
The Role of Long-Term Finance: Theory and Evidence

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Improving the supply of long-term credit to industrial firms is considered a priority for growth in developing countries. A World Bank multicountry study looks at whether a long-term credit shortage exists and, if so, whether it has had an impact on investment, productivity, and growth. The study finds that even after controlling for the characteristics of individual firms, businesses in developing countries use significantly less long-term debt than their counterparts in industrial countries. Researchers are able to explain the difference in debt composition between industrial and developing countries by firm characteristics; by macroeconomic factors; and, most importantly, by financial development, government subsidies, and legal and institutional factors.

The analysis concludes that long-term finance tends to be associated with higher productivity. An active stock market and an ability to enter into long-term contracts also allow firms to grow at faster rates than they could attain by relying on internal sources of funds and short-term credit alone. Importantly, although government-subsidized credit markets have increased the long-term indebtedness of firms, there is no evidence that these subsidies are associated with the ability of firms to grow faster. Indeed, in some cases subsidies are associated with lower productivity.

The popular view holds that financial markets in developing economies are highly imperfect and, in particular, that the alleged scarcity of long-term finance is a key impediment to greater investment and growth. Indeed, a significant part of the lending by the World Bank and other multilateral development banks is aimed at correcting for the dearth of long-term credit through the creation and encouragement of development finance institutions (DFIs) that could lend funds through loans from financial intermediaries and commercial banks, and recently through guarantees that lengthen the maturity of loans. Yet a recent strand of the finance literature has been studying the forces that determine the maturity structure of a firm's debt (Berglof and von Thadden 1993; Diamond 1991, 1993; Rajan 1992). In those models

long-term debt is not necessary for acquiring physical capital and may depress a firm's performance. These analysts would view policy-induced changes in the term structure of finance generally—if not uniformly—with great skepticism.

Notwithstanding the difference of views, attempts to cure the alleged scarcity of long-term credit in developing countries have been plentiful and expensive. By the early 1980s many DFIs were experiencing significant portfolio problems. A 1974 World Bank study of delinquency rates in agricultural lending institutions reported that the average arrears rate was 41 percent. A 1983 report indicated that 39 percent of all DFIs had serious portfolio problems, while another 53 percent faced moderate problems, many of which became more severe in the late 1980s and resulted in a wave of failures by DFIs (Siraj 1983).

Furthermore, in many cases, long-term directed credit failed to reach the intended beneficiaries (Atiyas 1991; World Bank 1989). Once these directed credit programs were established, governments found it politically difficult to reduce support for them, regardless of their cost and inefficiency. Prompted by these problems, the World Bank adopted new guidelines governing lending to DFIs, and World Bank loans to these institutions dropped dramatically, from 11 percent of new credits in fiscal 1989 to only 2.4 percent in fiscal 1993. Controversy continues, however, and both the World Bank and the development community at large are reevaluating mechanisms aimed at increasing the availability of long-term finance or lessening the constraints imposed by its absence.

Although aggregate data and anecdotal evidence suggest that there is less long-term credit in developing countries, even in those countries with low or moderate inflation rates, until recently no attempts had been made to examine the evidence more systematically to see if the scarcity merely reflected the characteristics of firms in poorer economies. This lacuna was understandable even five years ago, because the data were not available. Recently, however, this gap has been filled, first by the availability of data in emerging markets for the top tier of firms listed on stock exchanges, and second by various surveys of listed (and unlisted) firms in selected countries whose governments have sought to understand the impact of a variety of policies. Armed with this data, a number of studies have appeared in the last year, and answers are now available to fill an important gap in our knowledge.

Financing Decisions and Debt Maturity

What does it mean to say that long-term credit is scarce? Typically this question has been answered by asking firms to identify the important constraints on their operations; credit—usually long-term credit—regularly is at or near the top of the list. This approach is unsatisfactory, however, not least because it is unclear what the respondents imagine they will pay for credit. Moreover, it is unclear under what type

of financial system they would be able to obtain short- or long-term credit. Even the most advanced financial system will find some borrowers uncreditworthy or will lend them much less than they might desire or at higher interest rates than they would like. In the case of riskier firms, loans at average market rates are attractive precisely because they convey a subsidy in the form of a lower risk premium than the market would grant them. Whenever the lack of long-term credit constrains many firms from expanding, there are three potential sources of the credit constraints: first, macroeconomic factors that limit supply; second, institutional factors that are specific to the financial sector (often dubbed market imperfections); and third, the characteristics of the firms, or classes of firms, in the country.

One way to interpret scarcity then is by relative access to credit. That is, there is scarcity to the extent that developing country firms find it more difficult to borrow money than do similar firms in industrial countries. In this relative sense, if there is a scarcity, there may be a potential correction. To be sure, any correction may be difficult. For example, it is argued (and confirmed below) that a leading cause for the absence of long-term finance is high inflation and unstable macroeconomic policies. Attempts to increase the supply of long-term credit without addressing the inflation problem could easily prove to be short-lived or costly. Similarly, high real interest rates may reduce the effective demand for credit. Entrepreneurs will say they want more credit, but not at the market price. If the yield curve is upward sloping (meaning that long-term interest rates are higher than short-term rates), the demand for long-term credit will tend to suffer most. Again, addressing the factors that account for high real interest rates may in the long run be more useful than attempts to force banks to make longer-term commitments (Brock 1995). In the 1980s Chile succeeded both in tackling the factors underlying high real rates (an overvalued exchange rate and insolvent banks) and, by moving to a fully funded pension system, in creating a natural source of long-term finance without interfering in credit and investment decisions. The studies reviewed here finesse this issue by limiting the study to countries with relatively stable macroeconomic environments.

