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POLICY RESEARCH WORKING PAPER

The Role of Long-Term Finance

Theory and Evidence

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It appears that firms grow faster and are more productive when more long-term finance is available to them. Government subsidies do not produce the same effects and are in some cases associated with reduced productivity and growth.

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Summary findings

Caprio and Demirgüç-Kunt review the literature on term finance to place the research in context and discuss its implications for World Bank operations. Their project investigated whether industrial firms in developing countries suffer from a shortage of long-term credit and whether that shortage affects the firm's investment, productivity, and growth.

Both issues are important in designing the World Bank's industrial lending policy because the development community is reevaluating mechanisms to make more term finance available or to lessen the constraints imposed by its absence.

Using both cross-country empirical analysis and country case studies, researchers found that developing country firms use significantly less long-term debt than their industrial country counterparts, even after controlling for firm characteristics. They explain the difference in debt composition of industrial and

developing countries in terms of firm characteristics, macro factors, and — most important — government subsidies, the country's level of financial development, and legal and institutional factors.

They conclude that more long-term finance tends to be associated with higher productivity.

Cross-country analysis of firm-level data also indicates that when there is an active stock market and when creditors and debtors are better able to enter into long-term contracts, firms seem to be able to grow faster than they could by relying only on internal resources and short-term credit.

Another important finding: Government subsidies around the world have increased firms' long-term indebtedness, but there is no evidence connecting these subsidies with the firms' ability to grow faster. Indeed, in some cases subsidies were associated with lower productivity.

This paper — a product of the Finance and Private Sector Development Division, Policy Research Department — summarizes the results of a recently completed Bank project on term finance. The study was funded by the Bank's Research Support Budget under the research project "Term Finance: Theory and Evidence" (RPO 679-62). Copies of this paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Paulina Sintim-Aboagye, room N9-030, telephone 202-473-8526, fax 202-522-1155, Internet address psintimaboagye@worldbank.org. April 1997. (31 pages)

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The Role of Long Term Finance: Theory and Evidence

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The Role of Long Term Finance: Theory and Evidence

"Almost without exception DFC project appraisal reports take the position that in developing countries there is an inadequate supply of long-term (and foreign exchange) financing for the industrial sector. Most appraisal reports are focused on the solution to the term-financing problem, however, not on the analysis of the extent of the problem or its consequences." (Long, 1983)

A popular view, seen in the above quotation from 1983, is 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 World Bank and other multilateral development bank lending was aimed at attempting to correct for the dearth of term credit through the creation and encouragement of DFIs (Development Finance Intermediaries), later through financial intermediary loans (FILs) extended through DFIs and commercial banks, and recently by extending guarantees to lengthen the maturity of loans. On the other hand, a recent strand of the finance literature has been studying the forces which determine the maturity structure of a firm's debt.¹ In those models, long term debt is not necessary for acquiring physical capital and indeed performance of firms may improve by decreasing reliance on long term debt. Thus, policy-induced changes in the term structure of finance generally, if not uniformly, would be viewed at best with great skepticism by these analysts.

Notwithstanding the difference of views, attempts to cure this 'market imperfection' -- 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.² Many of the moderate problems became severe later in

¹ See for example work by Berglof and von Thadden (1993), Diamond (1991,1993) and Rajan (1992).

² A 1974 study of delinquency rates in agricultural lending institutions reported that the average arrears rate was 41 per cent, while a 1983 report indicated that 39 percent of the DFIs were experiencing serious portfolio problems while another 53 percent were experiencing moderate problems (World Bank, 1974, and Siraj, 1983).

the 1980s, and a wave of failures of DFIs or, at best, severe financial distress, was the result.³ Furthermore, directed credit, often long term, in many cases failed to reach its intended beneficiaries (Atiyas, 1991 and World Bank, 1989). Once established, governments found it politically very difficult to reduce support for these programs, regardless of their cost and inefficiency. Prompted by these problems and following the issuance of an internal review of financial sector lending (World Bank, 1989), the World Bank adopted new guidelines governing lending to DFIs, and Bank lending to these institutions dropped dramatically: DFI loans fell from 11 percent of new credits extended by the Bank in FY 1989 to only 2.4 percent of new loans in FY 1993. Still, controversy over the Bank's efforts to channel long term credit to the private sector continue. Both the Bank and the development community at large presently are re-evaluating mechanisms aimed at increasing the availability of term finance or lessening the constraints imposed by its absence, though the assumptions that term finance is scarce in developing countries, that its absence deleteriously affects firm performance, and that countries would be better off subsidizing its provision, remain prevalent, at least in the development community.⁴

Unfortunately, relatively little effort, until now, has been devoted to investigating the factors behind this imperfection and whether and how it affects economic growth. Although aggregate data and anecdotal evidence suggest that there often is less long-term credit in developing countries, even those with low or moderate inflation rates, no attempts had -- until quite recently -- been made to examine the evidence more

³ Although the potential for many of these problems might be traced to the origin of DFIs, it is likely that the strength of real commodity prices in the 1970s and their deterioration in the 1980s explains the timing of the recognition of the situation.

⁴ For example, a recent World Bank loan to Argentina uses Bank resources to provide a backup facility -- much like a revolving underwriting facility (RUF a 1980s financial innovation in industrial countries) for the rolling over of 3-year loans.

systematically and in particular to see if any scarcity merely reflected the different characteristics of firms in poorer economies. This lacuna was understandable even five years ago, because the data to test whether or not there was a shortage of long-term credit and whether the availability of such credit affected firm performance were not available. Recently, this gap has been filled in two ways: first, by the availability of firm-level data in emerging markets for the top tier of firms listed on stock exchanges, and second, by various surveys of listed (and in some cases unlisted) firms in selected countries, prompted by governments' attempts to understand the impact of a variety of policies on firm behavior. Armed with this data, a variety of studies from a World Bank research project on term finance have appeared in the last year to evaluate the empirical properties of long term credit and, as a result, we now have answers to fill an important part of the aforementioned gap in our knowledge.⁵

The present paper reviews these findings and discusses why policy makers should care about this issue. Section I investigates the issue of the availability of long term credit in developing countries, while Section II reviews evidence about the relationship of long term credit and firm performance. Section III concludes with lessons for policy makers and bilateral and multilateral agencies, as well as directions for future research.

