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ABSTRACT

This paper provides the first comprehensive documentation of the main features of corporate bond issues in domestic and international markets and analyzes how firms use these markets after they internationalize. We find that debt issues in domestic and international bond markets have different characteristics, not explained by differences across firms or their country of origin. International issues tend to be larger, of shorter maturity, denominated in foreign currency, and include a higher fraction of fixed rate contracts. Moreover, a large proportion of firms remain active in domestic bond markets after accessing international markets, and many of these firms use both markets for different types of issues. This evidence suggests that domestic and international bond markets provide different financial services and are not substitutes, but rather complements.

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1. Introduction

Financial globalization has transformed corporate finance since the early 1990s. Firms from both developed and developing countries increasingly raise capital through debt and equity issues outside their domestic markets and list their securities in major financial centers. For example, the total amount raised by firms through security issues in foreign markets grew more than four-fold between 1991 and 2008, reaching about one trillion U.S. dollars at the end of the period and accounting for almost 40 percent of the total amount raised in world capital markets.

The internationalization of capital markets has led to a large literature on why firms issue securities in foreign markets. Most of this research focuses on equity markets, particularly on the decision by firms to list their shares in foreign stock exchanges. According to one strand of this literature, firms internationalize to circumvent regulations, poor accounting systems, taxes, and illiquid domestic markets that might discourage foreign investors from purchasing their shares in local markets. Other research examines whether listing in a foreign stock exchange allows firms to bond to a better corporate governance framework or to exploit temporarily high prices for their securities during “hot” markets.¹

Research on the internationalization of equity markets, however, offers only a partial perspective on financial globalization because it largely overlooks bond markets. This is a significant drawback since bond markets constitute a larger and more internationalized source of capital for firms than equity markets. Over the period from 1991 to 2008, bond issues

¹ For theoretical arguments that focus on barriers to foreign investor participation in local market as drivers of the decision to list shares abroad see, for example, Black (1974), Solnik (1974), Stapleton and Subrahmanyam (1977), Errunza and Losq (1985), Alexander et al. (1987), and Domowitz et al. (1998). Stulz (1999) and Coffee (2002) argue that listing in foreign exchanges may allow firms to improve investor protection, while Errunza and Miller (2000) and Henderson et al. (2006) highlight the role of market timing in the decision to issue shares abroad. For empirical analyses of the motivations for cross-listings in foreign stock exchanges see, among many others, Pagano et al. (2002), Benos and Weisbach (2004), Doidge et al. (2004), and Gozzi et al. (2008).

accounted for almost 80 percent of all capital raised by firms in capital markets around the world and for more than 90 percent of all capital raised in markets outside their home country.²

In this paper, we provide the first comprehensive documentation of the main characteristics of corporate bond issues in domestic and international capital markets and analyze how firms use these markets after they internationalize. While Henderson et al. (2006) and Gozzi et al. (2010) examine capital raisings around the world, we (1) document differences in bond characteristics, such as issue size, maturity, interest rate type, and currency, between issues in domestic and international markets and (2) assess how firms use domestic and international bond markets after they first internationalize.³ Thus, we evaluate two broad questions: Do firms use domestic and international bond markets to issue different types of bond contracts? And, do domestic and international bond markets act as complements or substitutes? That is, do firms use both markets after internationalization, or do they opt out of domestic markets once they are able to issue bonds in international markets? Rather than testing or proposing specific theories, this paper documents new patterns on the use of domestic and international bond markets, relates these patterns to current theories, and offers new challenges to those seeking to understand international corporate finance.

To conduct our study, we construct and analyze a unique dataset that includes information on major characteristics of 116,338 corporate bond issues in domestic and international markets conducted by 13,920 firms from 99 countries. Our study covers the

² The value of debt issues is not directly comparable to that of equity issues because equity issues have no maturity, while debt issues must be repaid. Part of the proceeds from debt issues is typically used to repay maturing debt and therefore only a fraction of debt issues can be considered new financing. Henderson et al. (2006) try to adjust the data on debt issues to take this fact into account and conclude that, even with these adjustments, debt issues constitute a much larger source of new capital than equity issues at the aggregate level.

³ Earlier empirical work on international bond markets compares yields in the Eurodollar and U.S. markets for U.S. firms (Finnerty et al., 1980; Kidwell et al., 1985; Mahajan and Fraser, 1986) and analyzes stock price reactions to foreign bond issues in the Eurobond and U.S. markets (Kim and Stulz, 1988; Miller and Puthenpurackal, 2002). Miller and Puthenpurackal (2005) and Petrusek (2010) study the effects of global bonds (i.e., bonds that are issued and traded simultaneously in multiple markets) on bond yields and liquidity.

period from 1991 to 2008, though all the results hold when we restrict the sample to the period from 1991 to 2006 to avoid any undue influence from the global financial crisis.

We examine four main non-price characteristics of debt issues—issue size, maturity, currency denomination, and type of rate (i.e., fixed vs. floating)—that have received considerable attention in the corporate finance literature. Several theories emphasize the roles of agency costs, asymmetric information, signaling, and liquidity risk in shaping the maturity structure of corporate debt (Myers, 1977; Flannery, 1986; Diamond, 1991, 1993). Empirical research, focusing mostly on U.S. firms, presents evidence broadly consistent with these theoretical arguments (Mitchell, 1993; Barclay and Smith, 1995; Guedes and Opler, 1996; Berger et al., 2005). The literature on the choice of the currency denomination of debt argues that firms issue debt in foreign currencies to hedge their foreign currency cash-flows (Graham and Harvey, 2001; Allayannis et al., 2003) and to exploit temporary differences in interest rates across currencies (McBrady and Schill, 2007; Habib and Joy, 2010). A similar set of arguments applies to the choice of the type of rate. Firms may choose the interest rate risk exposure of their debt to match that of their assets and hedge (Smith and Stulz, 1985; Froot et al., 1993) or may try to time the market, issuing floating rate debt when the yield curve is steeper (Faulkender, 2005).

Our paper has two major, interrelated findings. First, debt issues in domestic and international bond markets have different characteristics. In particular, international bond issues are larger, of shorter maturity, tend to be denominated in foreign currency, and entail more fixed interest rate contracts. These differences are not driven by differences between those firms that raise debt abroad and those that issue securities at home. Indeed, we find that the differences between bond issues at home and abroad remain after controlling for time-varying country-specific factors and firm-level fixed effects, and also when analyzing only those

firms that issue bonds both in domestic and international capital markets. In other words, issues conducted abroad by a given firm are different from those conducted in the domestic market by the same firm, suggesting that domestic and international markets may specialize in bonds with different traits. These findings hold for firms from both developed and developing countries.

Second, while there is great heterogeneity, a large fraction of firms remain active in domestic markets after accessing international markets for the first time, and actually increase their debt issuance activity at home. If international markets offered access to capital on overall better conditions than domestic markets, then firms would opt out of domestic markets once they met the criteria to access international markets. Instead, we find that a large proportion of firms continue issuing debt at home after issuing abroad and that many of these firms use both domestic and international bond markets, tapping international markets for different types of bond issues than domestic ones. Our findings suggest that international markets are not substitutes for domestic markets but rather complements, with firms that have access to both markets conducting some types of issues at home and others abroad.

These patterns provide suggestive and challenging information about corporate financing decisions in a financially integrated world. In a frictionless world, the location where firms issue securities is irrelevant. However, in practice, frictions might lead different markets to provide different types of securities. For example, regulations, taxes, and information asymmetries, among other factors, might hinder the ability of investors to purchase securities outside their home market (Lewis, 1999; Karolyi and Stulz, 2003). In this context, investors with different preferences, investment horizons, and abilities to diversify risk might dominate particular markets, so that securities with distinct traits are offered in different locations. As another example, securities may also differ across markets if market makers in different

locations specialize in securities with particular characteristics. Consequently, for a variety of reasons, bond attributes might differ across geographic locations, increasing the complexity of financing decisions faced by those corporations with the ability to raise capital in different markets. Although we do not formally test any theory regarding the sources of the patterns documented in this paper, our results show that firms indeed issue bonds with different characteristics in domestic and foreign markets and that the differences across markets are not accounted for by differences across firms. Moreover, we find that many firms remain active in domestic bond markets after accessing international markets and that these firms often choose to issue different types of bonds in different markets.

