Financial Globalization and Debt Maturity in Emerging Economies

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Abstract

This paper studies how financial globalization affects debt structure in emerging economies. We find that by accessing international markets firms increase their long-term debt and extend their debt maturity. In contrast, with financial liberalization, long-term debt decreases and the maturity structure shifts to the short term for the average firm. These effects are stronger in economies with less developed domestic financial systems. The evidence is consistent with financial integration having opposite effects on the firms that are able to integrate with world markets and obtain financing globally, relative to the firms that rely on domestic financing only.

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1. Introduction

The advocates of financial globalization argue that the integration of countries with the world financial system can have many benefits, particularly for emerging economies with segmented financial markets.[1] In a global financial environment, firms from financially underdeveloped economies gain access to mature financial markets, which are liquid and offer long-term financing. This integration also helps to develop the domestic financial systems.[2] As a consequence, the cost of capital decreases and financing constraints are relaxed.[3] Furthermore, by issuing debt in foreign jurisdictions, with better contract enforcement institutions, the level of risk for creditors decreases and debtors become more able to borrow long term.[4] All these potential advantages have prompted most emerging economies to liberalize their financial systems around the first half of the 1990s.

The crises that started in the mid 1990s with the Mexican devaluation have, however, raised concerns that globalization increases risks, making emerging economies vulnerable to financial distress. Different risks are usually associated with globalization and crises. A central one is the maturity risk derived from the shortening of the maturity structure, which exposes borrowers to potential rollover difficulties and interest rate fluctuations.[5] In fact, short-term debt has played an important role in the crises of Mexico

[1] At the macroeconomic level, cross-country capital mobility may lead to a more efficient allocation of world savings, boost growth and investment, and help smooth consumption. See, for example, Bekaert, Harvey, and Lundblad (2004), Henry (2000a,b), and Obstfeld (1998).
[2] See, for example, Fischer (1998) and Mishkin (2003).
[3] See, for example, Bekaert and Harvey (2000), Edison and Warnock (2003), Lins, Strickland, and Zenner (2003), and Stultz (1999).
[4] See De la Torre and Schmukler (2005).
[5] A second risk commonly related to globalization is the over-borrowing syndrome, which arises because financial liberalization can generate lending booms and over-investment under the presence of moral hazard. As the expected rates of return are not realized, over-borrowing increases the chances of crises.

1994-95, East Asia 1997-98, Russia 1998, and Brazil 1998-99. The higher exposure to risks that globalization may bring about has led many economists to argue that countries should liberalize their financial systems gradually, and that those that have already liberalized might consider imposing some type of capital controls.[6]

The international finance literature offers different explanations to why globalization might expose emerging economies to maturity risk.[7] This literature argues that globalization can increase the maturity risk if it leads to exposure to international investors with information disadvantages, which may choose to lend short term to better monitor and discipline borrowers.[8] Also, if international investors were more risk averse than domestic investors, the maturity structure would shift to the short term, as foreign investors would charge borrowers from emerging markets a higher risk premium on long-term issues than domestic investors.[9] When short-term lending occurs, abrupt changes in

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See, for example, McKinnon and Pill (1997). The third risk typically mentioned is the exchange rate mismatch, which occurs because of the rise of foreign currency debt, while the income of borrowing countries remains in domestic currency. See, for example, Jeanne (2000a and 2003), Eichengreen and Hausmann (1999), and Frankel and Rose (1996).

[6] See, for example, Eichengreen and Wyplosz (1993), Krugman (1998), Rodrik (1998), Stiglitz (1999), and Tirole (2002).

[7] The corporate finance literature also provides arguments to explain the shortening of the debt maturity structure. Myers (1977) shows that when the value of firms depends on growth opportunities, shareholders might decide to under-invest to avoid passing the proceeds of future projects to bondholders. Short-term debt can avoid sub-optimal investment decisions. As firms from emerging economies typically face new growth opportunities when liberalization takes place, they might choose to borrow short term.

[8] Short-term debt forces borrowers to roll over their liabilities more frequently, giving them an incentive to make sound economic decisions. See Jeanne (2000b) and Rodrik and Velasco (1999).

[9] The evidence suggests that emerging economies borrow short term because investors charge a risk premium for holding long-term debt, and that this risk premium can be due to investors' risk aversion. See Broner, Lorenzoni, and Schmukler (2004). However, one would need to show that international investors are more risk averse than domestic investors to explain the changes in debt maturity with globalization. That evidence is, to our knowledge, still missing.

market sentiment may trigger financial crises, as it becomes too costly for countries to roll over maturing debt.[10]

Though there are different arguments on the impact of globalization on debt maturity, the empirical evidence is still scarce. This paper tries to fill this void by studying the effects of globalization on the debt structure of firms operating in emerging economies. By financial globalization we mean the integration of countries with the international financial system. This integration is driven by two factors: (i) financial liberalization policies implemented by governments, and (ii) the actual use of international financial markets by firms. The focus on debt maturity is interesting because, as discussed above, the literature gives mixed predictions. Some arguments suggest that the maturity structure lengthens with globalization, while others predict a rise in short-term debt. The actual impact on debt remains an empirical question, which is the subject of this paper.

We test the effects of globalization by studying the behavior of debt as reported in firms' balance sheets. The use of balance sheets has several advantages. First, firm-level data allow us to examine how firms' access to international markets affects their debt ratios. This is important because not all firms have access to international capital markets, even when governments liberalize the restrictions on the financial system. If markets are segmented and globalization opens new financing opportunities only to some firms, there will be differences in the financial structure of firms with and without access to international markets. Second, firms' balance sheets have received increasing attention

[10] See, among others, Caballero and Krishnamurthy (1998), Calvo (1998), Calvo and Mendoza (1996), Calvo and Reinhart (2000), Chang and Velasco (1999, 2001a), Furman and Stiglitz (1998), and Sachs,

because their health is key to achieve financial stability. As Krugman (1999) argues, deteriorated balance sheets can play a crucial role during crises and in their aftermath, as became evident in East Asia.[11] Third, aggregate data on the debt maturity of the private sector are not available; so firm-level data are needed to study its maturity structure.

To test the effects of globalization on debt structure, we construct a novel data set that enables us to focus on macro and micro issues. We assemble a large panel of 686 non-financial companies located in East Asia and Latin America. We work with seven emerging economies – Argentina, Brazil, Indonesia, Malaysia, Mexico, South Korea, and Thailand – that liberalized their financial systems. We construct long time series, covering the 1980s and 1990s, to be able to include periods characterized both by financial repression and financial liberalization. To test the effect of globalization at the macro level, we use country-level data to determine when countries liberalize their financial systems. Though the main results of the paper are obtained with an indicator of stock market liberalization, we additionally use measures of capital account liberalization and domestic financial sector liberalization. To study the effects of globalization at the micro level, we use the firms' participation in international bond and equity markets. Beyond the globalization effects, we control for information on balance sheets and firms' characteristics, crisis effects, and the level of financial development in the markets in which firms operate.

The results show that the effects of globalization on debt structure are significant. In particular, financial liberalization is associated with a shorter maturity structure for the

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Tornell, and Velasco (1996).

average firm. Interestingly, the effects are not equal across firms. While firms that rely only on domestic financing shorten their maturity structure after liberalization, firms with actual access to international bond and equity markets obtain more long-term debt and extend their maturity structure. Interestingly, the effects are stronger in economies with less developed domestic financial systems.

The rest of the paper is organized as follows. Section 2 describes the data. Section 3 presents the methodology and basic results. Section 4 describes the results using a broader definition of financial liberalization. Section 5 shows some alternative estimates. Section 6 concludes with a discussion of the results and directions for future research.

2. Data

To conduct the analysis, we need to ensemble a new database, which is difficult to construct given the data availability. We compile firm-level data from Argentina, Brazil, Mexico, Indonesia, Malaysia, South Korea, and Thailand. To be able to compare the pre- and post-liberalization periods, it is necessary to use more than one database. Data on firms' balance sheets come from two sources, the corporate finance database of the International Finance Corporation (IFC) and Worldscope. IFC has data for the 1980s and early 1990s, while Worldscope has data for the rest of the 1990s. Since the two sources have information for some overlapping years, we can check the consistency of the data and keep only the companies for which the two sources report the same information.