Institutional factors generally affect borrowers only until funds are disbursed but are crucial during all phases of a credit relationship for providers of funds, who are concerned about the return on their investment. Diamond (1991) points out that banks use short-term credit as a way to control borrowers and that they tend to use this instrument more frequently in cases in which the financial infrastructure is underdeveloped. Thus if information systems or contract enforcement mechanisms are absent, or accounting and auditing techniques are not adequate, lenders will be unwilling to enter into long-term loans. Ignoring this deficiency and establishing government banks for long-term credit is faster, cheaper, and less difficult than trying to address the information or contract enforcement problems, but government banks will have to cope with the same issues and may have additional incentive problems as well.

Finally, the maturity structure differs within an economy depending on the characteristics of domestic firms. Below we review the importance of these firm-specific factors that affect access to long-term finance.

Access within Countries: The Relevance of Firm Characteristics

In the aftermath of the seminal Modigliani-Miller (1958) article, which found that the value of a firm was not affected by its mix of financing, the study of financing choices initially received little attention. As economists and finance experts have renounced the simplifying assumptions of this classic framework, however, they have developed a literature on the maturity structure of firm financing, stressing the different roles played by long- and short-term finance. This literature emphasizes that short-term debt has three effects: it permits loans to be repriced to reflect new information; it increases efficiency by allowing uneconomic projects to be terminated; and it gives managers and owners strong incentives to avoid bad outcomes. In contrast, long-term debt protects the firm from liquidation by imperfectly informed creditors and prevents opportunistic creditors from using the threat of liquidation to expropriate the profits of healthy firms.

Several factors determine the optimal mix of long- and short-term debt. These include the firm's credit rating, its portfolio of growth opportunities, the profitability of the project, the ability to fund the project through retained earnings, the liquidation value of the assets, the perceived accuracy of financial information, the firm's size and age, and the level of banking competition. Valuable assets that can serve as collateral ease borrowing constraints considerably. According to Myers (1977) firms can also use their "growth opportunities" as collateral. Firms whose principal asset is the present value of growth opportunities may not be able to borrow that easily, however, because the owner-managers have greater opportunities to divert resources for their own use. As Myers notes, the firm can limit this problem by carrying less debt, by including restrictive covenants in its debt contracts, or by borrowing more short-term debt (which permits the creditors to detect opportunistic behavior relatively quickly). In developing countries, one might expect to find more firms relying on growth opportunities, so this diversion problem could be significant. Moreover, since it is difficult in lower-income countries both to sell shares of stock (one way to lower debt-equity ratios) and to enforce contracts (because regulatory mechanisms are typically less developed), businesses can be expected to use more short-term debt. By sequencing a series of short-term loans, bankers retain control over their clients because the option to discontinue rolling over these loans is easier to exercise and is a more credible near-term threat.

Hart and Moore (1995) find that the faster the returns to investment are realized, the shorter the optimal payment structure will be. Empirically, this suggests a particular relationship among the maturity of debt, purpose of the loan, and the nature

of the firm's assets. Long-term loans are usually used to acquire fixed assets, equipment, and the like. Short-term loans, on the other hand, tend to be used for working capital, such as payroll, inventory, and seasonal imbalances. Collateral usually consists of such things as inventories or accounts receivable. In other words, firms will tend to match the maturity of their assets and liabilities; only firms with long-term assets will tend to have a longer debt maturity structure. If this tendency is born out in developing country experience, it suggests that the most effective way to deal with the market allocation of credit is to take account of the structure of the firms' assets. A program to extend long-term credit to firms with short-term assets may not be welcomed, as it is inconsistent with the desire to balance the maturity of assets and liabilities.

The size of the firm is another key variable. Indeed, the desire to get more credit—particularly long-term credit—to small firms is a justification for a number of credit market interventions. In general there tends to be less information about small firms, not only because they are new, but also because such information is costly to obtain. Thus, even in the most developed financial systems, small- and medium-size enterprises tend to get a larger part of their external financing from banks. Banks overcome some information problems by developing long-term relationships with smaller firms.

The point is that firms in developing countries may have less long-term debt than firms in developed countries simply because they have different characteristics rather than because of deficiencies in credit markets. Moreover, comparisons of debt maturity structures in different countries are more likely to be informative if researchers control for these parameters.

Although numerous empirical papers test the implications of capital structure models, attention has turned only recently to empirical determinants of debt maturity (see Harris and Raviv 1990 for a review of the literature). Titman and Wessels (1988) find that highly leveraged firms tend to issue more long-term and short-term debt but that the mix varies according to the firm's characteristics. Barclay and Smith (1995) report that large firms as well as those that have few growth options have more long-term debt, a finding confirmed by Stohs and Mauer (1996), who note that larger, less risky firms with longer-term asset maturities use longer-term debt.