I. Firm Financing Decisions and Debt Maturity Choice

The starting point for any policy decision to encourage more long term credit should be that it is both scarce and important for goals of concern to developing country policy makers. This section examines the scarcity issue, discussing what it means and reviewing

⁵ These studies are part of the World Bank Research Project (RPO 679-62) and were presented at the World Bank Conference "Term Finance: Does It Matter?" held in Washington D.C., June 14, 1996.

evidence, both within countries and among them, leaving the importance (or performance) issue to section II.

What does it mean to say that long term credit is scarce? A typical way this question has been answered is by surveying firms to see what are important constraints on their operations; credit, usually long term credit, regularly is at or near the top of the list. However, such an approach is unsatisfactory, not least because it often is unclear what survey 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 would grant them much less credit than they might desire or at higher interest rates than they would like. Given riskier than average firms, loans at average market rates are attractive to these borrowers precisely because they convey a subsidy in the form of a lower risk premium than the market would grant them.⁶ Whenever there are many firms whose expansion is constrained by the lack of long-term credit, there are three potential sources of this constraint: first, macroeconomic factors limiting the supply side; second, institutional factors 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 the relative access to credit, i.e., to say that there is scarcity to the extent developing country firms find it more difficult to gain access to long term credit in comparison with similar firms in developed countries. In this relative sense if there is a scarcity or limited access in developing countries, then

⁶ Being aware of adverse selection and moral hazard problems, there of course are some borrowers to whom banks will not provide credit at any price.

there may be a potential correction that could rectify this problem.⁷ To be sure, any correction may be difficult. For example, it is argued (and confirmed below) that a leading reason for the absence of long term finance is high inflation and unstable macro policies (the first source, above). 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 (long term interest rates above short term rates), then the demand for long term credit will tend to suffer most in this situation. Again, addressing the factors that account for high real interest rates (see Brock, 1996) may in the long run pay off more than attempts to force banks to lend long. In the 1980s, Chile succeeded both in tackling the underlying factors behind high real rates -- an overvalued exchange rate and insolvent banks -- and by moving to a fully-funded pension system, created a natural source of long term finance without interfering in credit and investment decisions. The firm level studies reviewed below finesse this issue by examining term finance in countries with relatively stable macro environments.

Long term credit may well be scarce because of institutional factors (the second source, above) in developing country financial markets. Institutional factors generally affect borrowers only until funds are disbursed; these factors are crucial during all phases of a credit relationship for providers of funds, who are concerned about the return on their investment. An important emphasis in the finance literature is that banks will use short term credit as a way to control borrowers (Diamond, 1991), and that they will tend to

⁷ Of course, industrial country capital markets might also be characterized by imperfections. But this approach is taking, for better or worse, industrial country capital markets as the best that could be attained, at least in some medium run.

want to use this instrument more the less developed is financial infrastructure, such as information systems or contract enforcement mechanisms. Thus, if accounting and auditing are underdeveloped or if it is difficult or expensive to enforce loan covenants, bankers will prefer short term credit. Ignoring this deficiency and establishing government banks to lend long term certainly is faster, less difficult, and likely cheaper than trying to address the information or contract enforcement problems, but these banks will have to cope with the same issues that private banks would confront, and may have additional incentive problems as well.

Finally, the maturity structure of finance in an economy will depend on the characteristics of the firms there as well. Section Ib will review how all three factors interact to yield different patterns of maturity structure across countries. But first, the next part reviews how access to long term finance can differ within an economy by highlighting the importance of firm specific factors.

a. Differential Access Within Countries: Relevance of Firm Characteristics

In the aftermath of the seminal Modigliani-Miller article, which found that the value of a firm was invariant to its mix of financing, the study of financing choices by firms initially received little attention. As economists and finance experts have repealed 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 permits loans to be repriced to reflect new information, increases efficiency by allowing uneconomic projects to be terminated, and gives manager/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.

The optimal mix of long and short term debt is determined by a number of parameters including the firm's observable credit quality (i.e. its 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 (Table 1). According to Myers' (1977) seminal article, just as workers possess firm-specific capital, firms' owner/managers possess future investment opportunities that are like call options. These investment opportunities usually are important in determining the market value of the firm; if so much of the benefit of future investment accrues to debtholders that the owners -- stockholders -- cannot capture enough of the benefits, then the owners may underinvest. The greater the growth options that a firm has, the greater the possibility of a conflict between stock and bond holders, with the outcome being 'underinvestment.' As Myers notes, the firm can limit this problem by having less debt, by including restrictive covenants in its debt contracts, or by having more short term debt (since if the debt matures before the investment option expires, it is easy to show that there is no conflict). In developing countries, one might expect to find more firms with growth opportunities, meaning that this underinvestment problem could be significant there. Moreover, since both share issuance (one way to lower debt-equity ratios) is difficult in lower income countries and contract enforcement mechanisms (needed to enforce covenants) typically less developed, firms there can be expected to use more short term and less long term debt. By using a series of short-term loans, bankers retain greater control over their clients because the option to halt the

rolling over of these loans is easier to exercise, and a more credible near-term threat, than with long term credit.

Importantly for policymakers intent on intervening to influence the supply of long term credit is the key recent finding (Hart-Moore) that the faster the returns to investment arrive, the shorter the optimal payment structure will be. 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 attempts to interfere with the market allocation of credit need to take account of a number of factors, including the structure of the assets of firms; a program to extend long term credit to firms with short term assets may not be welcomed, as it is inconsistent with firms' desire to balance the maturity of assets and liabilities.