[11] The importance of balance sheets has led researchers to study them in more detail. See, for example, Calvo, Izquierdo, and Mejía (2004), Cespedes, Chang, and Velasco (2000), Chang and Velasco (2001b),

The compiled data set comprises annual balance sheet data of publicly traded firms from 1980 to 1998. The data were collected from annual corporate reports. As a minimum, firms comply with the accounting standards of the country where they operate. However, some firms may present their financial statements under more demanding standards or be subject to stricter auditing policies, for example, by cross listing in international markets.[12]

The pooled data set contains 686 firms. That is the number of firms that remain in the sample after removing financial firms, outliers, firms with less than three observations, and firms with incompatible time series (due to the use of two data sources).[13] For each country, the data set contains the following number of firms and time periods: Argentina, 70, 1988 to 1998; Brazil, 102, 1985 to 1998; Indonesia, 72, 1989 to 1998; Malaysia, 111, 1983 to 1998; Mexico, 48, 1984 to 1998; South Korea, 94, 1980 to 1998; and Thailand, 189, 1988 to 1998. The total number of country-time observations is 95, what allows us to estimate the aggregate-level effects.

To measure the effects of financial globalization we use two types of variables. First, we measure the integration at the firm level by constructing indicators of access to international bond and equity markets.[14] We use data from the Bank of New York,

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and Martinez and Werner (2002).

[12] Minimum accounting standards help to ensure that the data are comparable across firms within countries. Though varying accounting standards across countries do not offer these assurances, the potential differences are mitigated by several factors. First, we work only with emerging economies, where accounting standards are not substantially different. More generally, we try to address the potential heterogeneity problems that cross-country and cross-firm data may entail by alternatively including country fixed effects, splitting the sample by regions, and using firm-level fixed effects.

[13] We exclude financial firms and banks, since it is difficult to obtain information on their debt structure.

[14] The data do not distinguish between different bond or equity instruments. Since we work with balance sheet information, off-balance sheet activities, like interest rate swaps, are not captured by the database either. Likewise, we do not observe the derivatives contracts that firms buy and sell. We do not expect that excluding these data biases the results in any particular way.

Euromoney, and JP Morgan, which have a complete list of international bond issues, equity issues, equity cross-listings, and depositary receipt programs. Second, we use a dummy variable to capture financial liberalization policies at the macro level. The basic results are obtained with data on stock market liberalization, which have already been used extensively in the finance literature and are easily available. In particular, we use the stock market liberalization dates reported in Bekaert and Harvey (2000). The liberalization years for each country are Argentina 1990, Brazil 1991, Mexico 1990, Indonesia 1990, Malaysia 1989, South Korea 1992, and Thailand 1988. To make sure that the results are not just the effect of stock market liberalization but rather the consequence of a more general liberalization process, we additionally use the measures of financial liberalization constructed by Kaminsky and Schmukler (2003).[15] These measures of liberalization take into account controls on the domestic financial sector (controls on interest rates and directed lending provisions) and controls on the capital account (legal restrictions on firms and banks to borrow abroad, multiple exchange rate regimes, and restrictions on remittances and acquisition of assets in foreign currency). These dummy variables capture in different ways the overall financial liberalization process, which is described for each country in Appendix Table 1.

To measure the degree of domestic financial development, we use the sum of the stock market capitalization and liabilities of the banking sector, as a percentage of GDP, following Beck, Demirgüç-Kunt, and Levine (2000). We compute the interaction of this

[15] We use their measures of partial liberalization of the domestic financial sector and the capital account. These are dummy variables equal to one if the sector under analysis is partially or fully liberalized, and zero otherwise. These dummies also capture reversals in the liberalization process.

variable with the financial liberalization dummy. The data come from the World Bank's World Development Indicators.

Figure 1 displays some of the data we compile. It shows different averages long-term debt to equity ratio and short-term debt to total debt ratio. The figure suggests that financial globalization has significant effects on long-term debt and the debt maturity structure. The top panel displays the simple average of these ratios for the whole sample of firms during the pre-liberalization and post-liberalization periods. The evidence shows that the ratio of long-term debt to equity is lower and the maturity structure shifts to the short-term after financial liberalization. The middle and bottom panels show the effects of participating in international debt and equity markets, respectively. Firms with access to international bond (equity) markets are defined as those that, at some point during the sample period, access international bond (equity) markets. The data suggest that after firms access international bond or equity markets their long-term debt increases and their debt maturity structure lengthens.[16] These findings show the contrasting effects of globalization on the overall set of firms and on the firms that actively participate in the globalization process. While Figure 1 displays unconditional averages, in the next section we test whether these results are statistically significant after controlling for other factors.

[16] In the bottom two panels of Figure 1, the observations classified as "pre access" comprise the average value of the ratios before firms access bond or equity markets for the first time. The observations characterized as "after access" show the average value of the ratios after firms access international capital markets for the first time.

3. Methodology and basic results

3.1. Methodology

We analyze the effects of globalization mainly on two debt ratios that characterize the debt structure: long-term debt over equity and short-term debt over total debt. The long-term debt over equity ratio is the relation between long-term liabilities and the book value of equity. This ratio is interesting because it provides a measure of the level of long-term debt. The ratio short-term debt over total debt, also known as the maturity structure, captures the proportion of short-term liabilities. We additionally analyze the effects of globalization on the debt-equity ratio, defined as the ratio between total liabilities and the book value of equity.

As globalization is influenced by both macroeconomic policies that allow capital to flow freely across borders and the actual use of international financial markets by each firm, we use country-level and firm-level variables. The country-level variable is a dummy that takes the value one for the periods in which a country's stock market is financially liberalized, and zero otherwise, using the data described above. We also work with firm-level data to distinguish the effects of financial liberalization on "globally financed firms" and "domestic-only-financed firms." Globally financed firms are the ones that at some point in the sample access international capital markets. Since these are publicly listed firms, they have also obtained financing in the domestic markets. Domestic-only-financed firms are those that obtain financing just from the domestic markets. To capture the actual access to international bond and equity markets, we work with two dummy variables. The first dummy takes the value one for the periods in which a firm issues bonds in international capital markets, and zero otherwise. The second

dummy takes the value one from the moment that a firm starts trading or raising capital in international equity markets, and zero otherwise.[17] As the effects of globalization may vary with the level of domestic financial development, we interact the latter variable with the financial liberalization dummy. This interaction measures whether financial liberalization affects financially underdeveloped economies more than financially developed ones.

We use a number of aggregate and microeconomic controls in the regressions. First, we include a set of variables related to financial crises. They are dummy variables for the years 1995, 1997, and 1998, corresponding to the Mexican and Asian crises.[18] Second, we include country dummies to control for time-invariant country characteristics. Third, we use four firm-level controls following the corporate finance literature, which claims that financing ratios are affected by firm characteristics.[19] The

[17] We define the variable that captures access to international equity markets differently than the variable that measures access to international bond markets because access in each case is of different nature. Access to international bond markets means that a company was able to issue bonds abroad, without necessarily meeting the regulatory standards imposed by the international equity markets. Access to international equity markets means that a company was able to cross-list a stock or issue a depositary receipt in a major international financial center. The finance literature has argued that this access can have permanent effects, since it sends a signal that the firm has decided to become more transparent and meet new accounting standards. Also, this type of access enables firms to continuously raise new funds abroad, by issuing new shares domestically and converting them to depositary receipts. For this reason, we use a step dummy to capture access to international equity markets. As an alternative approach to measure access to international equity markets, we also used the ratio of value traded in depositary receipts to the value traded in domestic markets. The results do not change significantly when using this alternative indicator.

[18] Note that the 1995 Mexican crisis affected not only Mexico, but also Argentina (generating currency and banking distress) and Brazil (to a lesser extent). The year 1998 also captures the Russian crisis, which many regard as part of the Asian crisis. Also consider that the crisis dummies might not capture all the crisis effects. This is relevant for the post-liberalization periods that include crises in Asia and the run up to the Brazilian crisis and, to some degree, the Argentine crisis. The dynamics of these events may differ significantly.

[19] This literature studies firms' financing choices, testing theoretical arguments like the pecking order hypothesis (Myers 1984). Several papers analyze data on the U.S. and other industrial countries (e.g., Opler and Titman 1994, Rajan and Zingales 1995, Titman and Wessels 1988). Booth, Aivazian, Demirgüç-Kunt, and Maksimovic (2001) study the case of 10 developing countries during the 1980s. Fan, Titman, and Twite (2004) analyze the capital structure in 39 developed and developing countries during the 1990s, focusing on how a country's institutions affect these financial decisions.

first variable is the logarithm of firms' net fixed assets, which is a proxy for the size of firms. The second variable, the ratio of firms' net fixed assets over total assets, is an indicator of asset tangibility. The third variable, firms' profits after taxes over total assets, captures the capacity of firms to generate internal resources. Finally, the variable for the production mix is a time-invariant dummy that takes the value one if the firm is a producer of tradable goods, and zero otherwise.[20]

We estimate panel regressions for every dependent variable. The basic regression uses data for the seven emerging economies in the sample; it is a pooled panel estimated by feasible generalized least squares with standard errors robust to heteroskedasticity. The equations estimated for the pooled panels are:

$$Y_{i,c,t} = \eta' n_c + \pi' r_{i,c} + \beta' X_{i,c,t} + \gamma' K_{i,c,t} + \theta' M_{c,t} + \omega_{i,c,t}, \qquad (1)$$

such that $i = 1,...,N$, $c = 1,...,C$, and $t = 1,...,T$. We assume that the error term $\omega_{i,c,t}$ can be characterized by an independently distributed random variable with mean zero and variance $\sigma^2_{i,c,t}$.

