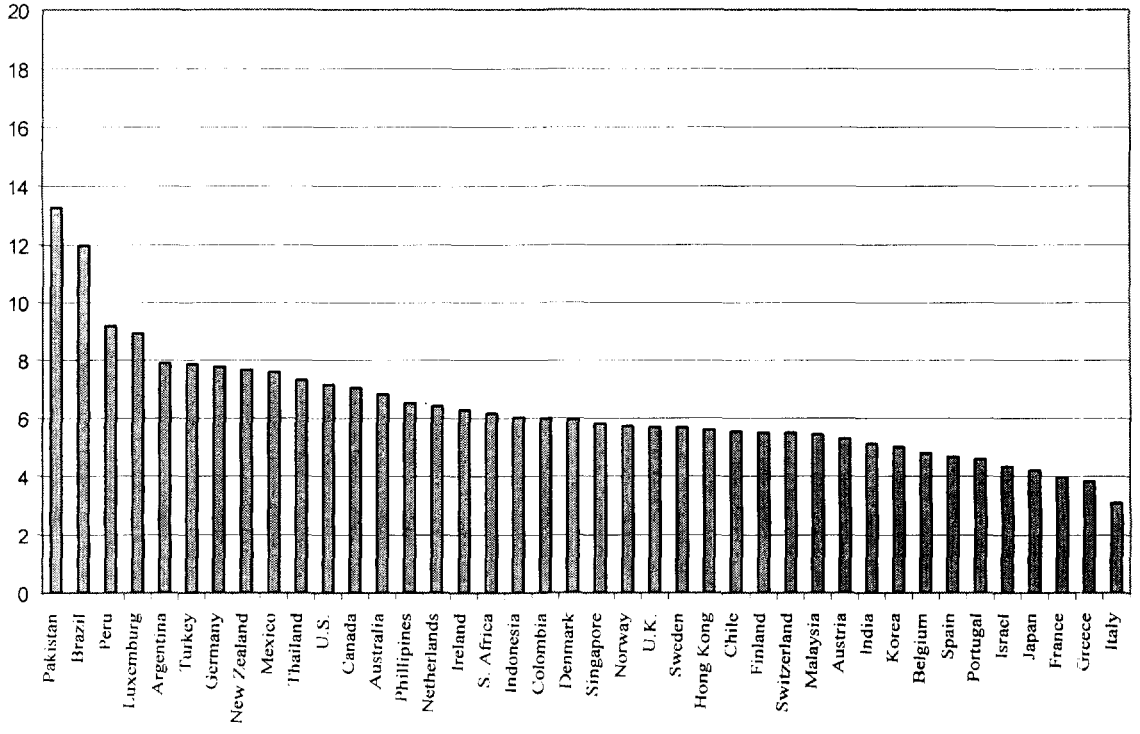

Figure 1. Receivables Turnover, RECTURN, is given by total sales divided by accounts receivable. The figure presents the average RECTURN values for firms in each country for 1989-1996. The countries are ordered by the value of the ratio.

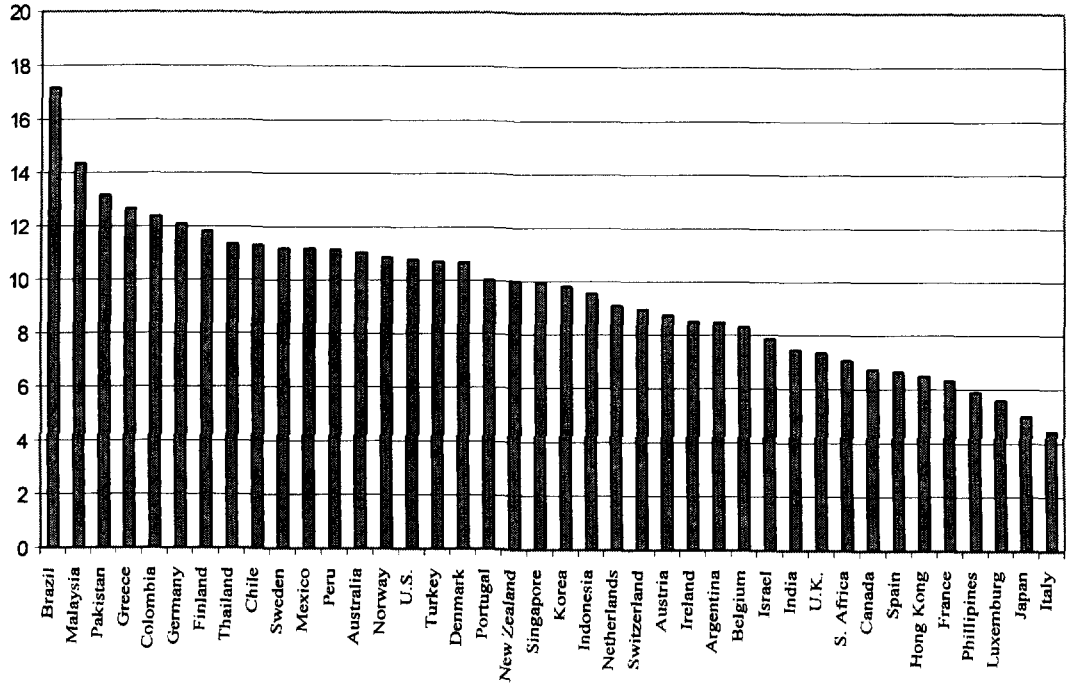

Figure 2. Payables Turnover, PAYTURN, is given by total sales divided by accounts payable. The figure presents the average PAYTURN values for firms in each country for 1989-1996. The countries are ordered by the value of the ratio.