Firm size is another key variable, and indeed a justification for a number of credit market interventions is the desire to get more credit, particularly long term credit, to small firms. In general, there tends to be less information about small firms, not only because some of them will be new but also because it is costly to obtain such information. Thus, even in the most developed financial systems, small and medium size enterprises tend to get a larger part of their external financing in the form of bank debt. Banks overcome some information problems by developing long term relationships with smaller firms.

A variety of other firm characteristics and their expected effect on the maturity structure of debt are summarized in Table 1. The key 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 necessarily implying a deficiency in the

Table 1. Theoretical determinants of maturity choice

Increase in:	Leads to	Source
Asset Maturity	Firms will tend to match the maturity of assets and liabilities	Hart and Moore (1995)
Growth opportunities	Reduced reliance on long term debt	Myers(1977)
Size of project	Reduced reliance on long term debt	Bergloff and von Thadden (1993)
Observable credit quality of low credit quality firms	Increased reliance on long term debt	Diamond (1991) and Rajan (1992)
Observable credit quality of high credit quality firms	Reduced reliance on long term debt because the possibility of being wrongly liquidated are decreasing. or Increased reliance on long term debt because the monitoring benefits of short term debt are less important.	Flannery (1986) and Diamond(1991)
Liquidation value	May make it possible for low quality firms to issue short term debt even if they cannot issue long term debt. No impact on other firms. Decreases reliance on long term debt	Diamond (1991) Rajan (1992)
Contestability	The lower the market power of incumbent lenders, the less the reliance on long term debt.	Rajan (1992)
Firm Size	Greater problem with asymmetric information, more reliance on bank debt, often have greater growth opportunities, leading to less reliance on long term debt.	Myers (1977), Barclay-Smith (1995)

credit market. It also means that comparisons of debt maturity structures in different countries are more likely to be informative if researchers control for these parameters, as we show below.

While numerous empirical papers tested the implications of capital structure models, attention recently has turned to empirical determinants of debt maturity.⁸ Titman and Wessels (1988) show that firms with higher leverage issue both more long term debt and more short term debt, but do not provide a clear picture of how the mix of long term and short term debt varies with firm characteristics. Barclay and Smith (1995) find that firms that have few growth options and large firms have more long term debt. Stohs and Mauer (1996) find that larger, less risky firms, with longer-term asset maturities use longer-term debt.

These studies all used U.S. data. In the World Bank research project, empirical studies using developing country data generally confirmed their results, with some interesting exceptions. The link that stands up most clearly is that for 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 get access to more long term credit. Maturity matching also is evident in Colombia (Calomiris, Halouva, and Ospina, 1996), India (Schiantarelli and Sembenelli, 1996), and Ecuador (Jaramillo and Schiantarelli, 1996). This finding is important for policy, in that as 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 resist taking on long term debt if it does not fit their balance sheet structure, and indeed may only do so if long term debt is subsidized, meaning a lower risk premium than they

⁸ See Harris and Raviv (1990) for a review of empirical and theoretical capital structure literature.

would get from the market. Also, these country studies showed that financial markets, where free from government intervention, provide more long term finance to better quality firms, and attempt to monitor lower quality firms more closely by using short term debt.

Whether or not governments even should want to intervene should depend on the link between long term credit and firm performance (below), as well as on equity considerations and dynamic arguments. For example, it is possible that small firms find it excessively difficult to obtain long term credit, as in Ecuador, where only 11% of micro firms and 17% of small firms had long term debt every year (1984-88), compared with 58% of all large firms.⁹ This correlation likely reflects the role of collateral, with large firms having more collateralizable assets, as well as age.¹⁰ Moreover, larger firms in Ecuador tended to be more profitable, suggesting that the allocation of credit favored firms with the more solid balance sheet positions. Finally, it could also reflect the greater economic and political bargaining power of large firms in obtaining directed credit. A disturbing fact was that, given firm size, past profits had no relationship with the amount of long term credit obtained. Whether this latter finding reflects a market failure, the limits of banking (bankers can pick the class or industry, but not individual winners and losers) or excessive intervention is not clear (a substantial portion of long term debt was subsidized).

⁹ The correlation between access to long term credit and firm size was also seen in Ecuador in a separate data set (1984-92).

¹⁰ Berger and Udell (1995) found that among small U.S. firms, it was important to have a long relationship with a bank. The longer this relationship, the lower the amount of collateral needed and the greater the availability of long term credit.

b. Differential Access Across Countries: Relevance of Institutional Factors

In addition to firm specific factors, the relative amount of long term credit will also depend on a variety of institutional factors. As noted above, financial theory suggests that a major factor in firms' choice of capital structure is the reduction of the cost of contracting between firms and their providers of capital. These costs depend not just on the characteristics of firms but especially on the institutional environment in which the contracting takes place. 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 inefficient or costly to use, short-term debt is more likely to be employed than long-term debt, as in recent work by Hart and Moore (1995) and Bolton and Scharfstein (1996). Diamond (1991, 1993) also emphasizes the importance of contract enforcement. As he has argued, short-term financing may reduce the expropriation of creditors by borrowers. Short maturity limits the period during which an opportunistic firm can exploit its creditors without being in default. It allows the creditors to review the firm's decisions frequently and, if necessary, to vary the terms of the financing before sufficient losses have accumulated to make default by the borrower optimal. This also implies that if complicated loan covenants (trying to anticipate a variety of future outcomes) could be enforced at a lower cost, the supply of long term debt by the institutions would be greater.