$Y_{i,c,t}$ represents the three dependent variables defined above, which measure the firms' debt ratios. The sub-indexes *i*, *c*, and *t* stand for firm, country, and time respectively. $X_{i,c,t}$ stands for the variables capturing firms' characteristics (except for the production mix dummy). $K_{i,c,t}$ denotes variables that reflect actual access to international capital markets. $M_{c,t}$ captures the macroeconomic variables, including the financial

[20] The capacity to generate revenues in foreign currency is viewed as one of the most important factors to obtain international collateral and, therefore, gain access to external financing (Caballero and Krishnamurthy 1998). Though the classification is somewhat arbitrary, the variable is constructed according to what firms produce. For example, producers of commodities and other manufacturing products are in the tradable group, while utilities are in the non-tradable group.

liberalization and the crisis variables, which only vary with time and countries but not across firms. n_c stands for the country fixed effect. $r_{i,c}$ is the tradable dummy.

3.2. Basic results

Following the evidence in Figure 1, we explore two main issues in the basic pooled estimates. We first analyze the effects of stock market liberalization policies on the average firm. Second, we study how the debt of globally financed and domestic-only-financed firms changes with globalization.

3.2.1. Effects of stock market liberalization

The pooled estimates reported in Table 1 show that stock market liberalization indeed impacts the debt ratios, confirming the findings described in Figure 1. The first two columns in Table 1 show that the stock market liberalization variable is statistically significant. It has a negative sign in the regression using long-term debt to equity as the dependent variable, implying that the latter falls after liberalization. The second column shows that in liberalized economies the maturity structure shifts to the short term. The coefficients are significant at the five percent level for long-term debt and at the one percent level for the maturity structure.

The point estimates suggest that the impact of stock market liberalization is economically relevant. With liberalization, the ratio of long-term debt to equity for the average firm falls by 0.22, against a mean value of 0.59. The coefficient for the proportion of short-term debt is lower, increasing by 0.07 against a mean value of 0.7. To further understand the economic relevance of the results, we collect a different data set to show what these estimates mean in a purely cross-sectional setting. We do so by gathering data on firms from 52 countries using the Worldscope database. We then

aggregate the firm-level evidence to obtain country-level information on the ratios of interest. We use the year 1995 as a benchmark, but comparisons using data from other years yielded similar conclusions. The new data indicate that the effect of liberalization on the long-term debt to equity ratio is similar to moving from the 50th to the 20th percentile in the cross-country sample, or from the 80th to the 55th percentile. That is equivalent to going, for example, from the long-term debt to equity ratio of Australia to that of Malaysia or Peru, or moving from the ratio of France or the United States to that of New Zealand or Portugal. Similarly, the comparisons for the debt maturity structure imply that the ratio changes with liberalization in the same way that it varies from the 55th to the 80th percentile in the sample. As an illustration, that is analogous to moving from the short-term debt to total debt ratio of the Netherlands to that of South Africa. This exercise suggests in a different way that the effects of liberalization are economically relevant.

We next study if countries with varying degrees of domestic financial development are affected differently by stock market liberalization. If international financial markets are more developed and offer better financing opportunities than domestic financial systems, firms from countries with developed domestic financial systems would see relatively few changes after liberalization relative to companies from countries with underdeveloped domestic financial markets. We test whether domestic financial development matters using the interaction of the variables domestic financial development and stock market liberalization. This interaction measures the effect of liberalization on firms' financing choices for different degrees of domestic financial development.

The results show that countries with more developed domestic financial systems seem less sensitive to liberalization. The interaction variable has the opposite sign than the liberalization variable, and is significant at the five percent level for long-term debt and at the one percent level for the maturity structure. In other words, the negative relation between liberalization and long-term debt is stronger in countries with less developed domestic financial systems. Similarly, the maturity structure shortens to a lesser degree in countries with deeper financial markets.

Finally, we analyze the effects of stock market liberalization on the debt/equity ratio. The fifth column of Table 1 shows that liberalization does not seem to affect this ratio, as the variable is not statistically different from zero.

3.2.2. Effects of globalization across firms

While the previous results show how liberalization affects the average firm, we are also interested in understanding the effects of actual access to international markets. Here we discuss whether globalization affects the debt structure of firms that have access to international capital markets in a distinct way. In particular, we address two questions. (i) Does liberalization affect globally financed and domestic-only-financed firms differently? (ii) How do debt ratios change when firms actually access international bond or equity markets?

The third and fourth columns in Table 1 show that liberalization has uneven effects on firms' debt. Only in the case of domestic-only-financed firms there is a reduction in long-term debt and a shortening of their maturity structure after liberalization. In other words, the interaction of the liberalization variable and the dummy indicating that a firm is globally financed is not statistically significant.

The results also show that participation in international capital markets is associated with access to more long-term debt and longer debt maturity. Column 3 shows that firms that access international equity markets present a higher long-term debt over equity ratio. The latter increases by 0.2 after accessing equity markets. Since long-term debt over equity decreases by 0.23 for domestic-only-financed firms after liberalization, the wedge between globally financed and domestic-only-financed firms increases by 0.43. This is a large number when compared to a mean of 0.59 for the entire sample period. Returning to the cross-country data described above, a 0.43 change in the long-term debt to equity ratio is equivalent to jumping from the 80th percentile to the 20th one. The figures are also economically relevant for the maturity structure. Short-term debt decreases by 0.1, while it increases by 0.08 for domestic-only-financed firms. This 0.18 difference is analogous to moving from the 30th percentile to the 80th percentile in the cross-country data.

Access to international bond markets is positively associated with long-term debt over equity, increasing the ratio of the firms with access by 0.22. Relative to domestic-only-financed firms after liberalization, firms with access to bond markets have a ratio that is 0.45 higher. Again, this is a significant difference. Furthermore, access to bond markets is associated with a longer debt maturity structure, reducing the ratio of short-term debt to total debt of the firms with access by almost 0.14, relative to that of domestic-only-financed firms in a liberalized environment.

Finally, the estimates of the variables used as controls are consistent with previous findings in the corporate finance literature. For example, larger firms have more long-term debt relative to equity and a lower proportion of short-term debt. On the other

hand, firms with more profits to assets have a lower level of long-term debt and a shorter maturity structure, as tradable producers do.

4. Beyond stock market liberalization

In this section, we show that the effects of liberalization on firms' debt structure go beyond stock market liberalization. To do so, we include a dummy variable that captures the liberalization of the domestic financial sector and another one that stands for the liberalization of the capital account, in addition to the stock market liberalization dummy.[21] We can include these variables because, as shown in Appendix Table 1, the liberalizations of the domestic financial sector, the stock market, and the capital account occur in different years for each country. Aside from including three different dummy variables, we decompose their effects on globally financed firms and domestic-only-financed firms. Furthermore, we use the interaction between financial development and a dummy that captures the first liberalization in each country. We do not include three different interaction terms because they are highly correlated, dampening the significance of each variable. Alternatively, we also estimated similar regressions using only one variable that captures the overall financial liberalization process, obtaining similar results.[22]

The estimations with the different liberalization dummies are reported in Table 2. Since we are mainly interested in the long-term debt over equity and short-term debt over

[21] Several country cases already analyze firm-level data around the liberalization of the domestic financial sector. See Boyle and Eckhold (1997) for New Zealand, Gallego and Loayza (2000) for Chile, Gelos and Werner (2000) for Mexico, Harris, Schiantarelli, and Siegar (1994) for Indonesia, Jaramillo, Schiantarelli, and Weiss (1996) for Ecuador, and Koo and Shin (2004) for Korea.

[22] Though these results are not reported here, they are available upon request.

total debt ratios, we report these results only for those variables. The results show that both the domestic financial sector and stock market liberalizations are statistically significant for both dependent variables. Long-term debt over equity decreases and short-term debt over total debt increases after liberalization. The point estimates are larger for the domestic financial sector liberalization. This result is important because it suggests that the previous results are not driven just by the liberalization of stock markets, which would tend to increase equity financing (the denominator of the first ratio) but not debt financing. The lack of significance of the capital account liberalization variable may reflect the fact that, as described in Appendix Table 1, the domestic financial sector and stock market liberalizations tended to occur before the capital account liberalization.