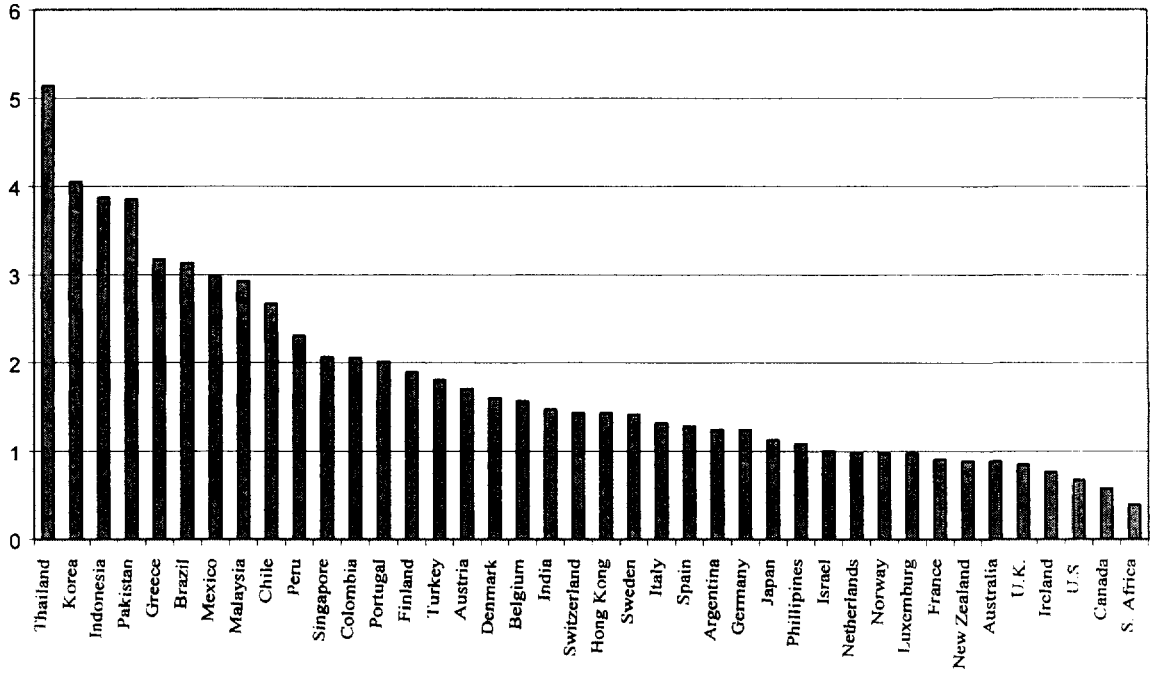

Figure 3. Short Term Debt to Accounts Payable. The figure presents the average short term debt to accounts payable ratios for firms in each country for 1989-1996. The countries are ordered by the value of the ratio.

Table I
Legal and Financial Indicators

GDP/CAP is the real GDP per capita in 1990 US$. INFLATION is the inflation rate of the GDP deflator. INFLATION is the inflation rate of the GDP deflator. $. PRIVATE/GDP is bank credit extended to the private sector divided by GDP. PUBLIC is percentage of assets of the 10 largest banks in each country owned by the government as a share of total assets of these banks. CONCENTRATION is the ratio of the three largest banks' assets to total banking sector assets. REST measures the ability of banks to own and control nonfinancial firms, calculated as in index in which 1 indicates "unrestricted," 2 indicates "permitted," 3 indicates "restricted," and 4 indicates "prohibited." LAW & ORDER, scored 1 to 6, is an indicator of the degree to which citizens of a country are able to utilize the existing legal system to mediate disputes and enforce contracts. Law and order indicator, produced by International Country Risk rating agency, reflects the degree to which the citizens of a country are willing to accept the established institutions to make and implement laws and adjudicate disputes. It is scored 0-6 with higher scores indicating sound political institutions and a strong court system. Lower scores indicate a tradition of depending on physical force or illegal means to settle claims. Common Law Dummy takes the value one for common law countries and the value zero for others. Values are 1989-96 averages where time-series observations are available.