In these studies, based on U.S. data, the link that stands up most clearly is the matching of firm assets and liabilities. This finding is quite robust in Italy and the United Kingdom (Schiantarelli and Srivastava 1996), where it is also clear that firms with higher profits have access to more long-term credit. World Bank research using developing country data generally confirmed these results. Maturity matching also is evident in Colombia (Calomiris, Halouva, and Ospina 1996), India (Schiantarelli and Sembenelli 1996), and Ecuador (Jaramillo and Schiantarelli 1996). If maturity matching represents a tendency in both industrial and developing country markets, attempts to stimulate long-term finance may prove to be excessive; firms may take

on long-term debt only if it fits their balance sheet structure, and perhaps only if long-term debt is subsidized, meaning that they can take advantage of a lower risk premium than is available from the market. These country studies confirmed that where financial markets are free from government intervention, they provide more long-term finance to better quality firms, and attempt to monitor lower quality firms more closely by using short-term debt.

The government's decision to intervene in credit markets should depend on the link between long-term credit and the firm's performance as well as on equity considerations. Lack of collateral as well as the age of the business may be factors where small firms find it difficult to obtain long-term credit, as in Ecuador, where only 11 percent of very small firms and 17 percent of small firms reported long-term debt every year (1984–88). Larger firms in Ecuador tended to be more profitable, suggesting that the allocation of credit favored firms with better balance sheets. The allocation could also reflect the economic and political power of such firms. A more disturbing aspect was that, regardless of the size of the firm, the amount of long-term credit obtained was unrelated to past profits. Whether this reflects a market failure, the limits of banking (bankers can pick the class or industry, but not individual winners and losers), or excessive intervention (a substantial portion of the debt was subsidized) is not clear.

Access across Countries: The Relevance of Institutional Factors

Financial theory suggests that a major factor in the choice of capital structure is the cost of contracting between firms and their providers of capital. It is the institutions in the economy—legal or financial—that facilitate monitoring and enforcement of financial contracts.

For example, when the legal system is costly or inefficient, short-term debt is more attractive than long-term debt (Hart and Moore 1995; Bolton and Scharfstein 1993). Diamond (1991, 1993) also emphasizes the importance of clear legal rules to govern contract enforcement. This implies that if complicated loan covenants (to anticipate a variety of future outcomes) could be enforced at a lower cost, the risk for the lender would be reduced and the willingness to expand the supply of long-term debt would increase.

FINANCIAL INSTITUTIONS. Two types of institutions—financial intermediaries and stock markets—directly influence an enterprise's choice of financial structure. Financial intermediaries have a comparative advantage in monitoring borrowers because, as Diamond (1984) argues, bankers have economies of scale in obtaining information. They may also have greater incentives to use the information to discipline borrowers than do small investors. By collecting information, monitoring borrowers, and exerting corporate control, a developed banking sector can facilitate access

to external finance—especially long-term finance—by smaller firms that have limited access to alternative means of financing due to information costs.

Large stock markets allow entrepreneurs the opportunity to substitute equity for long-term debt. Moreover, the prices quoted in financial markets also transmit information that is useful to creditors (Grossman 1976; Grossman and Stiglitz 1980). This revelation may make lending to a publicly quoted firm less risky and thereby increase its ability to obtain long-term credit.

GOVERNMENT PROVISION. In an effort to promote the availability and use of long-term debt, governments may adopt policies that direct or subsidize long-term capital to favored firms or sectors. Directed credit policies include preferential discount lines from the central bank, portfolio restrictions on private commercial banks, guaranteed credit for public enterprises, and credit lines through development banks. These programs need not always involve financial subsidies, but they frequently do. The degree of these distortions varies from country to country.

For example, Atiyas (1991) and World Bank (1989) provide evidence that directed credit often fails to reach its intended beneficiaries. In many cases, such programs are used not to correct the inadequacies of financial markets, but to channel funds to priority sectors whether or not these are the most productive investments. In many countries, including Brazil, Colombia, India, Kenya, Mexico, and Turkey, government interventions have generated large costs by funding inefficient borrowers and crowding out private credit intermediaries.

Directed credit programs did achieve their legitimate objectives in a few cases. In successful interventions, as in Japan, Korea and Singapore, credit policy priorities are determined as part of a national plan with broad participation. Commercial standards are applied within the priority sectors; once priorities have been established, lending decisions by agencies are shielded from public pressures; interventions that do not work are discontinued (Calomiris and Himmelberg 1993; Stiglitz and Uy 1996). Where political systems do not allow government authorities to develop and implement effective plans for the distribution of industrial credit, however, success may be difficult to achieve.