One potential limitation of our analyses is that we focus on non-price characteristics of debt issues. We do this because of the difficulties associated with comparing yields across multiple markets and currencies. In an extension, Appendix 1 examines yields on U.S. dollar-denominated bonds, since the dollar is the most common currency of denomination for bond issues in our sample. This approach significantly reduces the sample of firms and limits cross-country comparisons. Indeed, this strategy largely restricts these analyses to U.S. firms issuing bonds in the Eurobond and U.S. markets. For this reason, we relegate these findings to an appendix for interested readers. Again, we find that issues abroad are different from issues at home. In particular, issues abroad tend to have lower yields than issues at home, after conditioning on different bond characteristics, country-year dummies, and firm fixed effects.

The rest of the paper is organized as follows. Section 2 describes the data and presents descriptive statistics. Section 3 characterizes the main features of corporate bond issues in domestic and international markets. Section 4 shows how firms that issue debt abroad use domestic and international bond markets following their internationalization. Section 5 concludes.

2. Data and Descriptive Statistics

2.1 Data

To compare the major characteristics of corporate bond issues in international and domestic markets and analyze how firms use these markets, we assemble a comprehensive dataset on firms' public debt issues in capital markets around the world from 1991 through 2008.

Our data on firms' debt issuance activity come from Security Data Corporation's (SDC) New Issues Database, which provides transaction-level information on new bond issues with an original maturity of one year or more. Given that SDC does not collect data on debt issues with a maturity of less than one year, our dataset does not include commercial paper issues with such short-term maturities. Because our analysis focuses on corporate bond issues, we exclude all public sector debt issues, comprising bonds issued by national, local, and regional governments, government agencies, regional agencies, and multilateral organizations. We also exclude debt issues by investment funds, investment companies, and real estate investment trusts (REITs), as well as mortgage-backed securities and other asset-backed securities.⁴

SDC provides data on several major characteristics of corporate bond issues, including the amount raised, issue date, maturity date, currency denomination, credit rating, type of rate, and yield at issue. SDC collects data on security issuances mostly from filings with local regulatory agencies and exchanges. These data are augmented with data from other sources such as offering circulars, prospectus, surveys of investment banks, brokers, and other financial advisors, news sources, trade publications, and wires. While data for issues in the U.S. start in

⁴ SDC does not provide accurate data on the location of issuance of privately placed bonds. Thus, we cannot classify these issues as domestic or international. We, therefore, exclude private placements from our sample. Private placements account for less than 18 percent of the total amount raised through corporate bond issues in capital markets around the world during our sample period according to SDC.

the 1970s, coverage of other markets starts later, with most regional databases starting in 1991.⁵ Therefore, we restrict our sample to the period 1991-2008.

We considered several subsets of these data in our analyses. First, we were concerned that including data for the onset of the recent global financial crisis might affect the results. Consequently, we re-did all the analyses reported throughout the paper using data for only the period 1991-2006 and obtained similar conclusions. Second, our sample includes bond issues by both financial and non-financial firms. We include all firms in our analyses because we want to provide a comprehensive view of bond markets around the world. Although financial and non-financial firms might differ in their use of domestic and international bond markets, we obtain results similar to those reported throughout the paper when restricting the sample to non-financial firms. Third, there are some firms that are very active in debt markets, conducting many issues and capturing a significant fraction of the overall debt issuance activity. Therefore, as an additional robustness check, we re-estimated all our regressions excluding the top five percent of the firms in terms of the number of debt issues and obtained similar results.

To classify debt issues as domestic or international, we consider the main market in which the bonds are issued and compare it to the issuing firm's nationality.^{6,7} For offerings that

⁵ The SDC database is divided into twelve regional sub-databases covering different markets: Asian Pacific Domestic (Hong Kong, Indonesia, Malaysia, Philippines, Singapore, Taiwan, and Thailand,); Australian/New Zealand Domestic (Australia, New Zealand, and Papua New Guinea); Canadian Domestic (Canada); Continental European Domestic (Austria, Belgium, Bulgaria, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Luxembourg, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Sweden, and Switzerland); Indian and Subcontinent (Bangladesh, India, Pakistan, and Sri Lanka); International (Eurobonds and other cross-border issues); Japanese Domestic (Japan); Korean Domestic (South Korea); Latin American Domestic (Argentina, Bolivia, Brazil, Colombia, Costa Rica, Ecuador, Guatemala, Mexico, Panama, Peru, Uruguay, and Venezuela); United States (United States); United Kingdom Domestic (United Kingdom); and Rest of the World (countries not included in other SDC regional sub-databases, such as China). The academic version of SDC to which we have access does not include the Canadian and Korean Domestic sub-databases. Therefore, we exclude all Canadian and South Korean firms from our analysis.

⁶ Although bond trading takes place mostly over-the-counter (OTC), most bonds are listed in exchanges due to regulatory requirements that preclude institutional investors from holding unlisted securities. SDC provides information on the market where bonds are issued, including both formal exchanges and OTC markets.

⁷ SDC classifies most Eurobonds as being listed on the Luxembourg exchange, although these securities trade mostly OTC throughout Europe. This implies that Eurobond issues by firms from Luxembourg are classified as domestic issues, even though they may trade in other European countries. However, the number of firms from

take place in more than one market, we consider issues in each market as separate issues. In the case of subsidiaries, one could consider the nationality of the firm's parent company instead of its own nationality for classifying issues as foreign or domestic. For instance, a debt issue by a U.S. subsidiary of a British firm in the U.S. market could be classified as international, instead of domestic as in our classification. Which approach provides a better criterion for classifying bond issues depends on the degree of integration of financing decisions between firms and their subsidiaries, among other factors. If financial decisions are highly integrated, considering firms' parent nationality may provide a more accurate classification of debt issuances. But if financing decisions are relatively decentralized, considering subsidiaries' own nationality may be a better criterion. Actual decision-making policies may lie somewhere in between these two extremes, with multinational firms possibly coordinating financing decisions with their subsidiaries across several markets. All the results reported in the paper are obtained classifying bond issues as foreign or domestic based on subsidiaries' nationality. In unreported robustness tests, we classified issues by subsidiaries based on their parents' nationality and obtained results similar to those reported throughout the paper.

We focus on four major non-price characteristics of corporate bond issues. First, we analyze the size of bond issues, defined as the proceeds from the issue in U.S. dollars (at 2008 prices). Second, we study the maturity of debt issues, defined as the number of years between the date of issuance and the final maturity date. Third, we analyze the currency denomination of bonds. For our regressions, we use a dummy variable that equals one if the bond is denominated in a foreign currency and zero otherwise. We define a foreign currency as one that is different from the currency of the issuing firm's home country. Finally, we analyze whether

Luxembourg carrying out bond issuances at home according to SDC is relatively low. We re-did all our analyses excluding these firms and obtained results similar to those reported throughout the paper.

issues have a floating or fixed rate, by using a dummy variable that equals one if the bond has a floating rate and zero otherwise.

After eliminating issues with missing data on bond characteristics and outliers (observations in the top and bottom one percent), we are left with a sample of 116,338 corporate bond issues by 13,920 firms from 99 economies covering the period 1991-2008. Appendix Table 1 lists the countries included in our dataset and their regional and income level classification.

2.2 Descriptive Statistics

To illustrate the development and internationalization of corporate bond markets around the world, Figure 1 displays the evolution of the aggregate amount raised by firms through debt issues in capital markets over the period 1991-2008, differentiating between issues at home and abroad.

Figure 1 shows that the aggregate amount raised by firms in bond markets around the world almost doubled from 1991 to 2008, increasing from 635 billion to 1.1 trillion U.S. dollars (at 2008 prices). The increase is even steeper when excluding the global financial crisis, as the amount raised in corporate debt markets peaked in 2006 at 1.8 trillion U.S. dollars (at 2008 prices). Furthermore, the fraction of total debt issued abroad increased from about 34 percent in 1991 to 45 percent in 2006 and 38 percent in 2008, reflecting the collapse of global finance in 2008. Bond markets have become larger and more internationalized since the early 1990s.