	GDP/CAP (US $)	INF	PRVATE /GDP	PUBLIC	CONCENT.	REST.	LAW & ORDER	COMMON LAW DUMMMY
Argentina	3536	1.15	0.14	0.31	0.57	3	3.56	0
Australia	13627	0.04	0.65	0.00	0.67	2	6.00	1
Austria	17342	0.03	0.91	0.04	0.72	1	6.00	0
Belgium	16022	0.03	0.50	0.00	0.62	3	6.00	0
Brazil	2012	2.34	0.22	0.51	0.68	3	3.75	0
Canada	16149	0.03	0.53	0.00	0.58	3	6.00	1
Chile	2169	0.15	0.42	0.24	0.49	3	4.19	0
Colombia	1306	0.23	0.15	0.19	0.46	4	1.19	0
Denmark	21182	0.02	0.41	0.00	0.75	2	6.00	0
Finland	18223	0.03	0.83	0.41	0.86	1	6.00	0
France	17505	0.03	0.91	0.15	0.41	2	5.50	0
Germany	17403	0.03	0.90	0.43	0.44	1	5.75	0
Greece	5153	0.14	0.17	0.63	0.77	1	4.25	0
Hong Kong	9690	0.09	1.36	0.00	0.80	3	4.68	1
India	393	0.09	0.25	0.42	0.42	4	2.50	1
Indonesia	603	0.08	0.44	0.80	0.43	2	3.00	0
Ireland	11480	0.03	0.29	0.00	0.79	1	5.00	1
Israel	10088	0.11	0.61	.	0.80	1	3.31	1
Italy	14727	0.05	0.52	0.25	0.36	3	5.00	0
Japan	23372	0.02	1.17	0.00	0.21	3	5.44	0
Korea	4586	0.06	0.50	0.00	0.33	3	3.68	0
Malaysia	2614	0.04	0.68	0.10	0.54	2	3.68	1
Mexico	1800	0.18	0.21	0.42	0.59	3	3.00	0
Netherlands	16568	0.02	0.85	0.00	0.73	1	6.00	0
New Zealand	11226	0.03	0.68	0.00	0.77	2	6.00	1
Norway	21139	0.03	0.58	0.38	0.85	2	6.00	0
Pakistan	302	0.11	0.23	0.50	0.76	1	1.88	1
Peru	834	1.07	0.07	0.00	0.72	2	1.69	0
Philippines	603	0.10	0.23	0.20	0.46	3	2.13	0
Portugal	4619	0.08	0.52	0.17	0.45	2	5.18	0
S. Africa	2230	0.11	0.57	0.00	0.78	1	2.69	1
Singapore	11180	0.03	0.79	.	0.73	3	5.19	1
Spain	9323	0.05	0.68	0.02	0.46	1	4.98	0
Sweden	19436	0.05	0.49	0.00	0.89	3	6.00	0
Switzerland	27157	0.03	1.63	0.15	0.74	3	6.00	0
Thailand	1473	0.05	0.68	0.29	0.54	3	4.31	1
Turkey	1565	0.55	0.12	0.37	0.45	3	3.19	0
U.K.	12883	0.05	1.11	0.00	0.58	1	5.31	1
U.S.	19772	0.04	0.66	0.00	0.18	3	6.00	1

Table II
Summary Statistics and Correlations

Summary statistics and correlations are presented in Panel A and B of the table, respectively. N refers to firm level observations for 40 countries over the 1989-1996 period. The variables are defined as follows: RECTURN, receivables turnover, is given by total sales divided by accounts receivable. PAYTURN, payables turnover is given by the total cost of goods sold divided by accounts payable. NSNFA is the net sales divided by net fixed assets. ROE is return on earnings. SIZE is firm size given by total assets divided by GDP. GROWTH is the growth rate of the real GDP per capital. INFLATION is the inflation rate of the GDP deflator. GDP/CAP is real GDP per capita in thousands of US$. PRIVATE/GDP is bank credit extended to the private sector divided by GDP. PUBLIC is percentage of assets of the 10 largest banks in each country owned by the government as a share of total assets of these banks. CONCENTRATION is the ratio of the three largest banks' assets to total banking sector assets. REST measures the ability of banks to own and control nonfinancial firms, calculated as in index in which 1 indicates "unrestricted," 2 indicates "permitted," 3 indicates "restricted," and 4 indicates "prohibited." LAW & ORDER, scored 1 to 6, is an indicator of the degree to which citizens of a country are able to utilize the existing legal system to mediate disputes and enforce contracts. CREDITOR RIGHTS is an index that ranges from 0 to 4 and aggregates creditor rights in the following way: (1) the country imposes restrictions, such as creditors' consent or minimum dividends to file for reorganization; (2) secured creditors are able to gain possession of their security once the reorganization petition has been approved (no automatic stay); (3) secured creditors are ranked first in the distribution of the proceeds that result from the disposition of assets of a bankrupt firm; and (4) the debtor does not retain the administration of its property pending the resolution of the reorganization. COMMON- LAW DUMMY takes the value 1 for common law countries and the value zero for others. Detailed variable definitions and sources are given in the appendix.

Panel A: Summary Statistics

	N	Mean	Std Dev	Minimum	Maximum
RECTURN	27058	5.731	3.681	0.018	39.761
PAYTURN	27058	8.367	5.561	0.001	39.991
RATIO					
NSNFA	26949	5.165	22.685	0.007	2498.641
ROE	26461	0.067	0.162	-1.000	0.986
SIZE	26953	1.62×10^{-6}	7.70×10^{-6}	1.28×10^{-10}	.00045
GROWTH	26829	0.016	0.042	-0.688	0.320
INFLATION	27050	0.059	0.231	-0.001	3.555
GDP/CAP	26829	16.971	6.840	0.242	27.828
PRIVATE/GDP	26947	0.846	0.317	0.030	1.672
PUBLIC	26648	0.091	0.167	0	0.800
CONCENTRATION	25204	0.386	0.218	0.155	1
RESTRICTIONS	26855	2.417	0.882	1	4
LAW & ORDER					
CREDITOR RIGHTS	26996	2.019	1.171	0	4
COMMON LAW DUMMY	27058	0.424	0.494	0	1