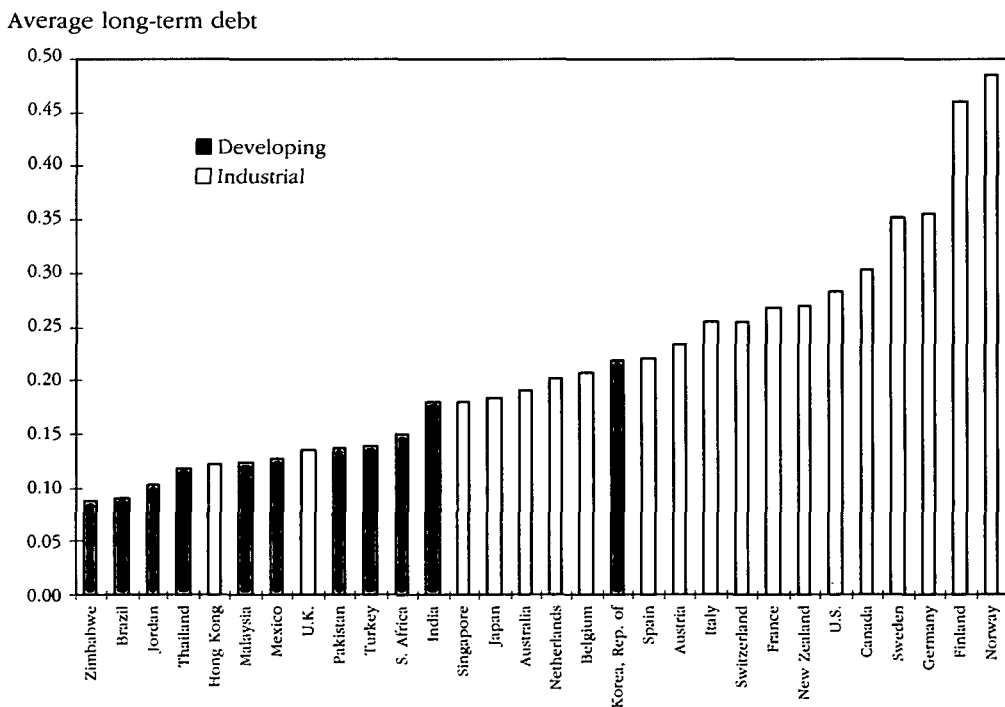
THE INSTITUTIONAL ENVIRONMENT. Several studies explore the effect of the institutional environment on the choice of debt. Hoshi, Kashyap, and Scharfstein (1990) show that membership in industrial groups linked to banks reduces financial constraints on Japanese firms, and Schiantarelli and Sembenelli (1996) find the same benefits flow to Italian firms that are members of large national groups. Calomiris (1993) examined the effect of differences between the banking systems of the United States and Germany and argued that regulatory limitations on the scale and scope of U.S. banks hampered financial coordination and increased the cost of capital for industrialization. Rajan and Zingales (1995) and Demirgüç-Kunt and Maksimovic

(1994) compare the capital structure of firms in five industrial countries and ten developing countries, respectively, and find that institutional differences were crucial in understanding the determinants of capital structure.

Because of data constraints, however, systematic cross-country empirical studies have been few and recent. Demirgüç-Kunt and Maksimovic (1996a, 1996b), who look at debt-equity ratios in 30 industrial and developing countries from 1980 to 1991, find that access to an active stock market increases firms' ability to borrow, especially in countries with developing financial markets. They also report systematic differences in the use of long-term debt between industrial and developing countries, as well as between small and large firms, even after controlling for the characteristics of the enterprises.

The data in figure 1 show that firms in industrial countries clearly have more long-term debt as a proportion of total assets. For example, the long-term debt-to-asset ratio of an average firm in Norway, with a per capita gross domestic product of \$20,000, is five times greater than it is in Zimbabwe, with a per capita GDP of less than \$1,000. And large firms have more long-term debt as a proportion of total assets and debt than do smaller firms (figure 2).

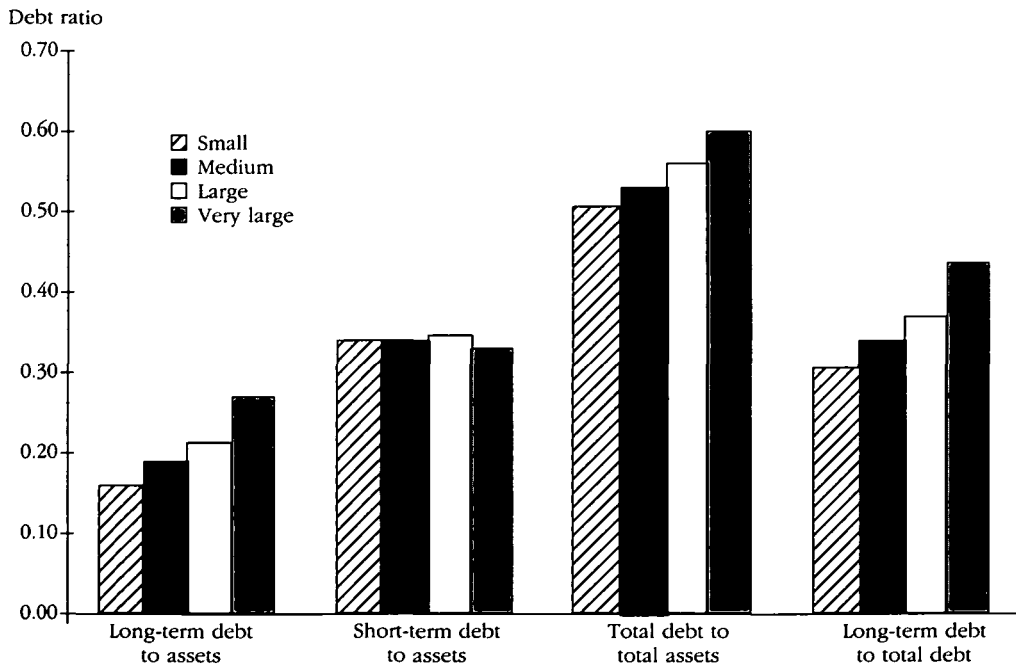
Figure 1. Average Long-Term Debt as a Percentage of Total Assets, 1980-91



Source: Demirgüç-Kunt and Maksimovic (1996b). The data set consists of financial statement data for the largest publicly traded corporations in manufacturing.