The third and fourth columns in Table 2 show the effects of the different financial liberalizations on globally financed and domestic-only-financed firms. The results show that financial liberalization at the macroeconomic level is related to a shorter maturity structure for domestic-only-financed firms but not for globally financed ones. All three liberalizations are statistically significant in explaining the increase in the proportion of short-term debt in domestic-only-financed firms. The interaction between financial development and the first financial liberalization dummy yields the opposite effect, as shown above. Namely, long-term debt decreases less in financially developed economies after liberalization, while short-term debt increases less. In all columns, the variables that capture access to international bond and equity markets are statistically significant and present the same signs as above.

5. Alternative estimates

In this section, we report alternative estimates to show the robustness of the results displayed in Section 3. As in Section 4, we only show new estimates for long-term debt over equity and short-term debt over total debt. We display three new alternative specifications, one with regional estimates, a second one using within estimates, and a third one estimated with instrumental variables.[23]

5.1. Regional estimates

We first estimate separate panels for the East Asian and Latin American economies to analyze regional differences. The results are reported in Table 3. Two points are worth mentioning when comparing pooled results with the regional estimates. First, stock market liberalization seems to have more significant effects in Latin America. The liberalization variable is statistically significant in the equations that explain long-term debt and debt maturity; the signs are consistent with the pooled estimates. Liberalization has a significant effect on debt maturity in East Asia, again in the same way that the pooled estimates suggest, but showing a lower elasticity than in Latin America. Second, the effects of access to international capital markets in both regions are consistent with the pooled estimates. That is, firms with access to bond and equity markets have more long-term debt and a longer maturity structure both in East Asia and Latin America. These effects, again, seem stronger in Latin America.

[23] We also estimated a logistic transformation of the variable short-term debt over total debt as another alternative because the variable is bounded between zero and one. The results are very similar. We report the results without the transformation to make our results comparable with the existing literature.

5.2. Within estimates

As a second alternative, we report within (or fixed effects) estimates. These estimates do not include country specific effects and the production mix variable because they are perfectly collinear with firm dummies. The within models estimated are:

$$Y_{i,c,t} = \phi' f_{i,c} + \beta' X_{i,c,t} + \gamma' K_{i,c,t} + \theta' M_{c,t} + \varepsilon_{i,c,t}, \qquad (2)$$

such that $f_{i,c}$ is the firm-specific effect.

While the pooled estimates capture both cross-firm and cross-time variation in the data, the within estimates allow us to analyze if the results obtained in the pooled regressions are mainly driven by cross-firm variation or whether firms indeed change their debt structure after accessing international capital markets. This is relevant because firms with access to international capital markets may have higher long-term debt even when obtaining financing in domestic markets, since globally financed firms tend to be larger and more reputable. Thus, the dummies for access to international markets could be capturing mostly differences between globally financed and domestic-only-financed firms.

The first two columns of Table 4 show that the results hold within firms, that is, firms change their debt structure over time. The results show that when firms access international bond and equity markets they do increase their long-term debt and extend their debt maturity. Moreover, the previous results related to stock market liberalization and financial development also tend to hold for the within estimations. Therefore, we can conclude that the results from the previous sections are not driven just by differences between firms with and without access to international capital markets.

5.3. Instrumental variables

Endogenous explanatory variables could bias the above results. Endogeneity would likely be caused by the explanatory variables with cross-firm variation, as macro variables are more likely to be exogenous in these firm-level estimates. In particular, the variables capturing access to international capital markets might be endogenous, since it could be easier for firms with a certain financial structure to issue bonds or equity internationally.

To address this possible problem, the third alternative specification estimates instrumental variables models of Equation (1) to control for potential endogeneity biases in the results. We use two types of instruments. For variables with continuous values and the variable that captures access to international equity markets, we use lagged values of the same variables as instruments. We work with two lags, to avoid cases in which there might be first-order autocorrelation in the residuals. This strategy assumes that past values of the explanatory variables are uncorrelated with the contemporaneous error term and, at the same time, correlated with their contemporaneous values. In the case of the variable that captures access to international bond markets, past values of the dummy variables are not suitable instruments because of their low correlation with contemporaneous values. Therefore, we construct an instrument that indicates whether capital markets are "open" for the globally financed firms in a given country. We consider that markets are open for the country when at least one firm from that country issues bonds in international capital markets during that year. To construct the instrument we use the interaction between the openness indicator and whether the firm is globally financed. This variable seems to be a valid instrument, given that the degree of market

openness tends to be uncorrelated with the firm-level error term and, at the same time, is correlated with the firm's access to international bond markets.

The instrumental variables estimates, displayed in the third and fourth columns of Table 4, suggest that the previous results are robust to endogeneity bias. Stock market liberalization reduces long-term debt and shortens the debt maturity structure. On the other hand, access to international bond or equity markets is positively related to a higher long-term debt-equity ratio and to a longer debt maturity structure.

6. Conclusions

This paper has documented mainly two new facts about the significant effects of financial globalization on firms' debt structure. Contrary to the claims that international financial markets lend relatively short term, firms that access international bond and equity markets experience an increase in long-term debt and a longer maturity structure. On the other hand, domestic-only-financed firms experience a shortening of their maturity structure with financial liberalization. This evidence supports to some extent the arguments that predict a lengthening of the maturity structure with globalization. Moreover, the claims that predict a shortening of the maturity structure with globalization seem to apply just to the firms that rely on the domestic financial sector exclusively.

The evidence also indicates that firms from emerging economies with more developed domestic financial systems are less affected by financial liberalization. This implies that relatively developed domestic financial sectors might provide similar financial instruments to the ones obtained abroad, what is particularly important for firms with no access to foreign financing. In light of this finding, if there exist negative effects

of financial liberalization, countries with more developed domestic markets should be less concerned about opening up their financial systems. To the extent that financial liberalization yields positive effects, countries with less developed financial sectors may be the ones benefiting the most.

While the results in this paper support the arguments that financial globalization has some positive effects on emerging economies (as the participation in international capital markets has a positive impact on long-term debt), they also provide some evidence for caution about the globalization process. First, the results suggest that globalization introduces a wedge between the firms that are able to integrate with the world financial markets and those that rely on the domestic financial system. The former seem able to reduce their financial vulnerability relative to the latter. Second, liberalization does lead to a rise in short-term debt for domestic-only-financed firms, increasing the risk of crises, as these constitute the largest group of firms in emerging economies. Finally, the results seem to provide support to the claims that financial markets are segmented, in the sense that the financing available in domestic markets is different from the one available in the international financial system. Financial underdevelopment probably affects negatively the firms that depend on domestic financing.

The new facts reported in this paper leave many questions for future research. One important question is why short-term debt increases for domestic-only-financed firms after financial markets become liberalized. One possible explanation could be related to the new financing available in domestic markets after some firms obtained financing abroad. Due to this extra financing, new firms without previous reputation in

credit markets may obtain access to domestic credit markets because of a "crowding in" effect. However, the lack of reputation may lead lenders to extend only short-term debt to these new firms. Another possible explanation could be that domestic financial intermediaries are the ones driving the increase in short-term debt by borrowing abroad short term and channeling those funds domestically.[24] Unfortunately, our data do not allow us to distinguish bank debt from other types of debt to answer this question. And the existing literature does not help either, as it does not study whether banks shift the maturity of their lending after liberalization.[25]

Another interesting topic for future research is why globally financed firms are able to lengthen their maturity structure. Perhaps, access to international equity markets sends a signal of transparency and credit worthiness at the firm level. Or maybe, the participation in international markets just helps companies overcome the difficulties of contracting in developing countries, accessing better financial institutions, better contractual frameworks, and more liquid markets, what facilitate long-term borrowing.

Future research could also shed light on the other risks that globalization can entail. Regarding the over-borrowing risk, the results suggest that financial liberalization does not seem to lead to higher debt-equity ratios. One possible explanation for this finding is that although debt may have increased substantially, equity financing may have also risen. To better measure the extent of over-borrowing, it would be necessary to analyze more data and other debt indicators. With respect to the exchange rate risk, it

[24] We thank one of the referees for raising this point.
[25] Some studies argue that there is boom in bank lending after liberalization, what might lead to banking and currency crises, while others focus on the gains in efficiency resulting from the liberalization of entry of foreign institutions. The implications from these studies on debt maturity are not straightforward. See,

would be interesting to know whether globalization affects the debt currency composition, and if so in which direction.

among others, Claessens, Demirguc-Kunt, and Huizinga (2001), Corsetti, Roubini, and Pesenti (1999), Kaminsky and Reinhart (1999), and Martinez Peria and Mody (2003).

References

Beck, T., Demirgüç-Kunt, A., Levine, R., 2000, A New Database on the Structure and Development of the Financial Sector, *World Bank Economic Review*, 14, 597–605.

Bekaert, G., Harvey C., 2000, Foreign Speculators and Emerging Equity Markets, *Journal of Finance*, 55, 562–613.

Bekaert, G., Harvey, C., Lundblad, C., 2004, Does Financial Liberalization Spur Growth? Forthcoming, *Journal of Financial Economics*.