Financial institutions also play a very important role. Two types of institutions, financial intermediaries and stock-markets, directly influence the financial structure choices of firms. A prime function of financial intermediaries, such as banks, is that of monitoring borrowers. As Diamond (1984) argues, intermediaries have economies of scale in obtaining information. Intermediaries may also have greater incentives to use the

collected information to discipline borrowers than small investors subject to free-rider problems. By collecting information, monitoring borrowers and exerting corporate control, a developed banking sector can facilitate access to external finance and especially long term finance, particularly among smaller firms which have limited access to alternative means of financing due to information costs.

Large stock markets provide opportunities for diversification by entrepreneurs. Thus, in countries with developed stock markets there may be an incentive for firms to substitute from long-term debt to equity. However, stock markets also transmit information that is useful to creditors. Prices quoted in financial markets at least partially reveal information that more informed investors possess, as demonstrated by Grossman (1976) and Grossman and Stiglitz (1980). This revelation of information may make lending to a publicly quoted firm less risky. As a result, the existence of active stock markets may increase the ability of firms to obtain long-term credit.

Finally, governments seek to increase the availability and use of long term debt -- which they think may be undersupplied due to informational costs, enforcement problems and financial market imperfections-- through adopting policies that direct or subsidize long-term financing 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 and may be an important determinant of the capital structure of firms.¹¹

¹¹ Atiyas (1991) and World Bank (1989) provide evidence that directed credit often failed to reach its intended beneficiaries.

Several studies have explored the effect of the institutional environment on firm financing choices in specific countries. Hoshi, Kashyap and Scharfstein (1990) show that membership in industrial groups linked to banks reduces financial constraints on Japanese firms. Schiantarelli and Sembenelli (1996) provide evidence that Italian firms that are members of large national groups face less severe financial constraints than independent firms. Calomiris (1993) examines the effect of differences between the banking systems of the United States and Germany on firm financing in the pre-World War era and argues that regulatory limitations on the scale and scope of US banks hampered financial coordination and increased the cost of capital for industrialization. Rajan and Zingales (1995) and Demirgüç-Kunt and Maksimovic (1995) compare and contrast capital structure decisions of firms in five developed countries and ten developing countries, respectively. Both studies conclude that institutional differences are crucial in understanding determinants of capital structure.

However systematic cross-country comparisons are needed to illustrate fully the effect of financial and legal institutions on financing decisions of firms, since the institutions within a particular country tend to evolve very slowly over time. In the past, cross-country empirical studies of this nature have been few and recent due to data constraints. One of the recent World Bank studies (Demirgüç-Kunt and Maksimovic, 1996a) focuses on the impact of stock market development on firm financing decisions. Analyzing firm-level debt-equity ratios in 30 developed and developing countries they find that existence of active stock markets increases the ability of firms to borrow, especially in countries with developing financial markets.¹² They also compare and

¹² The data set consists of financial statement data for the largest publicly traded corporations in manufacturing in thirty countries.

explain firm debt maturity choices across countries and they find systematic differences in the use of long term debt between developed and developing countries, as well as small and large firms, even after controlling for firm characteristics (Demirgüç-Kunt and Maksimovic, 1996b).

In this data set developed countries' firms clearly have more long term debt and greater proportion of their total debt is held as long term debt (Figure 1). Also, large firms have more long-term debt - as a proportion of total assets and debt - compared to smaller firms (Figure 2). Importantly, this lack of term finance in developing countries persists even after controlling for firm characteristics. The authors explain this differential by institutional differences, such as the extent of government subsidies, different level of development of stock markets and banks, and differences in the

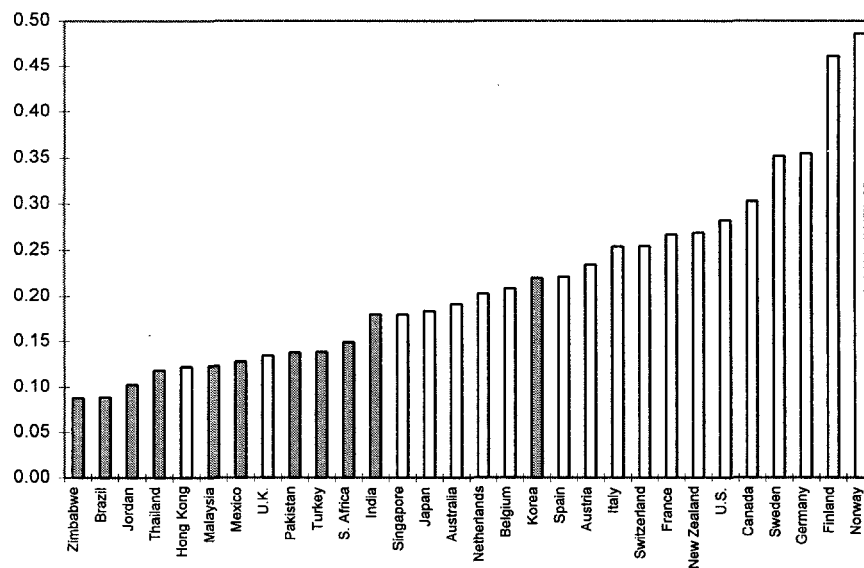


Figure 1. Long Term Debt/Total Asset Ratios. The figure presents the average long-term debt to total asset ratios for firms in each country for the 1980-1991 period. Developing countries are denoted by the darker outline. The countries in the figure are ordered by their utilization of long-term debt financing. Source: Demirgüç-Kunt and Maksimovic (1996b).