Importantly, this lack of long-term finance in developing countries persists even after controlling for firm characteristics and macroeconomic factors. Demirgüç-Kunt and Maksimovic explain this differential by institutional differences, such as the extent of government subsidies, different levels of development of stock markets and banks, and differences in the underlying legal infrastructure. Their results indicate that although policies that help develop legal and financial infrastructure are effective in increasing access to long-term debt, different policies are required to lengthen the debt maturity of large and small firms. Improvements in the legal system, for example, benefit all firms, although the effect is less significant for the smallest firms, which have limited access to the legal system. In the study, legal effectiveness is measured on a six-point scale every year, so, for example, the United States has a value of 6 and India a value of less than 2 for the whole sample period. The results indicate that a 10 percent improvement in the index of legal effectiveness would increase the largest firms' ratios of long-term debt to total debt by more than 5

Figure 2. Debt Ratios of Small vs. Large Firms for 30 Countries



Note: The figure presents the average debt ratio across 30 countries by firm size. The firms in each country are divided into quartiles by value of total assets, and the average debt ratios of each quartile, calculated across countries, is reported. Countries in the sample are Australia, Austria, Belgium, Brazil, Canada, Germany, Finland, France, Hong Kong, India, Italy, Jordan, Japan, Republic of Korea, Malaysia, Mexico, Netherlands, Norway, New Zealand, Pakistan, Singapore, South Africa, Spain, Switzerland, Sweden, Thailand, Turkey, United Kingdom, United States and Zimbabwe.

Source: Demirgüç-Kunt and Maksimovic (1996b).

percent. Thus, keeping all else constant, if a large Indian firm were to be transplanted to the United States, its ratio of long-term debt to total debt would increase by more than 100 percent. For the smallest firms, a 10 percent improvement in the legal index brings about an increase of 4 percent in their long-term debt ratio. In addition to being smaller in magnitude, this effect is also less significant in statistical terms.

Moreover, the authors find that policies to improve the functioning and liquidity of stock markets would benefit primarily large firms. During the sample period, the United States had one of the most liquid stock markets, with a turnover ratio of 60 percent, while Pakistan had one of the least liquid, with a turnover ratio of 11 percent. (Turnover is the value of shares traded divided by market capitalization.) The results indicate that a 10 percent increase in stock market liquidity leads to less than a 1 percent increase in the ratio of long-term debt to total debt for the largest firms. Holding everything else constant, however, transplanting the largest Pakistani firm to the United States would increase the ratio of the firm's long-term debt to total debt by 40 percent. This effect is not significant for the smallest firms.

In contrast, policies to improve the banking system would give smaller firms better access to long-term credit. The authors use the ratio of bank assets to gross domestic product as an indicator of banking development. In the sample, Germany has one of the largest banking systems—with a ratio of more than 100 percent—and Zimbabwe one of the smallest, with a ratio of 17 percent. The results indicate that a 10 percent increase in banking size leads to about a 3 percent increase in the ratios of long-term debt to total debt of the smallest firms. And again, keeping everything else constant, a small Zimbabwean firm transplanted to Germany would increase its long-term debt ratio by more than 100 percent. This result is not significant for large firms.

The Effect of Debt Maturity on Performance

In recent years theorists have been studying the forces that determine the maturity structure of a firm's debt (Brick and Ravid 1985; Diamond 1993; Kale and Noe 1990). This literature provides an interesting perspective on how this choice affects the enterprise's performance by emphasizing the different control and incentive properties of long- and short-term debt. In most of these models, long-term debt is not a necessity, but rather one of a number of financial claims that a firm may issue. Indeed, these models highlight several of the undesirable effects of long-term debt.

First, a capital structure that excludes long-term debt may be more efficient. Relying on such debt leads to greater distortions in the risk preferences of owners and managers, providing them with incentives to invest in projects that benefit themselves at the expense of outside investors (Myers 1977). This conflict can be miti-

gated, however, by reducing the overall degree of leverage, or the maturity of debt, since the short maturity limits the period during which an opportunistic firm can exploit its creditors without being in default (Diamond 1991, 1993).

Second, short-term debt may also increase efficiency because of its role in disciplining management (Jensen 1986). Because of the more continuous scrutiny of a firm's operations and the threat of liquidation, short-term debt may in fact constrain wasteful activities.

Third, long-term debt allows management to delay its response to deteriorating market conditions and avoid exiting the market when it is obvious that the firm is failing. This reduction in efficiency is even worse if the loan is subsidized. In addition, when the market for refinancing short-term loans is competitive, long-term capital always increases the firm's financing costs and reduces the incentive to exert the effort to save on interest costs and increase efficiency (Rajan 1992; Ofek 1993).