The statistics presented in Table 1 further emphasize that firms, both from developed and developing countries, raise a substantial amount of resources through bond issues in international markets. Over the period from 1991 to 2008, firms raised 8.4 trillion U.S. dollars (at 2008 prices) in international bond markets, which accounts for 36.5 percent of all funds

raised through the issuance of debt in capital markets. Developing country firms are especially “internationalized,” raising 45 percent of the total amount raised in bond markets during the period analyzed through issuances abroad. U.S. firms are a notable exception to the substantial internationalization of corporate bond markets, even when compared to firms from other developed countries with large domestic bond markets. Less than 15 percent of the total amount raised in debt markets by U.S. firms over the sample period was raised abroad.

3. Differences between Corporate Bond Issues at Home and Abroad

This section addresses one question: How do international and domestic corporate bond issues differ in terms of issue size, maturity, currency denomination, and rate type (fixed or floating)? We first present some descriptive statistics to characterize domestic and international issues and then present more formal analyses of the differences between issues at home and abroad, accounting for time-varying country-specific factors and differences across firms.

Table 2 shows the distribution of the number of issues at home and abroad according to the different bond features. The table also shows the fraction of the different types of issues conducted abroad. We examine the distribution of the number of issues to avoid giving excessive weight to larger issues, but obtain similar results if we instead analyze the distribution of the amount raised.

A number of patterns emerge from Table 2. First, domestic bond issues tend to be smaller than issues abroad. While more than 50 percent of domestic issues are below 100 million U.S. dollars, more than two-thirds of international issues are above this amount. Furthermore, the fraction of issues abroad tends to increase with the size of the issue. Second, domestic bond issues seem to have shorter maturities than international issues. About 43 percent of domestic issues mature in less than three years, but only 33 percent of international

issues mature in this period. Third, while a majority of domestic currency issues tend to take place at home, most of the foreign currency issues take place abroad. The dollar is the most common foreign currency, both for foreign currency-denominated issues at home (49.8 percent) and abroad (38.8 percent). In the case of foreign currency-denominated issues at home, the euro and the yen are also quite common. Close to 17 percent of foreign currency domestic issues are denominated in euros and 18 percent are denominated in yens. Fourth, the fraction of fixed rate issues is slightly higher for issues at home than abroad. While close to 70 percent of domestic issues carry a fixed rate, 64 percent of issues abroad have a fixed rate.

Whereas the results in Table 2 suggest that bond issues abroad differ from those at home, they might just reflect differences in the nationality, industry, or other characteristics of firms that issue debt abroad relative to firms that issue debt at home. In fact, several papers document that there are significant differences between those firms that access international capital markets and those that are only active in local markets, in terms of size, profitability, valuation, and other features that may also affect the characteristics of the bonds that they issue (see, for example, Pagano et al., 2002; Lang et al., 2003; Claessens and Schmukler, 2007; Gozzi et al., 2010). Therefore, accounting for differences across firms is important for reaching meaningful conclusions regarding whether issues abroad actually differ from issues at home.

Table 3 provides formal tests of whether issues in international and domestic markets differ, controlling for differences across countries over time and cross-sectional differences among firms. In particular, the table shows regression results for four dependent variables: issue size (defined as the log of the amount raised per issue in U.S. dollars at 2008 prices), the maturity of issues in years, a dummy variable that equals one if the issue is denominated in foreign currency (and zero otherwise), and a dummy variable that equals one if the issue has a floating rate (and zero otherwise). Each of these dependent variables is regressed on a dummy

variable that equals one for bond issues abroad (and zero otherwise) and four alternative sets of control variables: country-year dummies (column (a)); country-year dummies plus issue size (column (b)); country-year dummies and firm fixed effects (column (c)); and country-year dummies and firm fixed effects plus issue size (column (d)). Using country-year dummies allows us to control for time-varying country-specific factors that may affect the characteristics of debt issues conducted by firms, both in domestic and international markets. We control for the size of issues because larger bond issues may have different characteristics than smaller issues. The firm-level fixed effects account for cross-sectional differences among firms and allow us to analyze the within-firm differences between debt issues abroad and at home. We estimate separate regressions for each of the dependent variables and sets of controls and only report the coefficient on the issue abroad dummy in the table. All regressions are estimated using ordinary least squares and adjusting the standard errors for clustering at the firm level. As a robustness test, we also estimated our regressions using Logit models for the dummy dependent variables (foreign currency denomination and floating rate) to take into account the binary nature of these variables, and obtained results similar to those reported throughout the paper.

Table 3 shows that issues in international and domestic bond markets have different characteristics, conditioning on country-time and firm fixed effects. First, issues abroad tend to be larger than domestic bond issues. Consistent with the unconditional results reported in Table 2, Table 3 shows that bond issues in international markets are, on average, larger than issues in domestic markets when controlling for various combinations of country-year dummies and firm-level fixed effects. This difference is not only statistically significant, but also economically relevant. For instance, the results in column (c) show that within a firm, issues abroad are on average more than 19 percent larger than issues at home.

Second, foreign issues tend to have a shorter maturity than domestic issues when conditioning on different combinations of country-year dummies, issue size, and firm-level fixed effects. This result differs somewhat from the unconditional findings in Table 2, suggesting that some of the differences between issues at home and abroad reported in that table may reflect differences between those firms that issue debt in international markets and those that do not. Once we account for these differences, we find that on average issues abroad tend to have shorter maturities than domestic issues by about six months, according to the estimations reported in column (d).

Third, foreign bond issues include a higher fraction of foreign currency-denominated bonds than those issued in domestic markets. Consistent with the unconditional summary statistics reported in Table 2, this pattern holds after controlling for various combinations of country-year dummies, issue size, and firm-level fixed effects.

Fourth, we find that bond issues in foreign markets tend to include a smaller fraction of floating rate issues than those in domestic markets. Although on average foreign bond issuances tend to include a higher fraction of floating rate issues than issuances in domestic markets, as reported in Table 2, this observation reflects differences between those firms that issue in foreign and domestic markets. The results in Table 3, however, indicate that once we control for time-varying differences across countries, issues abroad are more likely to have a fixed rate than issues at home.

We find no evidence that the results in Table 3 reflect differences across issue types rather than differences between domestic and international markets. In particular, one possible concern about the results above is that they may reflect differences between different types of issues. For example, if foreign currency bonds tend to be larger and have fixed rates (irrespective of where they are issued), the finding that issues abroad are larger and include a

higher fraction of fixed rate issues might simply reflect the fact that issues abroad are denominated in foreign currency, and not some additional difference between domestic and international markets. To address this concern, we re-estimated the regressions in Table 3 considering different sub-samples based on bond characteristics (only fixed rate issues, only medium and long-term bonds, only dollar-denominated issues). The results are broadly similar to those reported in Table 3. We find significant differences between issues abroad and at home for the different bond sub-samples, suggesting that our findings reflect differences across markets and not simply differences between different types of bond issues.

To account for other possible differences across firms, Table 4 repeats the regression analyses of Table 3 but restricts the sample to firms that issue debt *both* at home and abroad at some point during our sample period. This significantly reduces our sample, from 13,920 firms (116,338 debt issues) to 1,597 firms (54,137 debt issues). In the regressions reported in columns (c) and (d) of Table 3, we account for cross-firm differences by including firm-level fixed effects. Thus, the identification of the issue abroad dummy in those regressions is driven only by those firms that issue debt both abroad and at home at some point during our sample period. For those regressions, the results presented in Table 4 will only differ from those in Table 3 to the extent that firms that issue both abroad and at home may be subject to different country-specific time trends than firms that do not issue in both markets.

The results in Table 4 show that restricting the sample to firms that issue debt at home and abroad does not affect the conclusions from Table 3. We find that issues abroad tend to be larger, have shorter maturities, include a higher fraction of foreign currency issues, and a larger fraction of fixed rate issues.

While the results presented in Tables 3 and 4 show that debt issues in domestic and international markets have different characteristics, it is important to understand to what

extent these differences across markets may be driven by firms from certain countries. Including country-year dummies as we do in the regressions reported in Tables 3 and 4 controls for (time-varying) differences across countries in the characteristics of issues in both markets (e.g., the possibility that firms from a given country may be more likely to issue certain types of bonds in a given period). However, it is possible that the differences between issues abroad and at home also vary across countries. In particular, the differences between issues abroad and at home that we find may mostly reflect the fact that when issuing debt abroad, firms from developing countries are accessing deeper and more developed financial markets. If this were the case, we would expect to find significant differences between issues abroad and at home for developing country firms, but not necessarily for firms from developed countries, which may already have access to active bond markets at home.