Booth, L., Aivazian, V., Demirgüç-Kunt, A., Maksimovic, V., 2001, Capital Structures in Developing Countries, *Journal of Finance*, 56, 87–130.

Boyle, G., Eckhold, K., 1997, Capital Structure Choice and Financial Market Liberalization: Evidence from New Zealand, *Applied Financial Economics*, 7, 427–437.

Broner, F., Lorenzoni, G., Schmukler, S., 2004, Why Do Emerging Economies Borrow Short Term? World Bank Working Paper No. 3389 and MIT Department of Economics Working Paper.

Caballero, R., Krishnamurthy A., 1998, Emerging Market Crises: An Asset Markets Perspective, NBER Working Paper No. 6843.

Calvo, G., 1988, Servicing the Public Debt: The Role of Expectations, *American Economic Review*, 78, 647–661.

Calvo, G., Izquierdo A., Mejía, L., 2004, On the Empirics of Sudden Stops: The Relevance of Balance Sheet Effects, NBER Working Paper No. 10520.

Calvo, G., Mendoza, E., 1996, Mexico's Balance-of-Payments Crisis: A Chronicle of a Death Foretold, *Journal of International Economics*, 41, 235–264.

Calvo, G., Reinhart, C., 2000, When Capital Flows Come to a Sudden Stop: Consequences and Policy, in P. K. Kenen and A. K. Swoboda, eds., Key Issues in Reform of the International Monetary and Financial System, International Monetary Fund: Washington DC.

Cespedes, L. F., Chang, R., Velasco, A., 2000, Balance Sheets and Exchange Rate Policy, NBER Working Paper No. 7840.

Chang, R. and Velasco, A., 1999, Liquidity Crises in Emerging Markets: Theory and Policy, NBER Working Paper No. 7272.

Chang, R., Velasco, A., 2001a, A Model of Financial Crises in Emerging Markets, *The Quarterly Journal of Economics*, 116, 489–517.

Chang, R., Velasco, A., 2001b, Monetary Policy in a Dollarized Economy where Balance Sheets Matter, *Journal of Development Economics*, 66, 445–464.

Claessens, S., Demirguc-Kunt, A., Huizinga, H., 2001, How Does Foreign Entry Affect Domestic Banking Markets? *Journal of Banking and Finance*, 25, 891– 911.

Corsetti, G., Roubini, N., Pesenti, P., 1999, What Caused the Asian Currency and Financial Crisis? *Japan and the World Economy*, 11, 305-73.

De la Torre, A., Schmukler, S., 2005, Coping with Risks through Mismatches: Domestic and International Financial Contracts for Emerging Economies, *International Finance*, 7:3, pp. 1–42.

Edison, H., Warnock, F. E., 2003, A Simple Measure of the Intensity of Capital Controls, *Journal of Empirical Finance,* 10, 81– 103.

Eichengreen, B., Hausmann, R., 1999, Exchange Rates and Financial Fragility, NBER Working Paper No. 7418.

Eichengreen, B., Wyplosz, C., 1993, The Unstable EMS, *Brookings Papers on Economic Activity*, 1, 51–144.

Fan, J. P. H., Titman, S., and Twite, G., 2004, An International Comparison of Capital Structure and Debt Maturity Choices, mimeo, Hong Kong University of Science and Technology.

Fischer, S., 1998, Capital Account Liberalization and the Role of the IMF, in S. Fischer et al., eds., Should the IMF Pursue Capital-Account Convertibility? *Essays in International Finance No. 207*, Department of Economics, Princeton University, May.

Frankel, J., Rose, A., 1996, Currency Crashes in Emerging Markets: Empirical Indicators, *Journal of International Economics*, 41, 351–367.

Furman, J., Stiglitz, J., 1998, Economic Crises: Evidence and Insights from East Asia, *Brookings Papers on Economic Activity*, 2, 1–114.

Gallego, F., Loayza, N., 2000, Financial Structure in Chile: Macroeconomic Developments and Microeconomic Effects, Central Bank of Chile Working Paper No. 75.

Gelos, R. G., Werner, A., 2002, Financial Liberalization, Credit Constraints, and Collateral: Investment in the Mexican Manufacturing Sector, *Journal of Development Economics*, 67, 1–27.

Harris, J., Schiantarelli, F., Siregar, M., 1994, The Effect of Financial Liberalization on Firms' Capital Structure and Investment Decisions: Evidence from a Panel of Indonesian Manufacturing Establishments, 1981–1988, *World Bank Economic Review*, 8, 17–47.

Henry, P., 2000a, Stock Market Liberalization, Economic Reform, and Emerging Market Equity Prices, *Journal of Finance*, 55, 529–564.

Henry, P., 2000b, Do Stock Market Liberalizations Cause Investment Booms? *Journal of Financial Economics*, 58, 301–334.

Jaramillo, F., Schiantarelli, F., Weiss, A., 1996, Capital Market Imperfections Before and After Financial Liberalization: An Euler Equation Approach to Panel Data for Ecuadorian Firms, *Journal of Development Economics*, 51, 367–86.

Jeanne, O., 2000a, Foreign Currency Debt and the Global Financial Architecture, *European Economic Review* 44, 719–727.

Jeanne, O., 2000b, Debt Maturity and the Global Financial Architecture, CEPR Discussion Paper No. 2520.

Jeanne, O., 2003, Why Do Emerging Market Countries Borrow in Foreign Currency? IMF Working Paper No. 03/177.

Kaminsky, G., Reinhart, C., 1999, The Twin Crises: The Causes of Banking and Balance-of-Payments Problems, *American Economic Review*, 89, 473–500.

Kaminsky, G., Schmukler, S., 2003, Short-Run Pain, Long-run Gain: The Effects of Financial Liberalization, NBER Working Paper No. 9787.

Koo, J., Shin, S., 2004, Financial Liberalization and Corporate Investments: Evidence from Korean Firm Data, *Asian Economic Journal*, 18, 277-292.

Krugman, P., 1998, Saving Asia: It's Time to Get Radical, *Fortune*, September 7, 74–80.

Krugman, P., 1999, Balance Sheets, the Transfer Problem, and Financial Crises, in P. Isard, A. Razin and A. Rose, eds., International Finance and Financial Crises: Essays in Honor of Robert Flood, Kluwer Academic Publishers: Boston.

Lins, K., Strickland, D., Zenner, M., 2003, Do Non-U.S. Firms Issue Equity on U.S. Stock Exchanges to Relax Capital Constraints? *Journal of Financial and Quantitative Analysis*, forthcoming

Martinez, W., Werner, A., 2002, The Exchange Rate Regime and the Currency Composition of Corporate Debt: The Mexican Experience, *Journal of Development Economics,* 69, 315-334.

Martinez Peria, M. S., Mody, A., 2004, How Foreign Participation and Market Concentration Impact Bank Spreads: Evidence from Latin America, *Journal of Money, Credit, and Banking,* 36, 511-538.

McKinnon, R., Pill, H., 1997, Credible Economic Liberalizations and Over-Borrowing, *American Economic Review*, 87, 189–93.

Mishkin, F., 2003, Financial Policies and the Prevention of Financial Crises in Emerging Market Countries, in M. Feldstein, ed., Economic and Financial Crises in Emerging Market Countries, University of Chicago Press: Chicago.

Myers, S., 1977, Determinants of Corporate Borrowing, *Journal of Financial Economics*, 5, 147–75.

Myers, S., 1984, Capital Structure Puzzle, *Journal of Finance*, 39, 575–92.

Obstfeld, M., 1998, The Global Capital Market: Benefactor or Menace? *Journal of Economic Perspectives*, 12, 9–30.

Opler, T., Titman, S., 1994, The Debt-Equity Choice: An Empirical Analysis, Working Paper.

Rajan, R., Zingales, L., 1995, What Do We Know about Capital Structure? Some Evidence from International Data, *Journal of Finance*, 50, 1421–1460.

Rodrik, D., 1998, Who Needs Capital Account Convertibility? in S. Fischer et al., eds., Should the IMF Pursue Capital-Account Convertibility? *Essays in International Finance* No. 207, Department of Economics, Princeton University, May.

Rodrik, D., Velasco, A., 2000, Short-Term Capital Flows, in B. Pleskovic and J. Stiglitz, eds., Annual World Bank Conference on Development Economics 1999, World Bank: Washington DC.

Sachs J., Tornell, A., Velasco, A., 1996, Financial Crises in Emerging Markets: The Lessons from 1995, *Brookings Paper on Economic Activity*, 1, 147–215.

Stiglitz, J., 1999, Bleak Growth for the Developing World, *International Herald Tribune,* April 10–11, 6.

Stulz, R. M., 1999, Globalization of Equity Markets and the Cost of Capital, *Journal of Applied Corporate Finance* 12, 1-12.