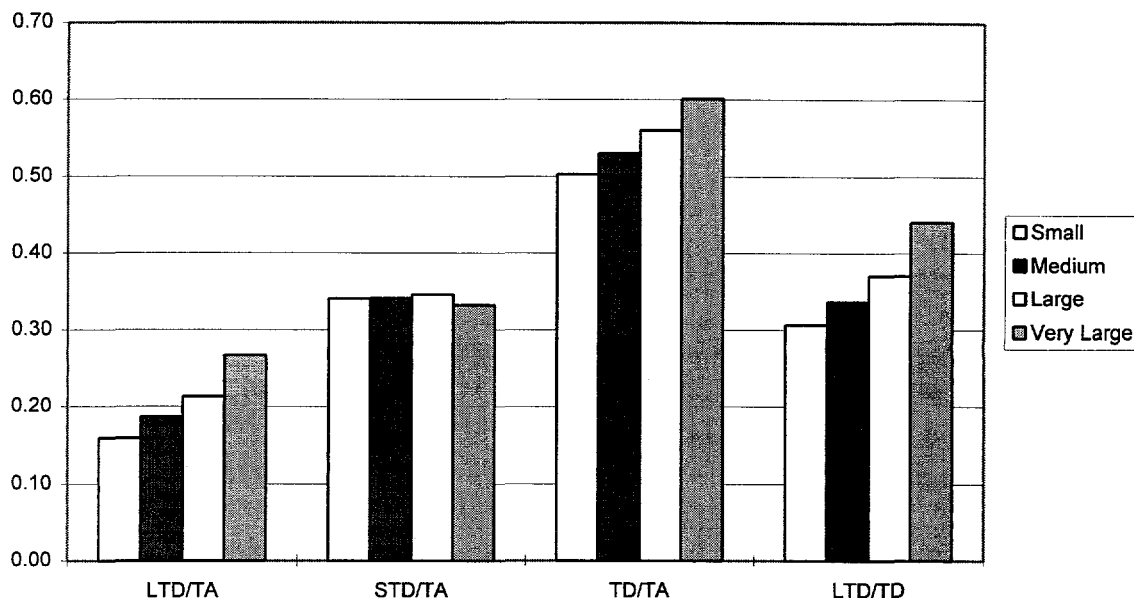


Figure 2. Debt Ratios: Small vs. Large Firms. The figure presents the average long-term debt to asset (LTD/TA), short-term debt to asset (STD/TA), total debt to total asset (TD/TA) and long-term debt to total debt (LTD/TD) ratios across thirty countries by firm size. The firms in each country are divided 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, Korea, Malaysia, Mexico, Netherlands, Norway, New Zealand, Pakistan, Singapore, Spain, Switzerland, Sweden, Thailand, Turkey, United Kingdom, United States, South Africa, and Zimbabwe. Source: Demirgüç-Kunt and Maksimovic (1996b).

underlying legal infrastructure. Their results indicate that while policies that help develop legal and financial infrastructure of countries are effective in increasing the access of firms to long term debt, different policies would be necessary to lengthen the debt maturity of large and small firms. A key result is that improvements in the legal system's effectiveness seems to benefit all firms, although this result is less significant for the smallest firms, which have limited access to the legal system. Moreover, policies that would help improve the functioning and liquidity of stock markets would benefit mostly the large firms. In contrast however, policies that would lead to improvements in

the development of the banking system would improve the access of smaller firms to long term credit.

II. Firm Performance and Debt Maturity Choice

In recent years theorists have been studying the forces which determine the maturity structure of a firm's debt.¹³ This literature provides an interesting perspective on the implications of debt maturity for firm 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 technological necessity for acquiring physical capital, but rather one of a number of financial claims that a firm may issue. Indeed, these models highlight a number of undesirable effects of relying on long term debt.

First, firm efficiency may be maximized by adopting a capital structure which excludes long term debt. Reliance on long term debt leads to greater distortions in the owner/manager's risk preferences than does short term debt (Myers, 1977). As noted earlier, when investment is financed through debt, this creates an incentive problem because the return of the project has to be split between shareholders and bondholders. Stockholders may not capture enough of the return, so they may pass up positive net present value projects. This conflict between shareholders and bondholders is greater, the greater the investment opportunities of the firm and it can be mitigated by decreasing the overall degree of leverage, or the maturity of debt.

Second, short term debt may also increase firm's efficiency because of its role as a discipline device (Jensen, 1986). Because of the more continuous scrutiny of a firm's

¹³ In addition to the articles cited in table I see Brick and Ravid (1985), Diamond (1993), Hart and Moore (1989), and Kale and Noe (1990).

operations and the threat of liquidation it brings, short term debt may lead to a reduction in wasteful activities by managers and a greater level of efficiency in a firm's operations.

Third, long term debt dampens the firm's response to deterioration in market conditions, and enables the firm to avoid exiting the market when the continued operation of the firm has become socially undesirable. This reduction in efficiency is even worse if long term debt is made available on a subsidized basis. In addition, when the market for refinancing short term debt is competitive, reliance on long term debt always increases the firm's financing costs and reduces the owner manager's incentives to exert effort and increase efficiency (Rajan, 1992).

Fourth, maturity structure may also affect the speed with which firms adjust to adverse shocks. There is some evidence that firms that rely primarily on short term debt respond more rapidly to adverse shocks and are more likely to adjust or exit if they fail to respond, compared with firms that rely primarily on long term debt (Ofek, 1993).

Fifth, debt maturity is also correlated with credit quality and 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. However, firms with lowest credit ratings can issue only short term debt, leading to a nonlinear relationship between maturity and credit rating.

Shorter debt maturity is not all good, however. Fear of liquidation may induce firms not to choose investment projects characterized by greater returns, because they accrue further in the future. Similarly, more productive technologies may not be adopted,

unless they provide an immediate payoff. This shortening of the investment horizon may have negative consequences on the overall performance of the firm. The faster the returns arrive, the shorter the optimal payment structure will be. This provides a rationale for the 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,¹⁴ because nontransferable control rents account for a major portion of the project returns,¹⁵ or because few people participate in financial markets,¹⁶ firms with a longer asset maturity may be disadvantaged.