To investigate the extent to which the differences between issues in domestic and international markets hold across developed and developing countries, Table 5 presents separate estimations for each group of countries. We report regressions controlling for country-year dummies and firm-level fixed effects for all firms and only for firms that issue bonds both at home and abroad at some point during our sample period.

Table 5 shows that most of the differences we find between issues abroad and at home exist for both developed and developing country firms. In particular, the results show that issues abroad tend to be larger, include a higher fraction of foreign currency issues, and a lower fraction of floating rate issues for both developed and developing country firms. The only noticeable difference between developed and developing countries is that while issues abroad tend to have a shorter maturity than issues at home in the case of developed countries, there is no significant difference in terms of maturity between issues at home and abroad in the case of developing countries.

As a robustness test, we re-estimated the regressions reported in Table 5 classifying countries based on their level of financial development, instead of considering overall economic development. In particular, we classified countries as high (low) financial development if they are above (below) the median across countries of different measures of financial development (alternatively, private credit/GDP, private bonds outstanding/GDP, and private credit plus stock market capitalization and private bonds outstanding/GDP). We found that, consistent with the results reported in Table 5, most of the differences between issues abroad and at home exist for firms from countries with high and low levels of financial development.

Overall, the results presented in this section show that issues in international and domestic bond markets have different characteristics: international bond issues are larger, of shorter maturity, tend to be denominated in foreign currency, and entail more fixed interest rate contracts. These differences do not seem to be driven by differences across countries or differences between those firms that raise debt abroad and at home. We find that all the differences between bond issues at home and abroad remain when controlling for country-year dummies and firm-level fixed effects, and when analyzing only those firms that issue bonds both in domestic and international capital markets. In other words, issues conducted abroad by a given firm are different from those conducted in the local market by the same firm, consistent with the claim that domestic and international markets offer different types of financial services. Also, our results are not driven by firms from developing countries accessing larger and more developed financial markets abroad, as we find significant differences between issues at home and abroad even when analyzing only developed country firms.

4. Bond Issuance Activities of Firms that Issue Debt Abroad

This section addresses three questions about how those firms that issue debt abroad use domestic and international bond markets. First, do these firms remain active in their domestic bond markets after they gain access to international markets? Second, do these firms change the amount raised through debt issues in domestic markets after they internationalize? Third, following internationalization, do firms issue different types of bonds in domestic and international bond markets?

4.1 Do Firms Continue Issuing Bonds Domestically After They Internationalize?

To analyze whether firms remain active in domestic bond markets after they internationalize, Table 6 shows, for different types of issues, the average across firms of the ratio of capital raised through bond issues at home to total capital raised in bond markets for each year following firms' first debt issue abroad during our sample period. The sample in this table includes only those firms that conduct at least one bond issue (in any market) following their first debt issue abroad in our sample. For the results reported in Table 6, we first compute for each firm the ratio of the amount raised through bond issues at home to the total amount raised through bond issues in each year following internationalization and display the average of this ratio across firms.⁸

Table 6 shows that firms remain active in domestic markets after they access international bond markets, conducting a significant share of their bond issuances at home. While firms tend to conduct most of their bond issues abroad in the year when they first access international bond markets, the fraction of debt capital raised at home increases rapidly

⁸ An alternative way to measure firm's reliance on domestic markets is to aggregate the total amount raised domestically by all firms in each year after they internationalize and divide it by the aggregate amount raised by these firms in all debt markets in the same year. This alternative measure gives more weight to larger firms that conduct bigger bond issues and yields patterns similar to those reported in Table 6.

following internationalization. For example, when considering all types of bond issues (column (a)), the average firm raises about 28 percent of debt capital from domestic bond markets one year after it internationalizes, while it raises over 45 percent of debt capital from domestic bond markets more than three years after it first internationalizes. Aggregating over all the years since a firm first issues debt abroad, Table 6 further shows that, after it internationalizes, the average firm raises almost one-third of the total capital raised through issuances in domestic markets (excluding issues during the month of the first issue abroad).⁹ As shown in Table 6, there are some differences across bond types with regards to the reliance of firms on domestic markets following internationalization. For instance, while on average firms raise at home over 50 percent of the total amount raised through long-term bond issues more than three years after internationalization (column (d)), this statistic is about 36 percent in the case of short-term issues (column (b)).

While the results presented in Table 6 suggest that after accessing international bond markets firms conduct a significant fraction of their debt issuances in their local markets, these averages may hide significant differences across firms. To further analyze the domestic bond market activities of firms that internationalize, Figure 2 shows the number of firms according to the ratio of the amount raised through bond issues at home to the total amount raised through bond issuances, calculated over all years following their internationalization. The figure excludes issues during the month of the first issue abroad; we obtain similar results when considering all issues after internationalization, including the first debt issue abroad.

Figure 2 shows that, consistent with the evidence in Table 6, a large fraction of firms remain active in domestic corporate bond markets following internationalization—though there is great heterogeneity across firms in terms of their reliance on these markets. For

⁹ The ratio is smaller if we consider all debt issues after internationalization, including the first issue abroad. In this case, issues at home account, on average, for about one quarter of all the capital raised through bond issues following internationalization.

example, the figure shows that following internationalization, 18 percent of firms only issue in domestic bond markets, 29 percent issue bonds in both domestic and foreign markets, and 53 percent of firms only issue bonds abroad. That is, only about half of the firms completely substitute out of the domestic corporate bond market and into foreign markets after they internationalize. The other half remains active domestically, with a significant fraction issuing bonds both at home and abroad.

4.2 Do Firms Change Their Domestic Bond Market Activity After They Internationalize?

We next analyze whether firms modify their debt issuance activity in domestic bond markets after they internationalize. Table 7 compares the annual amount raised in domestic bond markets before and after firms first access international bond markets. The table reports estimates for different types of debt issues.

To formally test whether firms change their issuance activity after internationalization, Table 7 displays a series of regressions of the logarithm of one plus the annual amount raised at home by each firm on a dummy variable that equals one on the years after a firm internationalizes and zero before, and different combinations of country-year dummies and firm-level fixed effects. We use the log of one plus the amount raised per year because we want to include those years when firms do not conduct debt issues at home. Results similar to those reported in Table 7 are obtained if, instead of taking logs, we directly use the amount raised per year as our dependent variable. All regressions are estimated using ordinary least squares and adjusting the standard errors for clustering at the firm level. We also estimated Tobit regressions to account for the censored nature of the dependent variable and obtained results similar to those reported in Table 7. In these regressions, we use annual observations on all

firms that issue debt both at home and abroad at some point during the sample period.¹⁰ This includes observations on firms that conduct debt issues at home before they internationalize, but that do not issue domestic debt after they raise debt capital abroad. For such firms, the dependent variable equals zero for all years following internationalization.¹¹ We include these firms because we want to capture the reduction in domestic bond issuance activity that results from some firms opting out from domestic markets following internationalization. We obtain similar results if we restrict the sample to firms that raise debt at home both before and after internationalization. Furthermore, we also obtain similar results when including all firms that issue debt abroad, irrespective of whether they issue debt at home or not at any point during the sample period. For those firms without bond issues in domestic markets, the annual amount raised at home equals zero both before and after internationalization. Although including these firms drives down the estimated coefficient on the after internationalization dummy in our regressions, we still find evidence of a significant and large increase in domestic bond issuance activity after firms first issue abroad.

Table 7 shows that firms substantially increase the annual amount they raise in domestic bond markets after they internationalize, controlling for country-year dummies (column (a)) and country-year dummies and firm-level fixed effects (column (b)). This increase is not only statistically significant, but also economically very large. For instance, the results in column (b) suggest that, on average, firms increase the annual amount they raise through debt issues in domestic markets by over 86 percent after they internationalize. Note that this

¹⁰ We exclude observations for the year when firms first issue debt abroad. Similar results are obtained if we include this year. Note that for firms that internationalize early (late) in our sample, we don't have many observations for the before (after) internationalization period. As an alternative, we re-estimated our regressions restricting the sample to firms for which we have at least three annual observations during our sample period before and after they internationalize (that is, restricting the sample to those firms that first issued debt abroad between 1994 and 2005) and obtained results similar to those reported in Table 7.