Panel B: Correlation Matrix of Variables

	RECTURN	PAYTURN	RATIO	GDP/ CAP	GROWTH	INFL.	LAW & ORDER	PRIVATE/ GDP	COMMON	CREDITOR RIGHTS	REST	CONCENT	PUBLIC	SIZE	ROE
PAYTURN	.501[a]														
RATIO	-.125[a]	.123[a]													
GDP/CAP	-.097[a]	-.188[a]	-.148[a]												
GROWTH	-.078[a]	-.037[a]	.053[a]	-.155[a]											
INFl.	.144[a]	.122[a]	.072[a]	-.295[a]	-.027[a]										
LAW ORD	.073[a]	.036[a]	-.195[a]	.785[a]	-.193[a]	-.261[a]									
PRIV/GDP	-.173[a]	-.113[a]	-.013[a]	.586[a]	-.113[a]	-.249[a]	.335[a]								
COMMON	.268[a]	-.007	-.195[a]	-.263[a]	-.007[a]	-.059[a]	.027[a]	-.290[a]							
CRED. RTS.	-.011[c]	-.079[a]	.087[a]	-.392[a]	.079[a]	-.050[a]	-.383[a]	.169[a]	.149[a]						
REST.	-.092[a]	.135[a]	.019[a]	.256[a]	.135[a]	.047[a]	-.052[a]	-.151[a]	-.003	-.414[a]					
CONC	.078[a]	-.067[a]	.111[a]	-.452[a]	-.067[a]	.157[a]	-.192[a]	-.132[a]	-.045[a]	.334[a]	-.572[a]				
PUBLIC	.058[a]	.012[b]	.165[a]	-.490[a]	.012[b]	.268[a]	-.443[a]	-.344[a]	-.268[a]	.138[a]	-.232[a]	.306[a]			
SIZE	.020[a]	.022[a]	.086[a]	-.081[a]	.018[a]	.034[a]	-.034[a]	-.046[a]	-.069[a]	-.013[b]	-.048[a]	.204[a]	.077[a]		
ROE	.168[a]	.128[a]	-.138[a]	-.138[a]	.050[a]	-.004	-.095[a]	-.084[a]	.110[a]	.093[a]	-.074[a]	.083[a]	.052[a]	.024[a]	
NSNFA	.031[a]	.040[a]	-.041[a]	.016[a]	-.019[a]	-.014[b]	.034[a]	-.013[b]	.008	-.013[b]	-.025[a]	-.007	.020[a]	-.021[a]	.025[a]

[a], [b] and [c] stand for significance levels at 1, 5 and 10 percent, respectively.

Table III
Determinants of Trade Credit

Panel A: Receivables Turnover. The regression equation estimated is: RECTURN = ∀ + ∃$_1$ NSNFA + ∃$_2$ ROE +∃$_3$ SIZE +∃$_4$GROWTH + ∃$_5$ INFLATION + ∃$_6$GDP/CAP + ∃$_7$ PRIVATE/GDP + ∃$_8$ PUBLIC + ∃$_9$ CONCENTRATION + ∃$_{10}$ REST+ ∃$_{11}$ LAW & ORDER + ∃$_{12}$ CREDITOR RIGHTS + ∃$_{13}$ COMMON-LAW DUMMY + ,. Dependent variable, RECTURN, receivables turnover is the total sales divided by accounts receivable. NSNFA is the net sales divided by net fixed assets. ROE is return on earnings. SIZE is firm size given by total assets divided by GDP. GROWTH is the growth rate of the real GDP per capital. INFLATION is the inflation rate of the GDP deflator. GDP/CAP is real GDP per capita in thousands of US$. PRIVATE/GDP is bank credit extended to the private sector divided by GDP. PUBLIC is percentage of assets of the 10 largest banks in each country owned by the government as a share of total assets of these banks. CONCENTRATION is the ratio of the three largest banks' assets to total banking sector assets. REST measures the ability of banks to own and control nonfinancial firms, calculated as in index in which 1 indicates "unrestricted," 2 indicates "permitted," 3 indicates "restricted," and 4 indicates "prohibited." LAW & ORDER, scored 1 to 6, is an indicator of the degree to which citizens of a country are able to utilize the existing legal system to mediate disputes and enforce contracts. CREDITOR RIGHTS is an index that ranges from 0 to 4 and aggregates creditor rights in the following way: (1) the country imposes restrictions, such as creditors' consent or minimum dividends to file for reorganization; (2) secured creditors are able to gain possession of their security once the reorganization petition has been approved (no automatic stay); (3) secured creditors are ranked first in the distribution of the proceeds that result from the disposition of assets of a bankrupt firm; and (4) the debtor does not retain the administration of its property pending the resolution of the reorganization. COMMON- LAW DUMMY takes the value 1 for common law countries and the value zero for others. First two columns report large firm results and the last two small firm results. Large vs. small split is based on the median value of firm sales. For each group the first regressions are estimated using firm level pooled data over the 1989-1996 period using firm and year random effects. Log transformation of the dependent variable is taken in all specifications. Specifications (2) and (4) are estimated using cross-sectional firm level data averaged over the sample period. Standard errors are given in parentheses. Detailed variable definitions and sources are given in the appendix.