Fourth, debt maturity is also correlated with credit quality and the profitability of existing projects. In the presence of asymmetric information about borrowers, firms of higher quality should choose short-term debt because they will be able to take advantage of the revelation of future good news (Diamond 1991). This positive information effect outweighs the liquidity risk of not being able to refinance oneself and running the risk of being liquidated by the lender. The opposite is true for firms with lower credit rating. Firms with the lowest credit ratings have access only to short-term debt, leading to a nonlinear relationship between maturity and credit rating.

But shorter debt maturity is not all good. Fear of liquidation may induce firms to avoid investing in profitable projects if the returns accrue in the distant future. Similarly, they may be reluctant to adopt more productive technologies unless they provide an immediate payoff. This shortening of the investment horizon may have negative consequences on overall performance. The faster the return on investment, the shorter will be the optimal payment structure. This provides a rationale for firms with long-term assets to have a longer debt maturity structure (Hart and Moore 1995). If financial markets undersupply long-term credit because banks are unable to internalize the full benefits of monitoring the firm (Mayer 1989; Calomiris and Himmelberg 1993) or because few people participate in financial markets (Diamond 1996), firms with a longer asset maturity may be disadvantaged.

On balance, the theoretical literature is inconclusive on how the maturity of debt affects a firm's performance. Notwithstanding data problems, empirical analysis in this area is difficult because it is not appropriate to draw conclusions about performance by simply treating maturity structure variables as independent, given that theory says that expected growth and profitability also affect the choice of maturity. The recent empirical literature attempts to avoid this simultaneity problem by focusing on performance indicators, such as efficiency measures, that should not play a role in "causing" maturity choice, or by using in-

struments for maturity choice, such as legal efficiency indicators, that measure the ability to enter into long-term contracts. This literature provides some interesting answers.

Evidence from Country Cases

Most of the empirical work in this area has been on growth and external financing. In a seminal work on the effect of financial constraints on investment decisions, Fazzari, Hubbard, and Petersen (1988) show that investment by U.S. firms is sensitive to cash flow. In later works, Calomiris and Hubbard (1995), Calomiris, Himmelberg, and Wachtel (1995), Carpenter, Fazzari, and Petersen (1994), and Calomiris and Himmelberg (1996) argue that the high shadow cost of external finance will show itself most clearly in the cash flow sensitivity of inventories. But surprisingly little work has been done on the links between debt maturity and performance. Gilson, John, and Lang (1990) find that the more long-term debt a firm has, the more likely it will be to reorganize successfully. Hall (1992) reports that when the ratio of long-term debt to physical capital increases, physical investment and research and development expenditures contract. Atiyas (1991), who investigates directed credit programs in Colombia, reports a negative relationship between long-term indebtedness and efficiency.

More recently, a number of case studies were conducted in industrial and developing countries using information about firms in each country—Schiantarelli and Sembenelli (1996) on the United Kingdom and Italy; Jaramillo and Schiantarelli (1996) on Ecuador; Calomiris, Halouva, and Ospina (1996) on Colombia; and Schiantarelli and Srivastava (1996) on India. In general, these studies find that short-term debt has no effect on efficiency and growth. The conventional wisdom that more long-term debt may actually lead to productivity improvements was confirmed in Ecuador, Italy, and the United Kingdom. Echoing the earlier findings for Colombia, however, the positive effect of long-term debt in Italy is substantially reduced—and even reversed—if the debt is subsidized (Schiantarelli and Sembenelli 1996). There is no evidence that the total investment is sensitive to the amount of long-term credit.

Evidence from Cross-Country Studies

Rajan and Zingales (1996), who look at industry-level data across 27 countries, find a positive correlation between dependence on external financing and growth. They do not distinguish between external debt and equity, however, or between differences in debt maturity. Demirgüç-Kunt and Maksimovic (1996c) analyze firm-level data for 30 countries and find that an active stock market and the

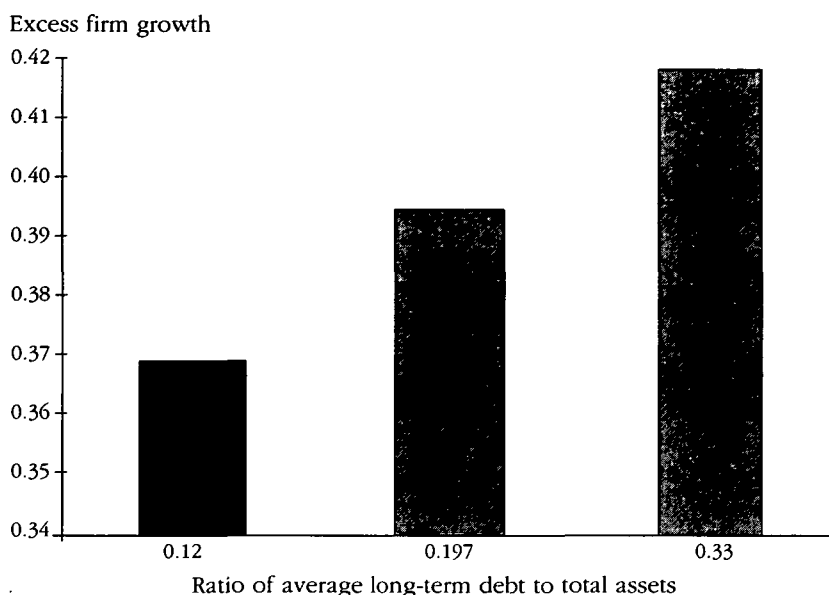
ability to enter into long-term contracts enable firms to grow at faster rates than they could attain by relying on internal capital and short-term credit alone.