While all these models have interesting implications both for empirical studies of the links between term finance and firm performance and for policy discussions about the necessity and means for providing subsidized finance to the industrial sector, taken as a whole, the theoretical literature is inconclusive on how the maturity structure a firm's debt affects its performance. Notwithstanding data problems, empirical analysis in this area is difficult since it is not appropriate to draw conclusions about performance by simply treating maturity structure variables as independent, given that theory tells us that expected growth and profitability also affect maturity choice. The recent empirical literature attempts to avoid this simultaneity problem by focusing on performance indicators that should not play a role in "causing" maturity choice such as efficiency measures, or using instruments for maturity choice such as legal efficiency indicators that measure the ability to enter into long-term contracts. This literature provides some interesting answers, which we discuss below.

¹⁴ See Mayer (1988) and Calomiris and Himmelberg (1993).

¹⁵ See Diamond (1991).

¹⁶ Diamond (1996) develops a model that predicts that there would be a small supply of long-term claims in countries where limited numbers participate in financial markets.

a. Evidence From Country Cases

Most of the empirical work on this area has been on firm growth and external financing. Starting with the seminal paper by Fazzari, Hubbard and Petersen (1988), there has been a large amount of work on the effect of financial constraints on firms' investment.¹⁷ On the links between debt maturity and performance, however, there has been surprisingly little work. Gilson, John, and Lang (1990) find that the more long term debt a firm has, the more likely it will be to reorganize successfully. However, Hall (1992) finds that when the ratio of long term debt to physical capital increases, physical investment and research and development expenditures are reduced. Atiyas (1991) investigates the impact of Colombian directed credit programs on firm productivity and finds a negative relationship between long-term indebtedness and efficiency.

More recently, a number of case-studies were conducted including both developed and developing countries, using firm-level information for a large number of firms in each country.¹⁸ In general, these studies find that there is no support in the data for any role played by short term debt in boosting efficiency and growth. Moreover, the conventional wisdom that more long term debt may actually lead to productivity improvements is confirmed in Ecuador, Italy and the U.K. However, echoing the earlier findings for Colombia, in the case of Italy, the positive effect of long term debt is substantially reduced and even reversed if debt is subsidized (Schiantarelli and

¹⁷ Fazzari, Hubbard, and Peterson showed that investment of US firms is sensitive to cash flow. In later work, again analyzing US data, Calomiris and Hubbard (1995), Calomiris, Himmelberg and Wachtel (1995), Carpenter, Fazzari and Petersen (1994), and Calomiris and Himmelberg (1996) argued that high-shadow cost of external finance will show itself most clearly in the cash flow sensitivity of inventories.

¹⁸ These are Schiantarelli and Sembenelli (1996), using data from UK and Italy; Jaramillo and Schiantarelli (1996), analyzing data from Ecuador; Calomiris, Halouva and Ospina (1996), using Colombian data; and Schiantarelli and Srivastava (1996) analyzing Indian firm level data.

Sembenelli, 1996). And also interesting is what was not found: even though many directed credit programs are established to increase investment, there was no evidence that the quantity of capital was sensitive to the amount of long term credit.

b. Evidence from Cross-Country Studies

Until recently, cross-country empirical work looking at linkages between debt maturity structure and firm performance was unavailable. Looking at industry-level data across 27 countries, Rajan and Zingales (1996) find a positive correlation between dependence on external financing and industry growth. However, they do not distinguish between external debt and equity, or differences in debt maturity. In the World Bank project, Demirgüç-Kunt and Maksimovic (1996c) analyze firm-level data for thirty countries to see if the availability of long term debt has an impact on firm performance. They show that an active stock market and an improved ability of creditors and debtors to enter into long-term contracts are reflected in the ability of firms to grow at rates greater than they could attain by relying on their internal sources and short term credit alone. For each firm in their sample Demirgüç-Kunt and Maksimovic estimate a predicted rate at which the firm can grow if it only relies on retained earnings and short term credit. Their results show that the proportion of firms that grow at rates exceeding this predicted rate is related to the specific features of the legal system, financial system and institutions in the economy. In particular, in countries whose legal systems score high on an efficiency index, a greater proportion of firms use long term external financing, most specifically, long-term debt (Figure 3). An active, though not necessarily large stock market and a large banking sector are also associated with externally financed firm growth. Thus they

show that the underdevelopment of financial markets and institutions prevents firms in developing countries from investing in potentially profitable growth opportunities.