	Large Firms		Small Firms	
	(1)	(2)	(3)	(4)
NSNFA	.001***	.000	.000	.000
	(.000)	(.000)	(.000)	(.000)
ROE	.201***	.597***	.276***	.577***
	(.015)	(.072)	(.015)	(.056)
SIZE	.000	.003**	.091***	.166***
	(.001)	(.001)	(.018)	(.024)
GROWTH	-.143***	-2.723***	-.029	-2.072***
	(.044)	(.384)	(.053)	(.329)
INFLATION	.274***	.367***	.277***	.337***
	(.016)	(.044)	(.021)	(.042)
GDP/CAP	.012***	-.000	.008***	.010**
	(.002)	(.004)	(.003)	(.004)
Banking variables:				
PRIVATE/GDP	-.330***	-.255***	-.269***	-.257***
	(.030)	(.045)	(.034)	(.048)
PUBLIC	.291***	.196***	.435***	.430***
	(.066)	(.067)	(.068)	(.070)
CONCENTRATION	.058**	-.143**	.000	-.066
	(.026)	(.062)	(.031)	(.064)
REST.	-.080***	-.051***	-.063***	-.046***
	(.013)	(.016)	(.013)	(.016)
Legal variables:				
LAW & ORDER	.043***	.087***	.087***	.084***
	(.017)	(.022)	(0.18)	(.023)
CREDITOR RIGHTS	-.022**	-.008	.005	.022**
	(.010)	(.010)	(.010)	(.011)
COMMON-LAW DUMMY	.320***	.254***	.303***	.303***
	(.022)	(.025)	(.023)	(.026)
R^2	.19	.20	.18	.19
No. of firms	2,935	2,939	2,957	2,962
No. of Observations	12,465	2,939	11,482	2,962

*, ** and *** indicate significance levels of 10, 5 and 1 percent respectively.

Panel B: Payables Turnover. The regression equation estimated is: PAYTURN = ∀ + ∃$_1$ NSNFA + ∃$_2$ ROE +∃$_3$ SIZE +∃$_4$GROWTH + ∃$_5$ INFLATION + ∃$_6$GDP/CAP + ∃$_7$ PRIVATE/GDP + ∃$_8$ PUBLIC + ∃$_9$ CONCENTRATION + ∃$_{10}$ REST+ ∃$_{11}$ LAW & ORDER + ∃$_{12}$ CREDITOR RIGHTS + ∃$_{13}$ COMMON-LAW DUMMY + ,. Dependent variable, PAYTURN, payables turnover is the total costs of goods sold divided by accounts payable. NSNFA is the net sales divided by net fixed assets. ROE is return on earnings. SIZE is firm size given by total assets divided by GDP. GROWTH is the growth rate of the real GDP per capital. INFLATION is the inflation rate of the GDP deflator. GDP/CAP is real GDP per capita in thousands of US$. PRIVATE/GDP is bank credit extended to the private sector divided by GDP. PUBLIC is percentage of assets of the 10 largest banks in each country owned by the government as a share of total assets of these banks. CONCENTRATION is the ratio of the three largest banks' assets to total banking sector assets. REST measures the ability of banks to own and control nonfinancial firms, calculated as in index in which 1 indicates "unrestricted," 2 indicates "permitted," 3 indicates "restricted," and 4 indicates "prohibited." LAW & ORDER, scored 1 to 6, is an indicator of the degree to which citizens of a country are able to utilize the existing legal system to mediate disputes and enforce contracts. *CREDITOR RIGHTS* is an index that ranges from 0 to 4 and aggregates creditor rights in the following way: *(1)* the country imposes restrictions, such as creditors' consent or minimum dividends to file for reorganization; (2) secured creditors are able to gain possession of their security once the reorganization petition has been approved (no automatic stay); (3) secured creditors are ranked first in the distribution of the proceeds that result from the disposition of assets of a bankrupt firm; and (4) the debtor does not retain the administration of its property pending the resolution of the reorganization. COMMON- LAW DUMMY takes the value 1 for common law countries and the value zero for others. First two columns report large firm results and the last two small firm results. Large vs. small split is based on the median value of firm sales. For each group the first regressions are estimated using firm level pooled data over the 1989-1996 period using firm and year random effects. Log transformation of the dependent variable is taken in all specifications. Specifications (2) and (4) are estimated using cross-sectional firm level data averaged over the sample period. Standard errors are given in parentheses. Detailed variable definitions and sources are given in the appendix.