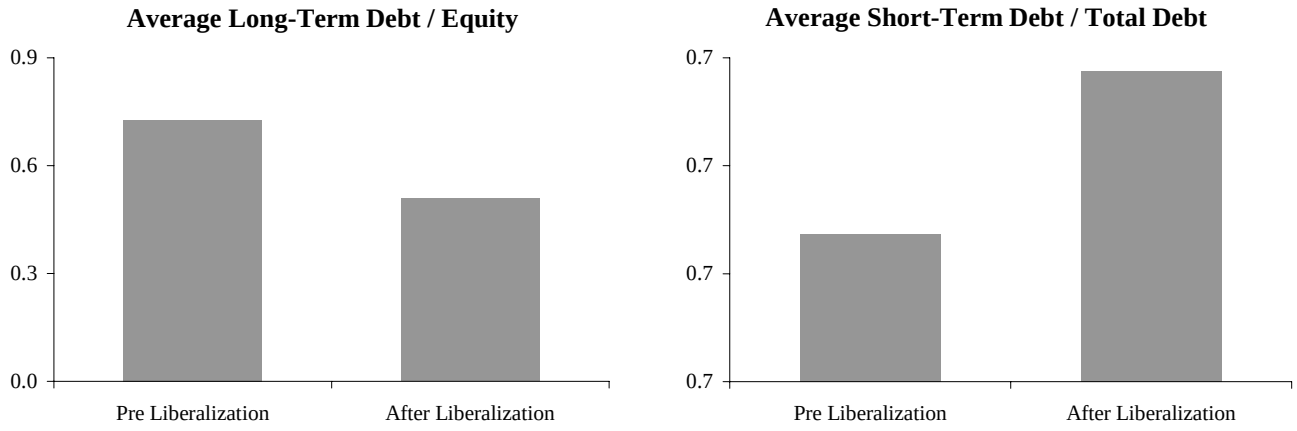
Titman, S., Wessels, R., 1988, The Determinants of Capital Structure Choice, *Journal of Finance*, 43, 1–19.

Tirole, J., 2002, Financial Crises, Liquidity, and the International Monetary System, Princeton University Press.

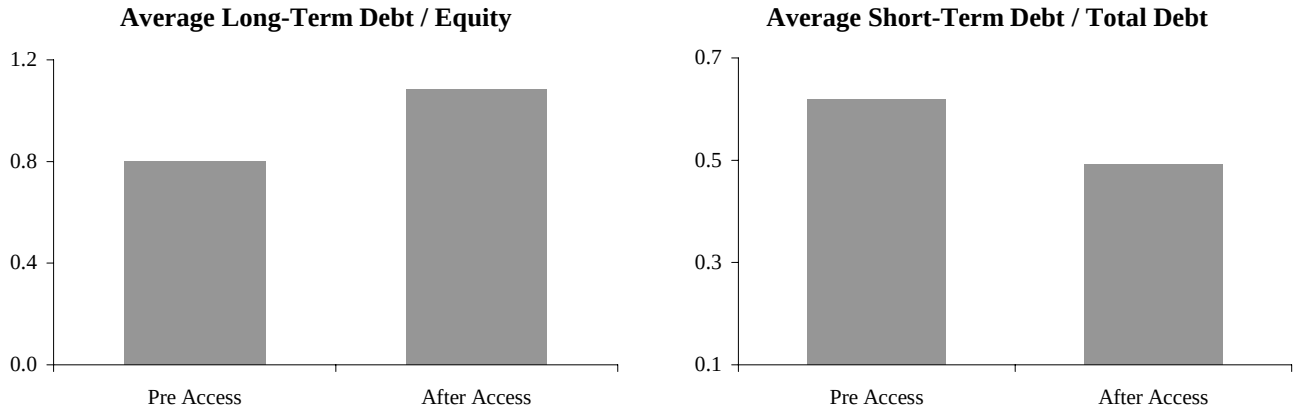
Figure 1
Effects of Financial Liberalization and Access to International Markets

The top panel displays the average long-term debt/equity and short-term debt/total debt for all firms in the sample, before and after financial liberalization policies were implemented. The last two panels display the same ratios for globally financed firms (those that access international bonds or equity markets at some point during the sample period), before and after they access international markets.

All Firms



Firms With Access to International Bond Markets



Firms With Access to International Equity Markets

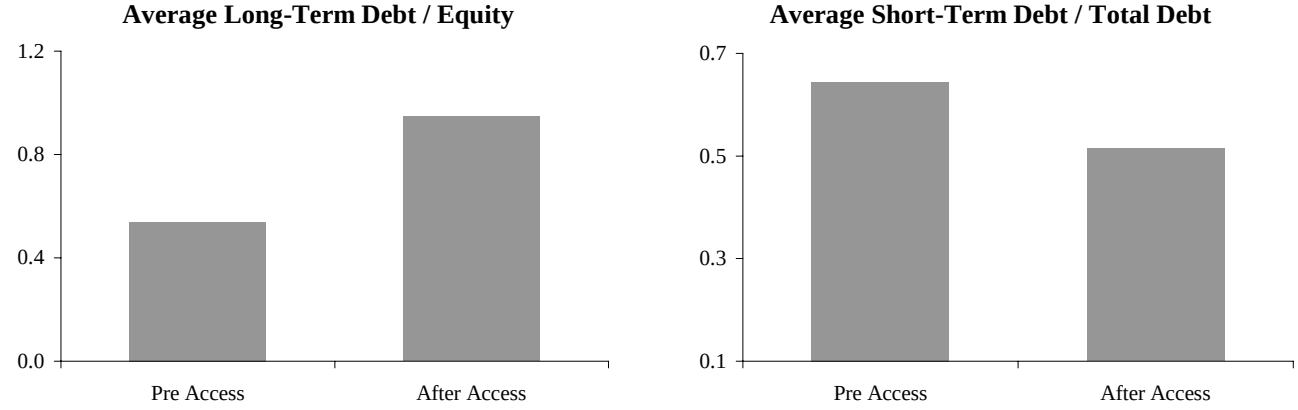


Table 1
Pooled Estimates

The table reports pooled panel results for the following ratios: debt/equity, long-term debt/equity, and short-term debt/total debt. The first two ratios stand for the firms' leverage, and the third ratio captures the debt maturity structure. Standard errors are robust, using the White correction for heteroskedasticity. Thailand is the base country. Absolute values of t-statistics are in brackets. *,**,*** indicate 10, 5, and 1 percent level of significance, respectively.

	Dependent Variables				
Explanatory Variables	**Long-Term Debt / Equity**	**Short-Term Debt / Total Debt**	**Long-Term Debt / Equity**	**Short-Term Debt / Total Debt**	**Debt / Equity**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**
Firms' Characteristics:					
Log of Net Fixed Assets	0.073 ***	-0.036 ***	0.070 ***	-0.033 ***	-0.064
	[4.015]	[14.330]	[3.837]	[13.042]	[0.743]
Net Fixed Assets/Total Assets	-0.094	-0.160 ***	-0.089	-0.165 ***	-0.865 ***
	[1.203]	[9.499]	[1.142]	[9.768]	[3.183]
Profits/Total Assets	-1.829 ***	0.192 ***	-1.843 ***	0.206 ***	-8.682 ***
	[7.682]	[5.249]	[7.768]	[5.529]	[3.645]
Tradable Producers	-0.238 ***	0.066 ***	-0.231 ***	0.059 ***	-0.085
	[3.764]	[6.746]	[3.633]	[6.140]	[0.350]
Access to International Capital Markets:					
Access to International Equity Markets	0.224 ***	-0.121 ***	0.201 ***	-0.099 ***	0.303
	[3.022]	[9.078]	[2.590]	[7.183]	[1.424]
Access to International Bond Markets	0.266 ***	-0.106 ***	0.222 ***	-0.064 ***	0.286 **
	[3.495]	[6.013]	[2.890]	[3.642]	[1.972]
Financial Liberalization and Crises:					
Stock Market Liberalization	-0.218 **	0.070 ***			-0.006
	[2.476]	[6.386]			[0.013]
Stock Market Liberalization * Globally Financed Firms			-0.148	0.002	
			[1.531]	[0.146]	
Stock Market Liberalization * Domestic-Only-Financed Firms			-0.225 **	0.076 ***	
			[2.550]	[7.035]	
Stock Market Liberalization * Financial Development	0.055 **	-0.021 ***	0.055 **	-0.021 ***	0.081
	[2.265]	[4.434]	[2.264]	[4.420]	[0.501]
Mexican Crisis - 1995	-0.020	-0.006	-0.019	-0.007	-0.198
	[0.611]	[0.547]	[0.584]	[0.632]	[0.693]
Asian Crisis - 1997	0.612 ***	0.001	0.613 ***	0.000	2.286 *
	[3.278]	[0.082]	[3.285]	[0.019]	[1.889]
Asian Crisis - 1998	0.464 ***	-0.021	0.463 ***	-0.021	1.208 ***
	[2.600]	[1.263]	[2.596]	[1.222]	[2.602]
Country Effects:					
Argentina	-0.218 ***	-0.106 ***	-0.231 ***	-0.092 ***	-1.688 ***
	[3.026]	[7.176]	[3.233]	[6.251]	[4.570]
Brazil	-0.054	-0.148 ***	-0.068	-0.135 ***	-1.376 ***
	[0.961]	[11.237]	[1.193]	[10.147]	[2.842]
Indonesia	-0.221	0.028	-0.222 *	0.029 *	-0.536
	[1.639]	[1.587]	[1.647]	[1.671]	[0.781]
South Korea	-0.047	-0.025 *	-0.043	-0.029	-0.058
	[0.702]	[1.746]	[0.645]	[2.015]**	[0.158]
Malaysia	0.573 ***	-0.045 ***	0.574 ***	-0.045 ***	1.850 **
	[4.166]	[3.550]	[4.173]	[3.636]	[1.963]
Mexico	-0.010	-0.091 ***	-0.025	-0.077 ***	-1.109 **
	[0.172]	[7.834]	[0.418]	[6.484]	[2.033]
Constant	0.231 *	1.067 ***	0.256 *	1.043 ***	3.195 ***
	[1.725]	[53.161]	[1.904]	[51.622]	[7.372]
Adjusted R-Squared	0.143	0.244	0.143	0.251	0.037
Number of Firms	686	686	686	686	686
Number of Observations	6133	6133	6133	6133	6133
Mean of Dependent Variable	0.591	0.703	0.591	0.703	1.896