¹¹ Similarly, we include firms that only issue debt at home after they internationalize, for which the dependent variable equals zero every year before internationalization.

increase is not explained by firms issuing debt abroad for the first time when their domestic markets are doing well, and as a result issuing more debt at home as well, because all country-specific time-varying factors are captured by the country-year dummies included in the regressions. Furthermore, we find a significant increase in domestic issuance activity for all types of bond issues, although the magnitude of this increase varies across different types of issues. For instance, the results in column (b) show that while, on average, the annual amount raised through domestic currency issues at home increases by over 77 percent after internationalization, the amount raised through foreign currency issues in local markets increases by only 18 percent. Overall, our results suggest that firms do not substitute out of the domestic corporate bond market and into international markets once they issue debt abroad. Rather, firms tend to increase the annual amount raised through domestic bond issues after they internationalize.

4.3 Do Firms Issue Different Types of Bonds across Markets After They Internationalize?

We now assess whether firms issue different types of bonds in foreign and domestic corporate bond markets after they access international debt markets. That is, for a firm that issues bonds in both foreign and domestic markets following internationalization, do the size, maturity, currency, and rate characteristics of these issues differ across markets?

Table 8 presents (1) unconditional comparisons of the average characteristics of bond issues in domestic and international markets and (2) regression analyses that assess whether issues abroad differ from domestic bond issues after a firm internationalizes, while conditioning on various combinations of country-year dummies, issue size, and firm-level fixed effects. The sample only includes firms that issue debt at home and abroad after internationalization and only issues that occur after a firm internationalizes. This reduces the sample to 818 firms and

38,542 debt issues. Thus, Table 8 evaluates whether firms issue bonds with different characteristics in domestic and international markets after they access international debt markets, conditional on issuing in both markets.

Table 8 differs importantly from Table 4 along two dimensions. First, Table 4 includes all firms that issue debt at home and abroad at some point during our sample period. This includes firms that issue debt at home before internationalizing, but do not issue debt at home after going abroad. Table 8 instead includes only those firms that issue debt at home and abroad after they internationalize. Second, Table 4 includes issues at home both before and after internationalization. This could raise some concerns that the differences we find in this table between issues abroad and at home may reflect differences between issues conducted before and after internationalization, as firms may change the type of issues they carry out in any market after going abroad, and not necessarily differences across markets.¹² Table 8 restricts the sample to issues conducted by firms after they internationalize. Thus, in Table 8, we explicitly test whether a firm issues different types of debt in domestic and foreign markets once it accesses international bond markets, conditional on the firm issuing in both markets after it internationalizes.

The results in Table 8 show that firms issue different types of bonds in domestic and international markets after they internationalize. When a firm issues a bond in a foreign market, the issue tends to be larger, of shorter maturity, is more likely to be denominated in a foreign currency, and is more likely to have a fixed rate, than when a firm issues a bond in its domestic market. These findings hold for all the regressions in Table 8 that condition on

¹² In unreported tests, we analyzed whether the characteristics of debt issues at home change following internationalization. For most characteristics, we found no significant difference between issues conducted at home before and after internationalization. Only in the case of maturity we found evidence of a significant increase following internationalization. This suggests that the differences we find in Table 4 between issues abroad and at home do not reflect differences in the characteristics of issues conducted before and after internationalization, but rather differences across markets. The results in Table 8 confirm that this is the case.

various combinations of country-year dummies and firm-level fixed effects. These results complement those in Table 4. While Table 4 shows that firms issue different types of securities in domestic and international markets when examining all firms that issue in these markets at any point and including the periods before and after a firm internationalizes, Table 8 shows that these differences hold when only considering the period after a firm internationalizes.

The results in Table 8 suggest that cross-market differences in bond characteristics reflect differences in the markets per se, not differences between the firms that access those markets. Since we restrict the sample to issues following internationalization and to firms that access both domestic and international markets after going abroad and also control for country-year dummies and firm fixed effects, the differences we find between bond issues in domestic and international issues cannot be not attributed to differences over time or across firms. In other words, firms that have access to domestic and international corporate bond markets use the two types of markets for different types of issues, suggesting that these markets are not perfect substitutes.

5. Conclusions

This paper offers the first comprehensive documentation of the main characteristics of corporate bond issues in domestic and international markets and analyzes how firms use these markets after they internationalize. We find that firms issue different types of bonds in domestic and international markets. These differences do not seem to be explained by differences across firms or countries. Firms use international markets to conduct larger issues, of shorter maturity, in foreign currency, and with fixed interest rates. These results suggest that domestic and international bond markets offer different types of securities. Moreover, almost half of the firms remain active in domestic bond markets after accessing international

markets, and actually increase the amount they raise at home. Many of these firms use both domestic and international bond markets after issuing debt abroad, tapping international markets for different types of issues than domestic ones. The evidence presented in this paper suggests that international and domestic markets are complements rather than substitutes.

The findings in this paper pose challenging questions to the corporate and international finance literatures. First, why do domestic and international markets provide different types of debt securities? Second, why do some firms issue bonds in both domestic and international markets after they internationalize, while other firms tend to specialize in terms of the location in which they raise debt capital after accessing international markets?

The patterns we uncover also contribute to important academic and policy discussions. On the academic front, our results relate to a broad literature in corporate finance that discusses why firms issue certain types of debt. One strand of this literature analyzes the maturity structure of corporate debt. Short-term debt can play a disciplinary role as investors may deny further financing to the issuing firm, reducing problems of moral hazard and adverse selection (Myers, 1977; Flannery, 1986; Diamond, 1991, 1993).¹³ Therefore, when information asymmetries are large, firms will tend to use more short-term debt. To the extent that foreign investors (likely to be more prominent in international markets) have less information than domestic ones, these arguments would predict that issues abroad tend to have a shorter maturity than issues at home, which is consistent with our findings.

This paper's findings also relate to research on why firms issue foreign currency debt. Most of this literature argues that firms use foreign currency debt to hedge exchange rate risk. Several factors may limit the ability of firms to issue foreign currency debt in their domestic markets. For instance, given size constraints, it may be difficult to develop deep liquid local

¹³ Similar arguments are mentioned in the international finance literature when discussing why governments issue short-term debt (Rodrik and Velasco, 1999; Jeanne, 2009; Broner et al., 2011).

markets for issues in different currencies (Cohen, 2005). In addition, regulatory restrictions on investments in foreign currency assets by local institutional investors and financial institutions could also lead to currency denomination being associated with the market of issuance (Lanoo, 1998). Our findings that issues abroad tend to be denominated in foreign currency are consistent with these arguments.¹⁴ We also find that firms from developing countries have almost no issues abroad in their domestic currencies, while firms from developed countries do place issues in their domestic currencies in foreign markets. These findings are broadly consistent with the “original sin” arguments (Eichengreen and Hausmann, 1999), which hold that emerging market borrowers cannot borrow abroad in their domestic currencies, due to historical reasons and imperfections in global capital markets.

The patterns reported in the paper are also relevant for the broader policy discussion on the role of domestic and international markets under financial integration. We find that firms typically continue to use—and often increase their use of—domestic bond markets after they internationalize. To the extent that domestic investors view firms that have accessed international markets more favorably than firms that have not issued securities abroad, internationalization may crowd out some firms from the domestic securities markets. This might have material ramifications for the distribution of domestic financing and entrepreneurship more generally, as emphasized by Levine and Schmukler (2006, 2007). Thus, the patterns presented in this paper touch on broad themes associated with international corporate finance and financial integration.

¹⁴ If we analyze in more detail the currency denomination of issues abroad, we find that they tend to be denominated in the local currency of the market of issuance (e.g., foreign issues in the U.S. are mostly in U.S. dollars, foreign issues in Japan are mostly in yens).

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Appendix 1: Differences in Yield Spreads between Bond Issues at Home and Abroad

Aside from the non-price attributes analyzed in the paper, it may also be interesting to study whether there are differences in terms of yields between domestic and international issues. However, comparing yields across markets raises several issues and complications that require a somewhat different type of analysis and a more specialized comparison. Therefore, we report the analysis of bond yields in this separate appendix.