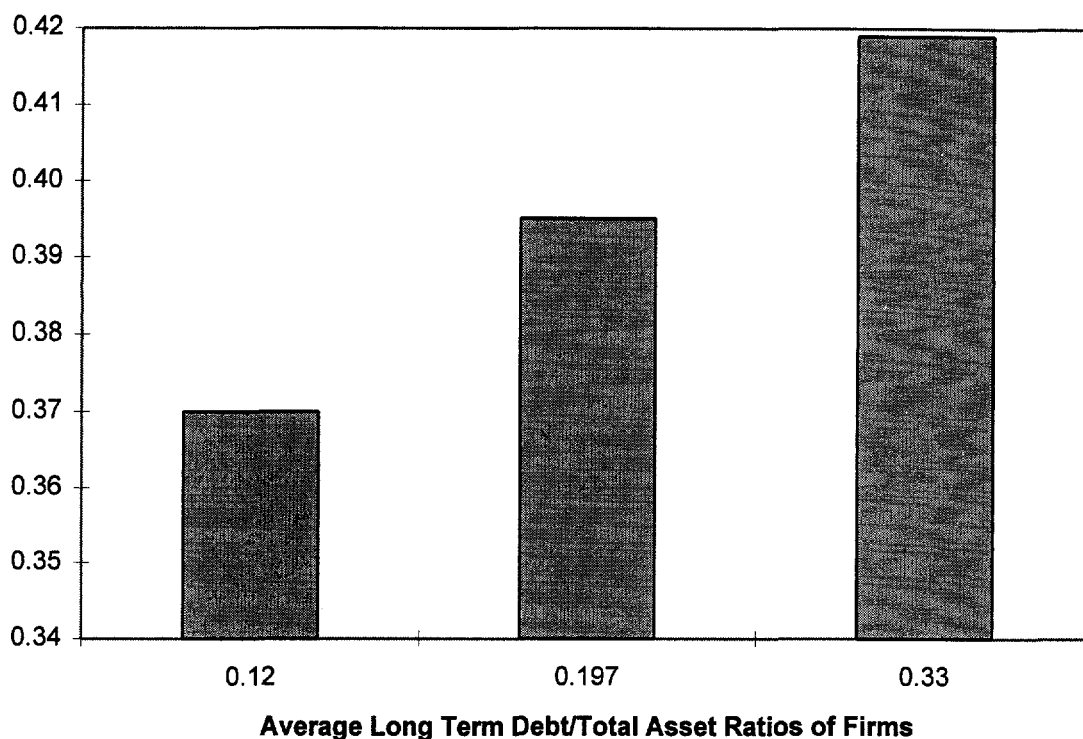


Figure 3. Proportion of Firms Growing Faster Than Predicted and Long Term Debt. The y-axis is the proportion of firms growing faster than predicted rates. Predicted rate is the rate at which a firm can grow by only relying on retained earnings and short term credit. Thirty countries in the sample were divided into three equal groups based on the average ltd/ta ratios of firms. Countries with the lowest LTD/TA are Brazil, Zimbabwe, Jordan, Thailand, Hong Kong, Malaysia, Mexico, Pakistan, UK, and Turkey. South Africa, Singapore, India, Japan, Australia, Spain, Netherlands, Belgium, Korea, and Italy are in the second group, with the remainder (note to Figure 2) in the third. Source: Calculations based on Demirgüç-Kunt and Maksimovic (1996c).

Do policies that were intended to increase the availability of long term debt actually work? Government subsidies around the world have increased the long term indebtedness of firms. However, for the thirty countries in their sample Demirgüç-Kunt and Maksimovic (1996c) find no evidence that government subsidies to firms are associated with the ability of firms to grow faster.¹⁹ To the contrary, their evidence

¹⁹ Government subsidies are defined as grants on current account by the public authorities to (I) private industries and public corporations and (ii) government enterprises.

indicates that although the ability of firms to enter into long term debt contracts is associated with greater numbers of firms growing at higher than predicted rates, to the extent the credit is government subsidized this result is reversed (Figure 4).

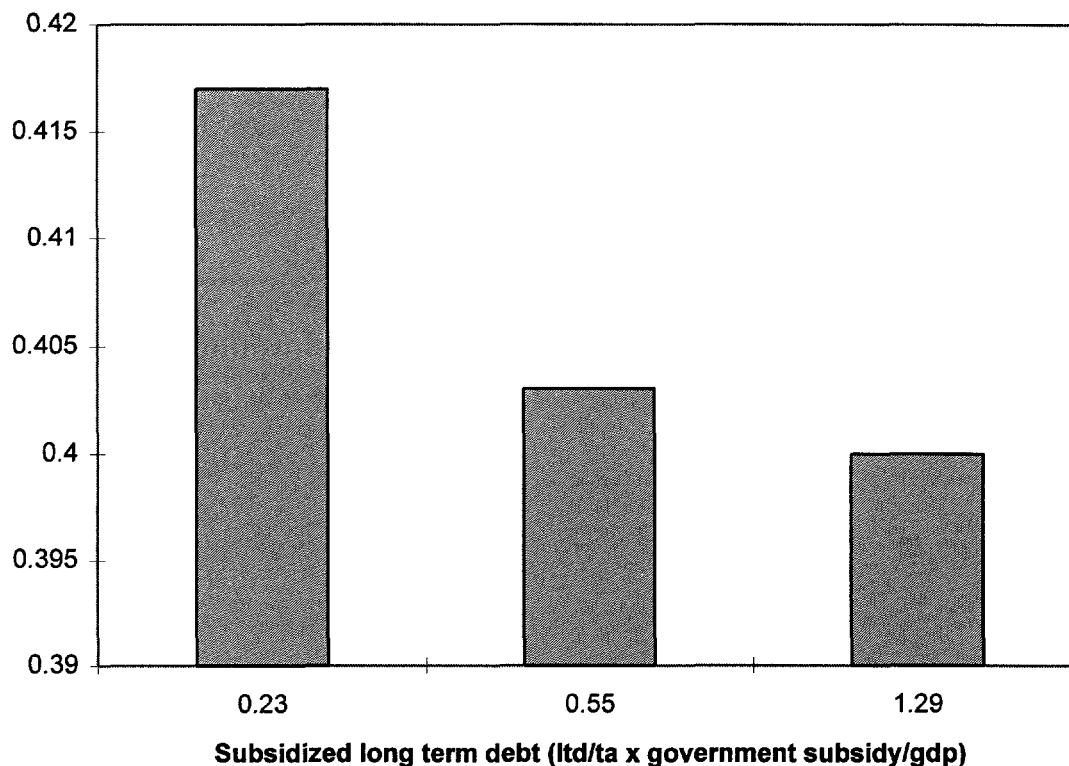


Figure 4. Proportion of Firms Growing Faster Than Predicted and Subsidized Long Term Debt. The y-axis is the proportion of firms growing faster than predicted rates. Predicted rate is the rate at which a firm can grow by only relying on retained earnings and short term credit. 26 countries for which 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 government subsidy to enterprises/gdp. Countries with highest subsidies are Norway, Sweden, Finland, Korea, India, Brazil, Austria, Italy and Belgium. The middle group includes Germany, Pakistan, France, Malaysia, Canada, Netherlands, Spain, Switzerland, and New Zealand. Finally, Singapore, Mexico, Turkey, Australia, UK, US, Thailand, and Japan have the lowest amount of subsidized long term debt. Source: Calculations based on Demirgüç-Kunt and Maksimovic (1996c).