	Large Firms		Small Firms	
	(1)	(2)	(3)	(4)
NSNFA	.002***	.001***	.000*	.000
	(.000)	(.000)	(.000)	(.000)
ROE	.041**	.321***	.162***	.843***
	(.019)	(.079)	(.019)	(.066)
SIZE	.001	.002	.095***	.164***
	(.001)	(.001)	(.022)	(.029)
GROWTH	-.094*	.248	-.224***	-1.325***
	(.057)	(.424)	(.068)	(.385)
INFLATION	.181***	.275***	.165***	.207***
	(.021)	(.049)	(.026)	(.049)
GDP/CAP	-.015***	-.011***	-.009***	-.004
	(.002)	(.004)	(.003)	(.004)
Banking variables:				
PRIVATE/GDP	-.319***	-.408***	-.328***	-.476***
	(.036)	(.049)	(.042)	(.056)
PUBLIC	.507***	.430***	.770***	.664***
	(.073)	(.074)	(.081)	(.082)
CONCENTRATION	-.080***	.014	.020	.080
	(.033)	(.068)	(.039)	(.076)
REST.	-.078***	-.076***	-.057***	-.045**
	(.014)	(.018)	(.016)	(.019)
Legal variables:				
LAW & ORDER	.181***	.189***	.184***	.187***
	(.019)	(.025)	(.022)	(.027)
CREDITOR	-.024**	-.017	-.022*	.003
RIGHTS	(.011)	(.012)	(.012)	(.013)
COMMON-LAW	.224***	.206***	.184***	.158***
DUMMY	(.024)	(.028)	(.028)	(.031)
R^2	.23	.21	.22	.22
No. of firms	2,935	2,939	2,957	2,962
No. of Observations	12,465	2,939	11,482	2,962

*, ** and *** indicate significance levels of 10, 5 and 1 percent respectively.

Panel C: Short Term Debt to Accounts Payable. The regression equation estimated is RATIO = $\forall$ + $\exists_1$ NSNFA + $\exists_2$ ROE +$\exists_3$ SIZE +$\exists_4$GROWTH + $\exists_5$ INFLATION + $\exists_6$GDP/CAP + $\exists_7$ PRIVATE/GDP + $\exists_8$ PUBLIC + $\exists_9$ CONCENTRATION + $\exists_{10}$ REST+ $\exists_{11}$ LAW & ORDER + $\exists_{12}$ CREDITOR RIGHTS + $\exists_{13}$ COMMON-LAW DUMMY + ,. Dependent variable RATIO is the ratio of short term debt to accounts payable. NSNFA is the net sales divided by net fixed assets. ROE is return on earnings. SIZE is firm size given by total assets divided by GDP. GROWTH is the growth rate of the real GDP per capital. INFLATION is the inflation rate of the GDP deflator. GDP/CAP is real GDP per capita in thousands of US$. PRIVATE/GDP is bank credit extended to the private sector divided by GDP. PUBLIC is percentage of assets of the 10 largest banks in each country owned by the government as a share of total assets of these banks. CONCENTRATION is the ratio of the three largest banks' assets to total banking sector assets. REST measures the ability of banks to own and control nonfinancial firms, calculated as in index in which 1 indicates "unrestricted," 2 indicates "permitted," 3 indicates "restricted," and 4 indicates "prohibited." LAW & ORDER, scored 1 to 6, is an indicator of the degree to which citizens of a country are able to utilize the existing legal system to mediate disputes and enforce contracts. CREDITOR RIGHTS is an index that ranges from 0 to 4 and aggregates creditor rights in the following way: (1) the country imposes restrictions, such as creditors' consent or minimum dividends to file for reorganization; (2) secured creditors are able to gain possession of their security once the reorganization petition has been approved (no automatic stay); (3) secured creditors are ranked first in the distribution of the proceeds that result from the disposition of assets of a bankrupt firm; and (4) the debtor does not retain the administration of its property pending the resolution of the reorganization. COMMON- LAW DUMMY takes the value 1 for common law countries and the value zero for others. For each group the first regressions are estimated using firm level pooled data over the 1989-1996 period using firm and year random effects. Log transformation of the dependent variable is taken in all specifications. Specifications (2) and (4) are estimated using cross-sectional firm level data averaged over the sample period. Standard errors are given in parentheses. Detailed variable definitions and sources are given in the appendix.

	Large Firms		Small Firms	
	(1)	**(2)**	**(3)**	**(4)**
NSNFA	-.001	.000	-.001*	-.001
	(.001)	(.001)	(.001)	(.00.)
ROE	-.847***	-1.837***	-.861***	-1.567***
	(.071)	(.206)	(.067)	(.155)
SIZE	.020***	.017***	.259***	.165***
	(.003)	(.003)	(.059)	(.068)
GROWTH	-.755***	2.685***	-.395*	.788
	(.218)	(1.089)	(.248)	(1.036)
INFLATION	-.147**	-.015	-.192***	-.217**
	(.018)	(.124)	(.079)	(.114)
GDP/CAP	-.082***	-.069***	-.051***	-.051***
	(.007)	(.011)	(.008)	(.01.)
Banking variables:				
PRIVATE/GDP	.660***	.530***	.459***	.382***
	(.105)	(.126)	(.112)	(.130)
PUBLIC	.166	.205	.700***	.641***
	(.188)	(.190)	(.191)	(.191)
CONCENTRATION	.183*	.463***	.355***	.384**
	(.112)	(.175)	(.122)	(.177)
REST.	.324***	.275***	.267***	.226***
	(.038)	(.045)	(.039)	(.045)
Legal variables:				
LAW & ORDER	.123**	.100*	.065	.032
	(.054)	(.063)	(.056)	(.063)
CREDITOR RIGHTS	.073***	.067**	.135***	.130***
	(.028)	(.029)	(.029)	(.030)
COMMON-LAW DUMMY	-.736***	-.634***	-.658***	-.643***
	(.064)	(.071)	(.068)	(.072)
R^2	.13	.17	.12	.17
No. of firms	2,870	2,879	2,798	2,808
No. of Observations	11,902	2,879	10,326	2,808

*, ** and *** indicate significance levels of 10, 5 and 1 percent respectively.