Table 2

Domestic Financial Sector, Stock Market, and Capital Account Liberalization

The table reports pooled panel results for the following ratios: long-term debt/equity and short-term debt/total debt. The first ratio stands for the firms' long-term leverage, while the second ratio captures the debt maturity structure. Standard errors are robust, using the White correction for heteroskedasticity. The First Liberalization dummy variable equals one after any of the three sectors (domestic financial sector, stock market, or capital account) is liberalized and zero otherwise. Thailand is the base country. Absolute values of t-statistics are in brackets. *,**,*** indicate 10, 5, and 1 percent level of significance, respectively.

	Dependent Variables			
Explanatory Variables	**Long-Term Debt / Equity**	**Short-Term Debt / Total Debt**	**Long-Term Debt / Equity**	**Short-Term Debt / Total Debt**
	(1)	**(2)**	**(3)**	(4)
Firms' Characteristics:				
Log of Net Fixed Assets	0.087 ***	-0.038 ***	0.082 ***	-0.035 ***
	[4.052]	[14.288]	[3.730]	[12.693]
Net Fixed Assets/Total Assets	-0.118	-0.157 ***	-0.111	-0.163 ***
	[1.513]	[9.300]	[1.449]	[9.575]
Profits/Total Assets	-1.811 ***	0.193 ***	-1.830 ***	0.209 ***
	[7.787]	[5.295]	[7.879]	[5.605]
Tradable Producers	-0.240 ***	0.066 ***	-0.232 ***	0.060 ***
	[3.796]	[6.792]	[3.757]	[6.195]
Access to International Capital Markets:				
Access to International Equity Markets	0.209 ***	-0.120 ***	0.187 **	-0.098 ***
	[2.745]	[8.947]	[2.371]	[7.101]
Access to International Bond Markets	0.260 ***	-0.105 ***	0.212 ***	-0.062 ***
	[3.448]	[5.969]	[2.720]	[3.531]
Financial Liberalization and Crises:				
Domestic Financial Sector Liberalization	-0.221 ***	0.041 ***		
	[3.483]	[4.615]		
Stock Market Liberalization	-0.094 **	0.038 ***		
	[2.007]	[4.499]		
Capital Acccount Liberalization	0.003	0.014		
	[0.046]	[1.891]		
Domestic Financial Sector Liberalization *			-0.142	0.025
Globally Financed Firms			[0.889]	[1.536]
Domestic Financial Sector Liberalization *			-0.226 ***	0.039 ***
Domestic-Only-Financed Firms			[3.958]	[4.372]
Stock Market Liberalization *			-0.132	-0.020
Globally Financed Firms			[0.717]	[0.981]
Stock Market Liberalization *			-0.084 *	0.043 ***
Domestic-Only-Financed Firms			[1.707]	[4.874]
Capital Acccount Liberalization *			0.048	0.018
Globally Financed Firms			[0.410]	[1.073]
Capital Acccount Liberalization *			-0.004	0.016 **
Domestic-Only-Financed Firms			[0.053]	[2.058]
First Liberalization * Financial Development	0.071 **	-0.031 ***	0.068 *	-0.030 ***
	[2.168]	[5.128]	[1.921]	[4.963]
Mexican Crisis - 1995	-0.021	-0.003	-0.020	-0.004
	[0.655]	[0.275]	[0.604]	[0.380]
Asian Crisis - 1997	0.621 ***	0.006	0.622 ***	0.005
	[3.127]	[0.462]	[3.119]	[0.438]
Asian Crisis - 1998	0.481 ***	-0.027	0.479 ***	-0.026
	[2.705]	[1.571]	[2.696]	[1.531]
Country Effects:				
Argentina	-0.173 **	-0.125 ***	-0.195 **	-0.110 ***
	[2.183]	[8.031]	[2.275]	[6.995]
Brazil	0.019	-0.166 ***	-0.001	-0.150 ***
	[0.289]	[11.672]	[0.008]	[10.440]
Indonesia	-0.051	-0.024	-0.047	-0.027
	[0.431]	[1.479]	[0.400]	[1.637]
South Korea	0.531 ***	-0.039 ***	0.532 ***	-0.040 ***
	[3.138]	[2.877]	[3.113]	[2.976]
Malaysia	-0.033	-0.080 ***	-0.048	-0.066 ***
	[0.419]	[5.994]	[0.612]	[4.884]
Mexico	-0.272 *	0.028	-0.270 *	0.028
	[1.674]	[1.508]	[1.646]	[1.521]
Constant	0.184	1.077 ***	0.218	1.050 ***
	[1.291]	[52.632]	[1.445]	[50.120]
Adjusted R-Squared	0.145	0.246	0.145	0.253
Number of Firms	686	686	686	686
Number of Observations	6133	6133	6133	6133
Mean of Dependent Variable	0.591	0.703	0.591	0.703

Table 3

Regional Estimates - East Asia and Latin America

The table reports pooled panel results for East Asian and Latin American countries separately for the following ratios: long-term debt/equity and short-term debt/total debt. The first ratio stands for the firms' long-term leverage, while the second ratio captures the debt maturity structure. Standard errors are robust, using the White correction for heteroskedasticity. Thailand is the base country for the East Asian estimates and Mexico is the base country for the Latin American estimates. Absolute values of t-statistics are in brackets. *,**,*** indicate 10, 5, and 1 percent level of significance, respectively.

	East Asia		Latin America	
	Dependent Variables		Dependent Variables	
Explanatory Variables	**Long-Term Debt / Equity**	**Short-Term Debt / Total Debt**	**Long-Term Debt / Equity**	**Short-Term Debt / Total Debt**
	(1)	**(2)**	**(3)**	**(4)**
Firms' Characteristics:				
Log of Net Fixed Assets	0.130 ***	-0.043 ***	0.042	-0.030 ***
	[5.129]	[11.699]	[1.602]	[7.379]
Net Fixed Assets/Total Assets	-0.194 **	-0.132 ***	0.015	-0.215 ***
	[2.064]	[7.464]	[0.122]	[4.200]
Profits/Total Assets	-2.241 ***	0.203 ***	-1.303 ***	0.184 ***
	[4.924]	[3.812]	[6.650]	[3.416]
Tradable Producers	-0.275 ***	0.073 ***	0.000	-0.010
	[3.931]	[7.107]	[0.006]	[0.314]
Access to International Capital Markets:				
Access to International Equity Markets	0.289 ***	-0.108 ***	0.118 *	-0.137 ***
	[2.608]	[6.181]	[1.684]	[6.387]
Access to International Bond Markets	0.294 **	-0.083 ***	0.142 **	-0.124 ***
	[2.501]	[3.514]	[2.506]	[4.480]
Financial Liberalization and Crises:				
Stock Market Liberalization	0.085	0.061 ***	-0.387 ***	0.116 ***
	[0.557]	[4.409]	[3.425]	[4.408]
Stock Market Liberalization * Financial Development	-0.061	-0.017 ***	0.336	-0.139 ***
	[1.420]	[2.959]	[1.156]	[2.628]
Mexican Crisis - 1995	0.016	-0.005	0.009	-0.001
	[0.332]	[0.397]	[0.173]	[0.027]
Asian Crisis - 1997	0.764 ***	0.007	0.158	-0.010
	[3.104]	[0.462]	[1.457]	[0.405]
Asian Crisis - 1998	0.515 **	-0.006	0.198 *	-0.030
	[1.962]	[0.266]	[1.861]	[0.977]
Country Effects:				
Indonesia	-0.257 ***	-0.005		
	[3.281]	[0.320]		
South Korea	0.542 ***	-0.029		
	[3.182]	[1.911]*		
Malaysia	0.350 ***	-0.119 ***		
	[3.841]	[7.676]		
Argentina			0.048	-0.138 ***
			[0.365]	[4.633]
Brazil			-0.063	-0.139 ***
			[0.431]	[4.294]
Constant	-0.316	1.106 ***	0.141	1.133 ***
	[1.570]	[39.086]	[0.470]	[20.528]
Adjusted R-Squared	0.149	0.252	0.053	0.221
Number of Firms	466	466	220	220
Number of Observations	4301	4301	1832	1832
Mean of Dependent Variable	0.716	0.716	0.297	0.673