Several papers study the yields of international bonds. The earlier literature focuses on analyzing differences in yields between issues in the Eurobond and U.S. markets by U.S. firms, finding mixed evidence (Finnerty and Nunn, 1985; Kidwell et al., 1985; Mahajan and Fraser, 1986). Differences in borrowing costs between these markets may arise because of differences in investor clienteles, risk, tax treatment, issuance procedures, flotation costs, indentures, and legal remedies in case of default, which may not be easily arbitrated (Kim and Stulz, 1983).¹⁵

Other papers study differences in yields across other markets. For instance, Miller and Puthenpurackal (2002) analyze yields of Yankee bonds (bonds issued in the U.S. by non-U.S. firms) and find that the difference between yields in the Yankee bond and Eurobond markets seems to be a significant determinant of the location of issues. Miller and Puthenpurackal (2005) and Petrasek (2010) find that global bonds (those issued and traded in simultaneously in several markets around the world) tend to have lower spreads than bonds issued in the Eurobond and U.S. markets. There is also evidence that interest rate spreads on syndicated loans to corporate borrowers differ across markets, with spreads being lower in Europe than in the U.S. and these differences not explained by observable borrower, loan, or lender characteristics (Carey and Nini, 2007).

¹⁵ Some papers compare underwriting costs between bond issues in the Eurobond and the U.S. markets, finding evidence that these costs tend to be higher for Eurobonds (Kidwell et al., 1985; Levich, 1985), although differences across markets have decreased in recent years (Peristiani and Santos, 2010).

Following the interest in the literature, we compare yields to maturity of debt issues in domestic and international markets. To obtain the cleanest possible comparison, we restrict significantly the data we analyze. First, we focus only on U.S. dollar-denominated issues to avoid the problems associated with comparing rates across currencies. In particular, differences in expectations about exchange rate movements might generate differences in observed yields to maturity for bonds denominated in different currencies. We focus the analysis on the U.S. dollar because it is the most common currency of denomination for the bond issues in our sample (both for issues abroad and at home). Second, we restrict the analysis to fixed rate issues because data on yields for floating rate bonds are not available for a large part of our sample and comparing yields on fixed and floating rate bonds is not straightforward. Finally, we exclude convertible bonds to avoid comparing yields on different types of bonds.

All the restrictions above substantially reduce the sample size. In particular, of the total 116,338 corporate bond issues by 13,920 firms used in the analysis in the main part of the paper, we use 30,828 bond issues by 4,763 firms to analyze yields. Though smaller than our original sample, this sample is still large relative to the ones used in the literature to analyze yields. This larger sample, together with the fact that several firms in our dataset issue bonds both at home and abroad, allow us to better control for unobserved differences across firms by including firm-level fixed effects in some of our specifications.

Because of the high correlation between currency and country of issuance, when restricting the sample to dollar-denominated issues the sample is reduced mostly to debt issues by U.S. firms. Specifically, U.S. firms account for 98 percent of the issues at home and 81 percent of the issues abroad in the sub-sample we analyze (or 95 percent of all the issues). Moreover, most of the dollar-denominated issues abroad by U.S. firms are conducted in the

Eurobond market. Thus, the analysis in this appendix mostly compares yields on bonds issued by U.S. firms in the U.S. and Eurobond markets.

The reduced sample size does not imply different results on the main non-price bond characteristics studied in the paper. We re-estimated all the tables in the paper using the sample employed for the analysis of yields and found results similar to those obtained when considering the full sample. In particular, issues abroad are larger and have shorter maturities than issues at home, consistent with our main results. We cannot analyze the type of rate for this reduced sample because we are excluding floating rate issues. Also, we cannot analyze the currency composition of debt issues because the only firms issuing abroad in domestic currency in this sample are U.S. firms, so all the variation is absorbed by the country-time dummies.

Following the literature, we measure the cost of debt using the yield spread at issue, defined as the difference between the yield to maturity of a bond at the time of issuance and the yield to maturity of a risk-free bond with the same maturity on the same date. As risk-free bonds we use the constant maturity U.S. Treasury security series obtained from the Federal Reserve Board. If there are no Treasury securities with the same maturity as the corporate bond, we follow the literature and compute the risk-free rate as a linear interpolation between the rates of the two Treasury bonds with the closest maturity.

We estimate ordinary least square regressions of the yield to maturity on a dummy variable that equals one for bond issues abroad (and zero otherwise) and various combinations of country-year dummies, firm-level fixed effects, and other control variables used in the literature. In particular, we control for the credit quality of issues by including several dummies for different rating categories based on Standard & Poor's credit ratings. The excluded category is the highest rated one, AA- to AAA, so the estimated coefficients measure the premium that riskier borrowers may pay. We also control for the size of issues, by including

the log of the amount raised per issue in U.S. dollars (at 2008 prices), and for the maturity of issues. Moreover, we control for other bond characteristics that may affect yields, such as whether the issue is subordinated and whether it has a sinking fund. Given that some of the bond characteristics may be jointly determined with the spread, we present results both excluding and including these controls. We report regressions for different firm samples, following the same structure as the main results presented in the paper. In particular, we present results including all firms (Appendix Table 2), only firms that issue both at home and abroad during our sample period (Appendix Table 3), and restricting the sample to firms that issue debt at home and abroad after internationalization and only issues that occur after a firm internationalizes (Appendix Table 4).

Overall, the results show that issues abroad tend to have lower yield spreads than issues at home after controlling for different combinations of bond characteristics, country-year dummies, and firm-level fixed effects. The difference is not only statistically significant, but also quite large. For example, the estimates in Appendix Table 2 column (f) show that, controlling for bond characteristics, country-time dummies, and firm-level fixed effects, issues abroad have yield spreads that are on average about 14 basis points lower than those of issues at home. This difference is approximately 13 percent of the mean spread in our sample. The coefficients on the rest of the control variables are consistent with the literature: larger issues, issues with longer maturities, and those with lower credit ratings tend to have higher spreads. The estimates are broadly similar across the different specifications presented in Appendix Tables 2, 3, and 4.

The results are robust to a number of alternative specifications. For example, we obtain similar results if we use the log of spreads instead of spreads as dependent variable. Moreover, while the reported regressions use Standard & Poor's credit ratings, similar conclusions are obtained if we combine data from Standard & Poor's and Moody's (considering the lowest

credit rating of the two). Also, broadly similar results are obtained if we use ratings converted to a numerical scale as a control variable, instead of controlling for dummies for the different credit rating categories. Furthermore, we find that the differences in spreads between issues abroad and at home exist for both financial and non-financial firms and when restricting the sample to U.S. firms.

Overall, the results in this appendix show that there are pricing differences across markets, reaffirming the main conclusions of the paper that domestic and international markets may offer different financial services. The differences in yield spreads we find between dollar-denominated issues at home and abroad remain when controlling for country-year dummies and firm-level fixed effects, when analyzing only those firms that issue bonds both in domestic and international capital markets, and also when focusing only on issues that take place after internationalization. In other words, dollar-denominated issues conducted abroad by a given firm tend to have lower yield spreads than those conducted in the domestic market by the same firm.

Of course, the existence of pricing differences across markets does not necessarily imply that there are unexploited arbitrage opportunities. There are many differences between the domestic U.S. and Eurobond markets (which constitute the bulk of the sample used in these regressions) in terms of tax treatment, issuance procedures, flotation costs, covenant enforcement, and types of bonds, which could potentially generate the lower spreads for issues abroad that we find. Nevertheless, regardless of the underlying cause, our results suggest that these pricing differences persist even after controlling for several bond characteristics highlighted by the literature and accounting for unobserved time-varying country-specific factors and cross-sectional differences among firms.

Figure 1
Evolution of Bond Issuance in Capital Markets around the World

This figure shows the evolution of the aggregate amount raised by firms through bond issues in capital markets around the world in each year over the 1991-2008 period. Issues at home are those carried out in the firm's home country. Issues abroad are those conducted outside the firm's home country. Data are in U.S. dollars at 2008 prices.