In summary, empirical evidence suggests that both financial market development and legal effectiveness are important in meeting the long term external financing needs of firms and facilitating firm growth. However, government subsidies do not appear to have promoted economic environments in which firms obtain resources for financing growth from financial markets. Whether government intervention in credit markets can achieve

its legitimate objectives depends on the implementation mechanisms chosen by the policymakers. In successful interventions, as in Japan, Korea and Singapore, priorities of credit policy are determined as part of a national plan, with broad participation; once priorities have been established, lending decisions by agencies are shielded from public pressures (Calomiris and Himmelberg, 1993; Stiglitz and Uy, 1996).

IV. Conclusions

a. What does a development economist learn from this research?

The first key lesson from recent research on maturity choice in developing countries is that, even after adjusting for the characteristics of firms, long term credit is scarce in developing countries and in particular is scarce for smaller firms. Thus if a firm in a developing country were magically relocated to an industrial economy, other things equal, it could expect to receive more long term credit, all the more so if it were a small firm. Second, among manufacturing firms there is clear evidence that more long term finance tends to be associated with higher productivity. Third, and perhaps most importantly, this last result is reversed to the extent that such credit is subsidized.

Thus it is worthwhile for governments to attempt to foster the supply of long term credit, though it is crucial that these interventions be crafted with great care -- and little subsidy. If the macro environment is unstable, it is unlikely that the market will provide long term finance. With fixed interest rates, savers regularly show that they are averse to putting their assets into long term instruments, the yield curve is -- or may soon become -- inverted; with variable interest rates, borrowers, or at least those who intend to repay, will not easily 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, owners will not want to enter into long term investments, meaning that with asset-liability matching, there will not be much demand for long term credit. Beyond these reforms, however, firm characteristics do not admit to easy change, but the institutional differences between developed and developing country financial markets, such as the adequacy of banking and stock markets and the legal infrastructure, are important in affecting the supply of term credit and can be changed, though not overnight.

Once macro stability and real sector reform have been or are being achieved, focusing attention on basic financial infrastructure is a 'low distortion' road to achieving more long term credit. Cross-country data still are not available in sufficient detail to be much more precise, but existing data strongly suggest that a costly and ineffective legal system is a sure way to limit the development of long term finance. The literature also suggests (Fleisig, 1996) that improving the collateral registration and perfection process would tend to help intermediaries monitor their loans and especially redound to the benefit of smaller borrowers, for whom collateralized finance tends to be of overriding importance. Similarly, industrial economies that featured better information in general saw more rapid development of their capital markets in the past. Thus securities markets in the United States rapidly developed from the 1790s, in large part due to both a stable macro environment (a budget surplus, which led to U.S. debt trading at a premium on international markets) and good information disclosure. As Sylla (1997) notes, only when disclosure laws in the United Kingdom were reformed in the mid-nineteenth century did London overtake New York in stock market capitalization (relative to national income).

Overwhelmingly, long term finance tends to go to larger companies. This may be good for growth if there is evidence that larger firms tend to be more productive. However, it may also be that societies would be willing to sacrifice some growth for more equity, and one way to achieve this goal is to facilitate access to credit for small firms. Unfortunately, many of these schemes in the past have not achieved their goals – credit aimed at small firms, especially when it was heavily subsidized -- ended up with larger firms. The studies reviewed here show that stimulating the development of the banking sector does help with small firms' access to credit, and this relatively low distortion policy also promises to raise, rather than lower, income growth. Other research also shows that banking and stock market development are complementary, most likely because each produces and demands better information (Demirguc-Kunt and Levine, 1996). Hence, a policy of stimulating banking development will not only have knock-on effects on small firms' access but indirectly help larger firms by leading to greater capital market development as well.

Another low-distortion road to stimulating long term finance is by the development of pension funds, insurance, and contractual savings systems (Vittas, 1996). Although some economists believe that moving to a Chilean-type fully-funded pension scheme would induce people to save more than they otherwise would, this issue has been a subject of considerable controversy on both theoretical and empirical grounds. However, in the case of Chile - which is yet to be confirmed in other more recent cases - a switch from mandatory pay-as-you-go public plan to a fully funded private one increased private savings substantially, by much more than the government dis-saving needed to pay off the old social security debt. Even if the savings effect of pension reform is subject to dispute, most analysts agree that development of private contractual savings

institutions leads to an increase in the supply of long term funds since 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 indirectly long term credit. How rapidly governments will want to move in this direction depends on a number of other variables, not least of which are demographic trends and the likelihood that investment pools can be allocated free of government interference.

b. Directions for future research

What do we still need to know about long-term credit? As a first step, it is important to confirm the findings noted above, though the most significant gap is on the availability of deep data sets including both listed and unlisted firms. The approach taken in the Term Finance research project was to look both at a large cross-country sample of large listed firms and then individual country data with a wider array of firms. However, there are still relatively few developing countries with such data, and as these become available, testing some of the findings here with new data would be appealing and worthwhile.

Additionally, a closer look at how countries have allocated long term credit, both in successful cases as well as when these policies have failed, more than ever needs to be undertaken, as it is now clear that long term credit both is relatively scarce in developing countries and can, but need not, positively affect firm performance. While in many cases government interventions have generated large costs through the funding of inefficient borrowers and the crowding-out of private credit intermediaries, there were also success cases where governments were able to avoid these problems by establishing credible mechanisms that ensure proper allocation and repayment of funds (World Bank, 1993).

In depth firm-level case studies would help generate more precise recommendations about how governments should conduct their interventions to achieve the best growth and equity outcomes. An examination of some of the failures is important: although it may be possible to raise productivity with more long term credit, a number of countries with these programs have institutions whose solvency is in doubt in part as a result of these programs. Thus, a careful balancing of the benefits and cost of these programs remains an important goal.

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