Table 4
Within and Instrumental Variables Estimations

The table reports within (or fixed effects) and instrumental variables (IV) results for the following ratios: long-term debt/equity and short-term debt/total debt. The first ratio stands for the firms' long-term leverage, while the second ratio captures the debt maturity structure. The instruments in the IV estimates are lagged explanatory variables of Firms' Characteristics (except the variable Tradable Producers), lagged values of the variable Access to International Equity Markets, and an indicator of each country's access to international bond market. See main text for a description of the latter instrument. Standard errors are robust, using the White correction for heteroskedasticity. Thailand is the base country. Absolute values of t-statistics are in brackets. *,**,*** indicate 10, 5, and 1 percent level of significance, respectively.

	Within Estimates		**IV Estimates**	
	Dependent Variables		**Dependent Variables**	
Explanatory Variables	**Long-Term Debt / Equity**	**Short-Term Debt / Total Debt**	**Long-Term Debt / Equity**	**Short-Term Debt / Total Debt**
	(1)	**(2)**	**(3)**	**(4)**
Firms' Characteristics:				
Log of Net Fixed Assets	0.004	-0.021 ***	0.102 ***	-0.036 ***
	[0.253]	[7.669]	[5.463]	[9.263]
Net Fixed Assets/Total Assets	-0.049	-0.077 ***	-0.266 **	-0.182 ***
	[0.466]	[3.549]	[2.205]	[8.627]
Profits/Total Assets	-1.559 ***	0.199 ***	-3.667 ***	0.240 **
	[5.895]	[5.217]	[7.238]	[2.099]
Tradable Producers			-0.219 ***	0.067 ***
			[3.119]	[5.925]
Access to International Capital Markets:				
Access to International Equity Markets	0.275 **	-0.053 ***	0.415 ***	-0.088 ***
	[2.138]	[3.249]	[3.575]	[4.153]
Access to International Bond Markets	0.259 ***	-0.074 ***	0.283 **	-0.226 ***
	[3.515]	[5.903]	[2.038]	[6.079]
Financial Liberalization and Crises:				
Stock Market Liberalization	-0.008	0.034 ***	-0.243 ***	0.054 ***
	[0.133]	[3.531]	[3.198]	[3.954]
Stock Market Liberalization * Financial Development	0.022	-0.018 ***	0.060 **	-0.015 **
	[1.152]	[4.242]	[2.123]	[2.121]
Mexican Crisis - 1995	0.028	-0.017 **	-0.051	-0.007
	[0.991]	[2.19]	[1.498]	[0.572]
Asian Crisis - 1997	0.684 ***	-0.012	0.385 ***	-0.006
	[3.798]	[1.365]	[3.998]	[0.412]
Asian Crisis - 1998	0.459 ***	-0.029 **	0.233 ***	-0.021
	[3.073]	[2.188]	[2.892]	[1.205]
Country Effects:				
Argentina			-0.204 **	-0.091 ***
			[2.402]	[4.502]
Brazil			-0.045	-0.138 ***
			[0.535]	[7.835]
Indonesia			-0.062	-0.003
			[0.769]	[0.15]
South Korea			0.378 ***	-0.045 ***
			[3.899]	[2.879]
Malaysia			0.117	-0.100 ***
			[1.486]	[6.121]
Mexico			-0.413 ***	0.065 ***
			[2.969]	[2.787]
Constant			0.132	1.077 ***
			[0.855]	[35.284]
Adjusted R-Squared	0.380	0.627	0.181	0.242
Number of Firms	686	686	686	686
Number of Observations	6133	6133	4654	4654
Mean of Dependent Variable	0.591	0.703	0.608	0.692

Appendix Table 1
Chronology of Financial Liberalization

Argentina
In October 1987, most domestic interest rate regulations were eliminated. This reform was followed by capital account liberalization at the end of 1989, when a free exchange rate was introduced and the special exchange rate regime for capital account transactions was abolished. In November 1989, a new foreign investment regime was put in place, eliminating all legal limits on foreign investment and liberalizing the repatriation of capital and remittance of dividends and capital gains.
Brazil
In 1988, some loan interest rate controls were eliminated. The liberalization was completed in 1989, when controls on deposit interest rates were eliminated. In 1990, certain financial institutions were authorized to issue commercial paper abroad. Borrowing abroad by corporations had a minimum maturity of one year, which was subsequently modified several times. In May 1991, the foreign investment law was modified, increasing limits on foreign ownership to 49 percent of voting shares and 100 percent of non-voting shares. Foreign investors were allowed to set up omnibus accounts, which were essentially portfolios of one or more shares held in local custody (before foreign portfolio investment was limited to investment through country funds).
Indonesia
Most interest rates controls and credit ceilings were eliminated in 1983. In September 1989, the Ministry of Finance allowed foreigners to purchase up to 49 percent of all listed shares, excluding bank shares. In 1988, almost all restrictions on borrowing abroad (except for open position limits) were lifted. However, in 1991 the central bank adopted a series of measures to discourage foreign borrowing (limits to banks' short-term foreign exchange liabilities, reserve requirements on foreign borrowings) and in 1992 central bank approval was required to borrow abroad. In 1998, a special exchange rate regime for capital account transactions was established.
Malaysia
The liberalization of interest rates started in October 1978, but controls on deposit and loan rates were re-imposed in October 1985. These controls were eliminated in February 1991. Since 1979, borrowing from non-residents by banks and corporations was freely permitted up to a maximum amount, with larger amounts requiring permission from the Controller of Foreign Exchange. From January to August 1994, all residents were prohibited from selling short-term monetary instruments to non-residents. In September 1998, exchange controls were introduced. At the end of 1988, the government presented plans for the liberalization of foreign ownership policies in order to attract foreign investors.
Mexico
The liberalization of interest rates started in October 1988. In April 1989, interest rate ceilings were abolished and banks were allowed to pay interest on checking accounts. In May of that year, the restrictions on foreign investment were substantially liberalized, allowing foreign investors to participate in the Mexican Stock Market through specially designed trust funds and "B" shares. In 1991, restrictions on repatriation of capital and income were lifted. In November 1991, the special exchange rate regime for capital account transactions was abolished and the requirement to channel foreign bank loans through the controlled exchange rate market was also eliminated.

Appendix Table 1
Chronology of Financial Liberalization

South Korea
Loan rates and interest rates on time deposits with maturities of more than two years were liberalized in 1988. Short-term deposit rates and the total amount of credit were still controlled by the authorities. In 1995, all lending rates and most deposit rates were deregulated. In January 1992, foreign investors were allowed to invest in the domestic stock market, subject to the restriction that total foreign ownership could not exceed ten percent of a firm's shares and that a single foreign investor could not own more than three percent of a firm's shares. These limits were subsequently raised several times. Although a capital account liberalization plan was announced in 1993, considerable restrictions on capital inflows remained. In 1996, short-term foreign borrowing was permitted under the regulations governing foreign exchange positions.
Thailand
Foreign investor participation in the domestic stock market was permitted in September 1987, when the Alien Board of the Thailand Stock Exchange was inaugurated, allowing foreigners to trade stocks of those companies that had reached their foreign investment limits. The liberalization of the domestic financial sector started in June 1991, when the Bank of Thailand eliminated the interest rate limits for time deposits with maturity of more than one year, and was completed in June 1992, when lending rates were liberalized. In 1992 restrictions on loans from abroad were eliminated, but in 1995 a series of measures aimed at reducing foreign-financed lending were introduced. Between July 1997 and January 1998 a two-tier exchange rate regime was introduced.

Source: Bekaert and Harvey (2000), Kaminsky and Schmukler (2003)