This research examines whether differences in financial and institutional development prevent firms in some countries from investing in potentially profitable growth opportunities. Such an effect, if it exists, would not affect all firms equally. Firms that can finance operations from retained earnings will be minimally affected, whereas firms whose financing needs exceed their internal resources may be severely constrained. To gauge the effect of financial development on the firm's ability to exploit growth options, it is necessary to identify firms that have a need for external financing and examine whether their realized growth depends on the development of financial markets.

To get around this problem, Demirgüç-Kunt and Maksimovic calculate growth rates of firms that rely only on internal financing. Their estimate of the constrained growth rate is based on the standard "percentage of sales" approach to financial planning (see Ross, Westerfield, and Jordan 1995). For each firm they define a maximum short-term financed growth rate, which is an estimate of the maximum rate of growth if a firm reinvests all earnings and obtains enough short-term credit to maintain the ratio of its short-term borrowing to assets. They then calculate the proportion of firms that exceed their benchmark growth rates, average these over the 1980–90 period, and relate these excess growth rates to firm characteristics, including asset composition, profitability, and size; macroeconomic indicators, such as inflation and the growth rate of the economy; institutional factors, such as the effectiveness of the legal system and the level of government subsidies to enterprises; and financial indicators, such as banking development and stock market liquidity.

Their results show that the proportion of firms that grow faster than the predicted rate is related to specific features of the legal and financial systems and to the institutional structure of the economy. Even after controlling for firm characteristics, macroeconomic environment, financial development, and the extent of government intervention, the results show that firms with higher long-term debt ratios tend to grow faster than they would if they relied solely on internal resources (figure 3). Because it is difficult to identify the direction of causality in this framework, the authors also test their results by replacing the debt ratio with an index of legal effectiveness that they have shown to be highly correlated with long-term debt (Demirgüç-Kunt and Maksimovic 1996b). The results indicate that in countries whose legal systems score high on an efficiency index—which is expected to be an exogenous indicator of the ability to enter into long-term contracts—a greater proportion of firms grow at faster-than-predicted rates. They also find that an active, although not necessarily large, stock market is associated with faster growth. An additional test of causality using initial values of stock market liquidity and legal effectiveness to predict future growth does not alter the results. The findings

Figure 3. Firm Growth and Long-Term Debt



Note: The y-axis is the proportion of firms growing faster than predicted rates. Predicted rate is the rate at which a firm can grow by only relying on retained earnings and short-term credit. Thirty countries in the sample were divided into three equal groups based on the average long-term debt to total assets (LTD/TA) ratios of firms. Countries with the lowest LTD/TA are Brazil, Hong Kong, Jordan, Malaysia, Mexico, Pakistan, Thailand, Turkey, the United Kingdom, and Zimbabwe. Australia, Belgium, India, Italy, Japan, Korea, Netherlands, Singapore, South Africa, and Spain are in the second group. The third group comprises Austria, Canada, Finland, France, Germany, New Zealand, Norway, Switzerland, Sweden, and the United States.

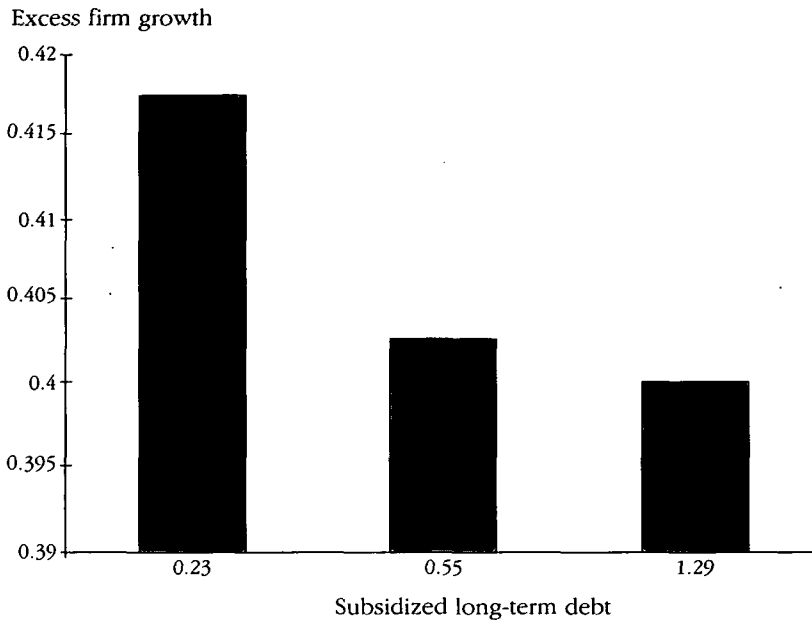
Source: Calculations based on Demirgüç-Kunt and Maksimovic (1996c).

make it clear that the underdevelopment of financial markets and institutions prevent firms in developing countries from investing in potentially profitable growth opportunities.