Amount raised through bond issues by firms
 (billion U.S. dollars at 2008 prices)

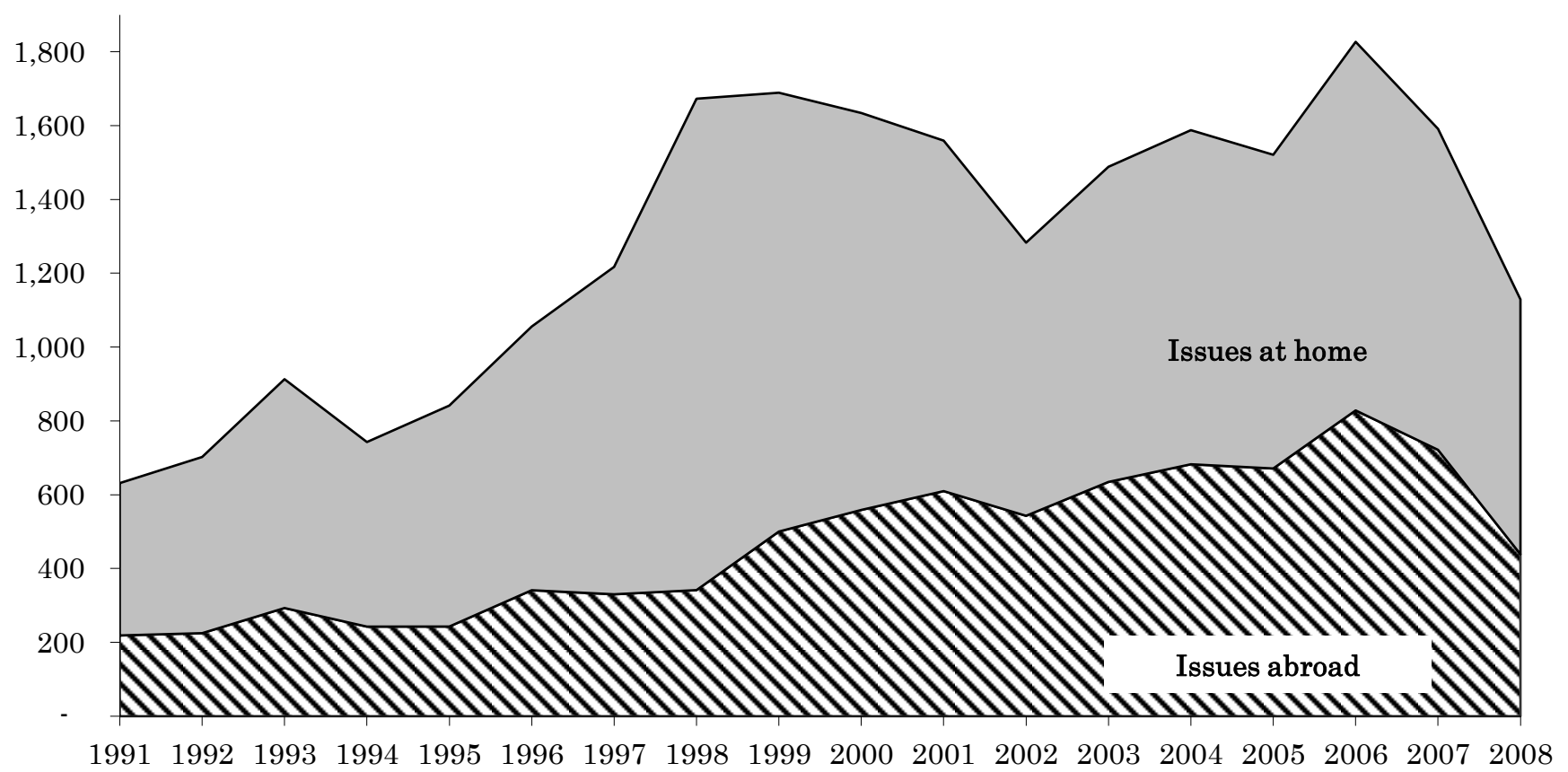


Figure 2

Distribution of Bond Issuance Activity Across Markets After Internationalization

This figure shows the bond issuance activity in domestic markets of firms that issue bonds abroad at some point during the 1991-2008 period. The displayed variable is the number of firms classified according to the ratio of the amount raised through bond issues at home to the total amount raised through bond issues after internationalization. The fraction of firms in each category is in parentheses. The sample includes only firms that conduct bond issues following their first issue abroad during the sample period and considers bond issues after internationalization, excluding issues during the month of the first issue abroad. Issues at home are those carried out in the firm's home country. Issues abroad are those conducted outside the firm's home country. Data on amount raised are in U.S. dollars at 2008 prices.

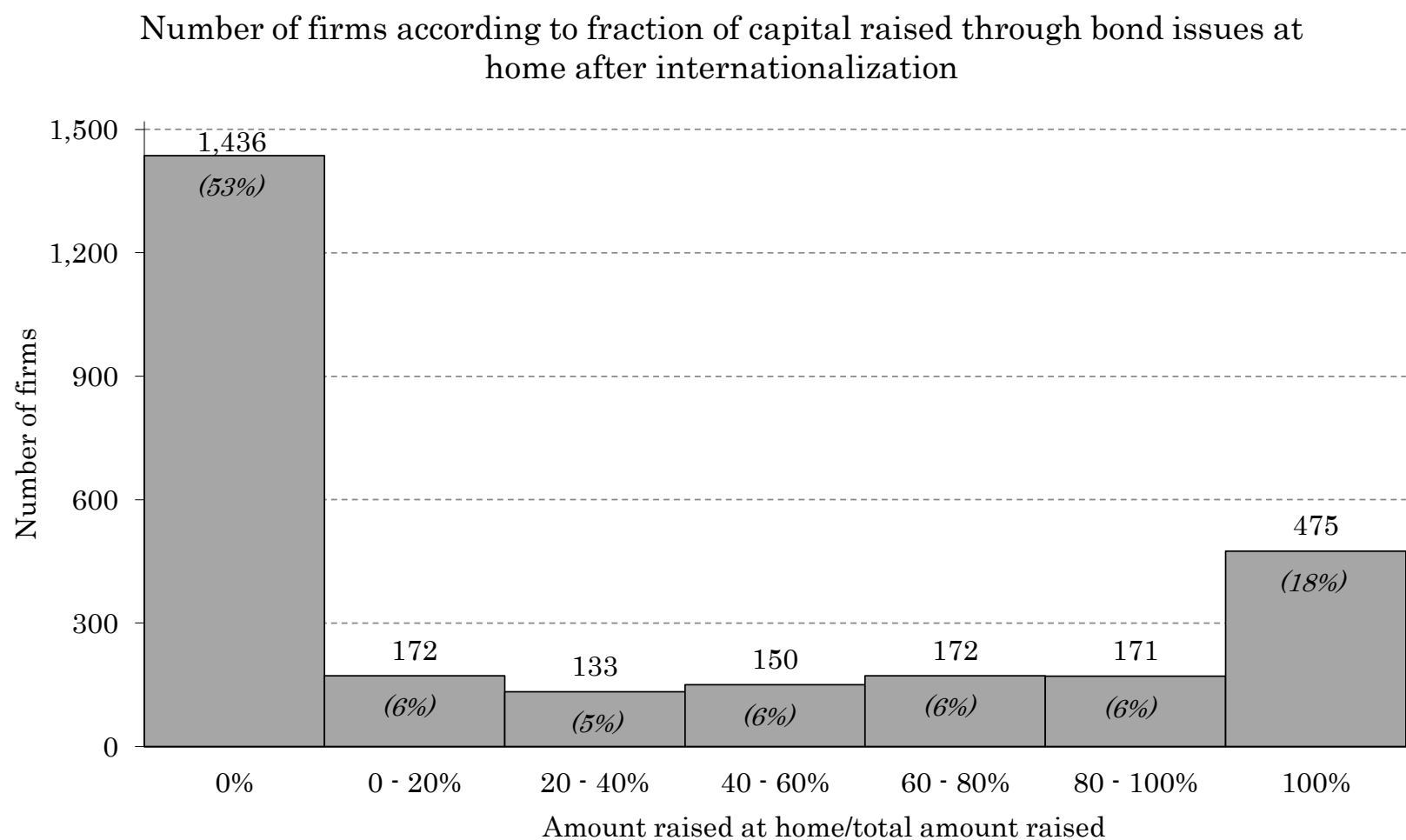


Table 1
Amount Raised, Number of Issues, and Number of Firms by Issuer Country/Region

This table reports the number of issues, the number of firms, and the aggregate amount of capital raised by firms from each country/region through bond issues over the 1991-2008 period. Issues at home are those carried out in the firm's home country. Issues abroad are those conducted outside the firm's home country. Data on amount raised are in U.S. dollars at 2008 prices. Because firms may conduct issues both abroad and at home, the number of firms in the total column may differ from the sum of the number of firms in the home and abroad columns. See Appendix Table 1 for a list of the countries included in each income group and region.