Table IV
Sensitivity Analysis

The regression equation estimated is: D= $\forall$ + $\exists_1$ NSNFA + $\exists_2$ ROE +$\exists_3$ SIZE +$\exists_4$GROWTH + $\exists_5$ INFLATION + $\exists_6$GDP/CAP + $\exists_7$ PRIVATE/GDP + $\exists_8$ PUBLIC + $\exists_9$ CONCENTRATION + $\exists_{10}$ REST+ $\exists_{11}$ LAW & ORDER + $\exists_{12}$ CREDITOR RIGHTS + $\exists_{13}$ COMMON-LAW DUMMY + ,. Dependent variable, D, is RECTURN, receivables turnover, PAYTURN, payables turnover, or RATIO, respectively in the three regressions reported in each panel. Log transformations of all dependent variables are taken. NSNFA is the net sales divided by net fixed assets. ROE is return on earnings. SIZE is firm size given by total assets divided by GDP. GROWTH is the growth rate of the real GDP per capital. INFLATION is the inflation rate of the GDP deflator. GDP/CAP is real GDP per capita in thousands of US$. PRIVATE/GDP is bank credit extended to the private sector divided by GDP. PUBLIC is percentage of assets of the 10 largest banks in each country owned by the government as a share of total assets of these banks. CONCENTRATION is the ratio of the three largest banks' assets to total banking sector assets. REST measures the ability of banks to own and control nonfinancial firms, calculated as in index in which 1 indicates "unrestricted," 2 indicates "permitted," 3 indicates "restricted," and 4 indicates "prohibited." LAW & ORDER, scored 1 to 6, is an indicator of the degree to which citizens of a country are able to utilize the existing legal system to mediate disputes and enforce contracts. CREDITOR RIGHTS is an index that ranges from 0 to 4 and aggregates creditor rights in the following way: (1) the country imposes restrictions, such as creditors' consent or minimum dividends to file for reorganization; (2) secured creditors are able to gain possession of their security once the reorganization petition has been approved (no automatic stay); (3) secured creditors are ranked first in the distribution of the proceeds that result from the disposition of assets of a bankrupt firm; and (4) the debtor does not retain the administration of its property pending the resolution of the reorganization. COMMON- LAW DUMMY takes the value 1 for common law countries and the value zero for others. In the regressions PRIVATE/GDP is replaced by its predicted value from the regression PRIVATE/GDP= $\forall$ + $\exists_1$GROWTH + $\exists_2$ INFLATION + $\exists_3$ GDP/CAP + $\exists_4$ LAW & ORDER + $\exists_5$ CREDITOR RIGHTS + $\exists_6$ COMMON-LAW DUMMY + , .The regressions are estimated --for large and small firms separately --using firm level pooled data over the 1989-1996 period with firm and year random effects. Large vs. small split is based on the median value of firm sales. Log transformation of the dependent variable is taken in all specifications. Standard errors are given in parentheses. Detailed variable definitions and sources are given in the appendix.

PANEL A: Large Firms

	RECTURN	PAYTURN	RATIO
NSNFA	.002***	.002***	-.001
	(.000)	(.000)	(.001)
ROE	.207***	.047***	-.871***
	(.015)	(.019)	(.071)
SIZE	.000	.000	.021***
	(.001)	(.001)	(.003)
GROWTH	-.154***	-.096*	-.745***
	(.045)	(.058)	(.217)
INFLATION	.221***	.131***	-.025
	(.018)	(.023)	(.077)
GDP/CAP	.031***	.001	-.115***
	(.004)	(.004)	(.013)
Banking variables:			
PRIVATE/GDP	-.929***	-.922***	2.163***
	(.148)	(.164)	(.416)
PUBLIC	.477***	.672***	-.127
	(.064)	(.071)	(.182)
CONCENTRATION	.089***	-.052*	.099
	(.026)	(.033)	(.112)
REST.	-.063***	-.058***	.265***
	(.013)	(.014)	(.037)
Legal variables:			
LAW & ORDER	.042***	.190***	.056
	(.016)	(.018)	(.051)
COMMON-LAW DUMMY	.386***	.278***	-.817***
	(.021)	(.023)	(.062)
R^2	.17	.21	.13
No. of firms	2,923	2,923	2,870
No. of Observations	12,430	12,430	11,943

*, ** and *** indicate significance levels of 10, 5 and 1 percent respectively.