Do policies intended to increase the availability of long-term debt actually work? Although government subsidies have increased the long-term indebtedness of firms around the world, Demirgüç-Kunt and Maksimovic (1996c) find no evidence that government subsidies to firms in the 30 countries in their sample were associated with faster growth (figure 4).

On the contrary, their evidence indicates that although long-term debt is associated with greater numbers of firms growing at rates that are higher than predicted, this result is reversed to the extent the credit is government-subsidized. Country case studies also confirm this effect. And Schiantarelli and Sembenelli (1996) show that the positive effect of debt maturity on firm performance declines as the aggregate proportion of subsidized credit rises—until it is reversed.

Figure 4. *The Effect of Subsidized Long-Term Debt on Enterprise Growth*



Note: The y-axis is the proportion of firms growing faster than predicted rates. Predicted rate is the rate at which a firm can grow by only relying on retained earnings and short-term credit. Twenty-six countries for which data were available were divided into three groups (9, 9, 8) based on a ranking of the extent of subsidized long term-debt obtained by multiplying average LTD/TA ratios of firms by the ratio of government subsidy to gross domestic product. Countries with highest subsidies are Austria, Belgium, Brazil, Finland, India, Italy, Korea, Norway, and Sweden. The middle group includes Canada, France, Germany, Malaysia, Netherlands, New Zealand, Pakistan, Spain, and Switzerland. Finally, Australia, Japan, Mexico, Singapore, Thailand, Turkey, the United Kingdom, and the United States have the lowest amount of subsidized long-term debt.

Source: Calculations based on Demirgüç-Kunt and Maksimovic (1996c).

Lessons for Development Economists

First, even after adjusting for the characteristics of individual firms, long-term credit is scarce in developing countries, particularly for smaller firms. Thus if a firm in a developing country were magically relocated to an industrial economy, other things being equal, it could expect to receive more long-term credit. Second, among manufacturing firms, there is clear evidence that more long-term finance tends to be associated with high productivity. Third, and perhaps most important, this last result is reversed to the extent that such credit is subsidized.

Therefore, although it is worthwhile for governments to attempt to foster the supply of long-term credit, it is crucial that these interventions be crafted with great care—and little subsidy. If the macroeconomic environment is unstable, it

is unlikely that the market will provide long-term finance. When fixed interest rates are offered, savers regularly show that they are averse to putting their assets into long-term instruments; the yield curve is—or may soon become—inverted. When variable interest rates are offered, borrowers, or at least those who intend to repay, will not readily enter into a contract that could leave them bankrupt. Additionally, real sector reforms are important, as they will lead to changes in relative prices and in the performance of firms. If relative prices are clearly out of line, investors will not want to enter into long-term arrangements, so there will not be much demand for long-term credit. Beyond these reforms, however, firm characteristics do not admit to easy change. Institutional differences, such as the adequacy of banking and stock markets and the legal infrastructure, are important in affecting the supply of long-term credit and can be changed, although not overnight. Focusing attention on basic financial infrastructure is a “low distortion” road to achieving more long-term credit. Similarly, improving the legal system and collateral registration would especially redound to the benefit of smaller borrowers, for whom contract enforcement issues (and collateralized finance) tend to be of overriding importance.

Overwhelmingly, long-term finance tends to go to larger companies. That may be good for growth if there is evidence that larger firms tend to be more productive, but societies may be willing to sacrifice some growth for more equity. Unfortunately, many schemes designed to facilitate access to credit for small firms have not achieved their goal. Research shows that banking and stock market development are complementary, probably because each produces and demands better information (Demirgüç-Kunt and Levine 1996). Hence, banking development will not only improve small firms’ access but indirectly help larger firms by leading to greater capital market development as well.

The development of pension funds, insurance, and contractual savings systems are similarly low-distortion paths to stimulating long-term finance (Vittas 1996). Some economists argue that moving to a fully funded old age pension system would induce people to save more, but this has been a subject of considerable controversy on both theoretical and empirical grounds. In the case of Chile, however, a switch from a pay-as-you-go public pension plan to a fully funded private plan increased private savings substantially, although this is likely to be a transitory effect. Even in the absence of a permanent increase in savings, most analysts agree that the development of private contractual savings institutions leads to an increase in the supply of long-term funds because in every country these institutions hold a portfolio dominated by long-term assets. Thus, encouraging mandatory, fully funded pension schemes is an appealing way to encourage such credit indirectly. How rapidly governments will want to move in this direction depends on several variables, not least of which are demographic trends and the likelihood that investment pools can be allocated free of government interference.

Directions for Research

What do we still need to know about long-term credit? First, it is important to confirm the findings reported here. Although deep data sets that include listed and unlisted firms are still relatively rare, testing the findings here with new data as they become available would be appealing and worthwhile. Additionally, it is important to take a closer look at how countries have allocated such credit because it *can*, but does not always, have a positive effect on performance. Although government interventions have been costly and inefficient in many cases, credit policies in some countries have succeeded by establishing credible mechanisms that ensure proper allocation and repayment of funds (World Bank 1993). In-depth case studies of individual firms would help generate more precise recommendations about how credit policies can achieve optimal growth and equity outcomes; in several countries, long-term credit institutions face insolvency partly as a result of these programs. A careful balancing of the benefits and costs of credit-market interventions is therefore a top research priority.

Notes:

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