PANEL B: Small Firms

	RECTURN	PAYTURN	RATIO
NSNFA	.000	.000**	-.001**
	(.000)	(.000)	(.001)
ROE	.279***	.166***	-.874***
	(.015)	(.019)	(.067)
SIZE	.101***	.110***	.268***
	(.018)	(.022)	(.058)
GROWTH	-.005	-.228***	-.364
	(.054)	(.069)	(.247)
INFLATION	.252***	.109***	-.029
	(.023)	(.028)	(.085)
GDP/CAP	.014***	.007	-.103***
	(.005)	(.005)	(.013)
Banking variables:			
PRIVATE/GDP	-.403***	-.935***	2.788***
	(.152)	(.181)	(.419)
PUBLIC	.579***	.949***	.483***
	(.066)	(.079)	(.183)
CONCENTRATION	.030	.046	.290***
	(.031)	(.039)	(.121)
REST.	-.048***	-.036**	.218***
	(.013)	(.016)	(.038)
Legal variables:			
LAW & ORDER	.082***	.192***	-.031
	(.017)	(.021)	(.052)
COMMON-LAW DUMMY	.359***	.242***	-.689***
	(.022)	(.027)	(.065)
R^2	.17	.20	.12
No. of firms	2,948	2,948	2,800
No. of Observations	11,421	11,421	10,364

*, ** and *** indicate significance levels of 10, 5 and 1 percent respectively.

Variable Definitions and Sources

CONCENTRATION:	The ratio of the three largest banks' assets to total banking sector assets, Growth rate of real per capita GDP, average over 1990-97 period and using data from Beck, Demirgüç-Kunt, and Levine (1999)
PUBLIC:	Percentage of assets of the 10 largest banks in each country owned by the government as a share of total assets of these banks, calculated using data from La Porta, Lopez-Silanes, and Schleifer (1999)
RESTRICTIONS	measures the ability of banks to own and control nonfinancial firms, calculated as in index in which 1 indicates "unrestricted," 2 indicates "permitted," 3 indicates "restricted," and 4 indicates "prohibited." Obtained from Barth, Caprio and Levine (1999).
PRIVATE/GDP	PRIVATE/GDP Demirgüç-Kunt and Levine (2000).
LAW &ORDER	LAW & ORDER, scored 1 to 6, is an indicator of the degree to which citizens of a country are able to utilize the existing legal system to mediate disputes and enforce contracts. Lower scores indicate a tradition of depending on physical force or illegal means to settle claims. Higher scores indicate sound political institutions and a strong court system. It is produced by the International Country Risk Rating Agency.
CREDITOR RIGHTS	is an index that ranges from 0 to 4 and aggregates creditor rights in the following way: (1) the country imposes restrictions, such as creditors' consent or minimum dividends to file for reorganization; (2) secured creditors are able to gain possession of their security once the reorganization petition has been approved (no automatic stay); (3) secured creditors are ranked first in the distribution of the proceeds that result from the disposition of assets of a bankrupt firm; and (4) the debtor does not retain the administration of its property pending the resolution of the reorganization. It is from Laporta, Lopez-De-Silanes, Shleifer and Vishny (1998).
COMMON LAW DUMMY	takes the value 1 for common law countries and the value zero for others. It is based on the information in Laporta, Lopez-De-Silanes, Shleifer and Vishny (1998).
GROWTH	is the growth rate of the real GDP per capital.it is calculated as the log difference of GDP/CAP. Source: World Development Indicators (WDI)
GDP/CAP	is real GDP per capita in thousands of US$. Source: WDI
INFLATION	is the inflation rate of the GDP deflator. Source: International Financial Statistics (IFS)

The following firm-level variables are obtained from World Scope:

PAYTURN	payables turnover, given by the total cost of goods sold divided by the mean of the accounts payable at the beginning and at the end of the period
RECTURN	receivables turnover, given by the total sales divided by the mean of the accounts receivable at the beginning and at the end of the period

RATIO	is given by short-term debt divided by accounts payable.
NSNFA	net sales divided by net fixed assets
ROE	return on earnings
SIZE	firm size is given by total assets divided by GDP. Nominal GDP in local currency is from IFS.

World Scope data were screened for potential data errors as follows: For each country we calculated the 5^{th} and 95^{th} percentile of the variables above. A firm was dropped if any of the variables was not in a interval around the country's mean for that variable. The interval's value is siz times the difference between the 95^{th} and 5^{th} percentile values of the variable for the specific country.

The sample was trimmed for outliers. Firms were dropped if PAYTURN and RECTURN exceeded 40, or if RATIO exceeded 30. The sample 99^{th} percentile values of the three variables are 44, 26, and 27, respectively.

The sample composition is given in Table A1. The number of firms in the sample does not always equal the number of observations used to estimate the regressions. Firms are dropped from regressions equations when a required firm-level or country-level variable is missing. In addition, a small number of firms switches from being classified as "small" to being classified as "big," or vice-versa, over the sample period. Such firms appear in both of the size-classified samples for the appropriate period.

Table AI

Sample Composition

The Table shows the composition of firms remaining in the sample after the outliers were trimmed.

COUNTRY	NUMBER OF FIRMS	COUNTRY	NUMBER OF FIRMS
Argentina	14	Japan	1164
Australia	50	Korea	143
Austria	53	Malaysia	136
Belgium	43	Mexico	40
Brazil	86	Netherlands	89
Canada	151	New Zealand	15
Chile	30	Norway	45
Colombia	10	Pakistan	52
Denmark	84	Peru	16
Finland	57	Philippines	28
France	308	Portugal	33
Germany	326	S. Africa	55
Greece	52	Singapore	63
Hong Kong	99	Spain	56
India	252	Sweden	87
Indonesia	67	Switzerland	89
Ireland	12	Thailand	109
Israel	20	Turkey	32
Italy	110	U.K.	547
		U.S.	1393

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