| | Amount raised (million U.S. dollars at 2008 prices) | | | | Number of issues | | | | Number of firms | | | |
|-------------------------------|--|------------------|-------------------|-----------------|------------------|---------------|----------------|-----------------|-----------------|--------------|---------------|-----------------|
| | Home | Abroad | Total | % <i>abroad</i> | Home | Abroad | Total | % <i>abroad</i> | Home | Abroad | Total | % <i>abroad</i> |
| Germany | 1,617,549 | 1,024,279 | 2,641,828 | 38.8% | 5,328 | 4,264 | 9,592 | 44.5% | 414 | 235 | 540 | 43.5% |
| Japan | 1,276,368 | 315,084 | 1,591,452 | 19.8% | 5,874 | 1,301 | 7,175 | 18.1% | 1,030 | 583 | 1,277 | 45.7% |
| United States | 8,570,571 | 1,494,800 | 10,065,371 | 14.9% | 50,434 | 4,029 | 54,463 | 7.4% | 3,735 | 575 | 4,021 | 14.3% |
| Africa | 4,534 | 24,498 | 29,032 | 84.4% | 27 | 79 | 106 | 74.5% | 18 | 35 | 50 | 70.0% |
| Asia | 254,317 | 206,576 | 460,893 | 44.8% | 4,973 | 1,077 | 6,050 | 17.8% | 972 | 681 | 1,503 | 45.3% |
| Australia & New Zealand | 44,088 | 383,836 | 427,924 | 89.7% | 243 | 1,677 | 1,920 | 87.3% | 102 | 178 | 261 | 68.2% |
| Eastern Europe & Central Asia | 1,368 | 117,594 | 118,962 | 98.9% | 17 | 380 | 397 | 95.7% | 16 | 200 | 213 | 93.9% |
| Latin America & Caribbean | 311,503 | 159,987 | 471,490 | 33.9% | 6,469 | 951 | 7,420 | 12.8% | 1,706 | 392 | 1,969 | 19.9% |
| Middle East | 3,489 | 48,655 | 52,144 | 93.3% | 6 | 382 | 388 | 98.5% | 4 | 64 | 68 | 94.1% |
| Western Europe | 2,577,723 | 4,266,459 | 6,844,181 | 62.3% | 11,596 | 15,085 | 26,681 | 56.5% | 2,479 | 1,819 | 3,739 | 48.6% |
| Other | 57 | 382,292 | 382,349 | 100.0% | 1 | 2,145 | 2,146 | 100.0% | 1 | 278 | 279 | 99.6% |
| Developed countries | 14,192,835 | 8,039,610 | 22,232,446 | 36.2% | 75,821 | 29,419 | 105,240 | 28.0% | 8,126 | 4,040 | 10,777 | 37.5% |
| Developing countries | 468,731 | 384,450 | 853,181 | 45.1% | 9,147 | 1,951 | 11,098 | 17.6% | 2,351 | 1,000 | 3,143 | 31.8% |
| Total | 14,661,566 | 8,424,060 | 23,085,626 | 36.5% | 84,968 | 31,370 | 116,338 | 27.0% | 10,477 | 5,040 | 13,920 | 36.2% |

Table 2**Distribution of the Number of Bond Issues at Home and Abroad by Issue Characteristics**

This table shows the fraction of the number of bond issues conducted by firms over the 1991-2008 period for different types of issues. Issues at home are those carried out in the firm's home country. Issues abroad are those conducted outside the firm's home country. Data on amount raised are in U.S. dollars at 2008 prices. Short-term issues are those with a maturity of three years or less. Medium-term issues are those with a maturity between three and ten years. Long-term issues are those with a maturity of more than ten years.

| | Composition of issues at home | Composition of issues abroad | <i>% abroad</i> |
|--|----------------------------------|---------------------------------|---------------------|
| <i>Issue size (amount raised per issue)</i> | | | |
| Size below 40 million U.S. dollars | 35.8% | 11.8% | <i>10.9%</i> |
| Size between 40 and 100 million U.S. dollars | 18.3% | 20.8% | <i>29.5%</i> |
| Size between 100 and 250 million U.S. dollars | 23.9% | 31.4% | <i>32.7%</i> |
| Size above 250 million U.S. dollars | 22.0% | 35.9% | <i>37.6%</i> |
| <i>Maturity</i> | | | |
| Short term | 43.0% | 33.4% | <i>22.3%</i> |
| Medium term | 41.9% | 53.1% | <i>31.8%</i> |
| Long term | 15.1% | 13.6% | <i>24.9%</i> |
| <i>Currency denomination</i> | | | |
| Domestic currency | 94.7% | 31.5% | <i>10.9%</i> |
| Foreign currency | 5.3% | 68.5% | <i>82.7%</i> |
| <i>Currency denomination of foreign currency issues</i> | | | |
| U.S. dollar | 49.8% | 38.8% | <i>78.8%</i> |
| British pound | 2.6% | 7.3% | <i>93.0%</i> |
| Japanese yen | 18.0% | 5.7% | <i>60.3%</i> |
| Swiss franc | 0.9% | 9.2% | <i>97.9%</i> |
| Euro | 16.8% | 13.8% | <i>79.7%</i> |
| Other | 11.9% | 25.1% | <i>91.0%</i> |
| <i>Rate type</i> | | | |
| Fixed rate | 69.6% | 63.9% | <i>25.3%</i> |
| Floating rate | 30.4% | 36.1% | <i>30.5%</i> |
| Total number of issues | 84,968 | 31,370 | <i>27.0%</i> |

Table 3
Comparison between Bond Issues in Domestic and International Markets

This table compares the characteristics of bond issues at home and abroad conducted by firms over the 1991-2008 period. Issues at home are those carried out in the firm's home country. Issues abroad are those conducted outside the firm's home country. Data on amount raised are in million U.S. dollars at 2008 prices. Columns (a), (b), (c), and (d) report least squares regressions of the different bond characteristics on a dummy identifying issues abroad and different sets of control variables. Only the coefficient on the issue abroad dummy is reported. The regressions in column (a) are estimated including country-year dummies. The regressions in column (b) are estimated including country-year dummies and the log of the amount raised per issue. The regressions in column (c) are estimated including firm-level fixed effects and country-year dummies. The regressions in column (d) are estimated including firm-level fixed effects, country-year dummies, and the log of the amount raised per issue. In the regressions of issue size, the dependent variable is the log of the amount raised per issue. Standard errors are estimated with clustering at the firm level. Absolute values of t-statistics are in brackets. *, **, *** mean significance at ten, five, and one percent, respectively.

| Dependent variable | Mean | | Regression coefficient on issue abroad dummy, controlling for | | | |
|---|----------------|---------------|---|-----------------------------------|---|--|
| | Issues at home | Issues abroad | Country-year dummies | Country-year dummies + issue size | Firm fixed effects and country-year dummies | Firm fixed effects and country-year dummies + issue size |
| | | | (a) | (b) | (c) | (d) |
| Issue size (amount raised per issue) | 172.6 | 268.5 | 0.418 *** [9.223] | | 0.194 *** [3.441] | |
| Maturity (years) | 5.8 | 5.4 | -0.758 *** [6.377] | -0.823 *** [6.886] | -0.537 *** [3.017] | -0.528 *** [2.960] |
| Foreign currency denominated | 0.05 | 0.69 | 0.612 *** [35.685] | 0.616 *** [35.640] | 0.579 *** [23.732] | 0.581 *** [23.581] |
| Floating rate | 0.30 | 0.36 | -0.041 ** [2.482] | -0.053 *** [3.083] | -0.074 *** [2.871] | -0.080 *** [2.987] |
| No. of observations | 84,968 | 31,370 | | | | |
| No. of firms | 10,477 | 5,040 | | | | |

Table 4
Comparison between Bond Issues in Domestic and International Markets
Only Firms that Issue Bonds at Home and Abroad

This table compares the characteristics of bond issues at home and abroad conducted by firms over the 1991-2008 period. The sample includes only firms that issue bonds both at home and abroad at some point during this period. Issues at home are those carried out in the firm's home country. Issues abroad are those conducted outside the firm's home country. Data on amount raised are in million U.S. dollars at 2008 prices. Columns (a), (b), (c), and (d) report least squares regressions of the different bond characteristics on a dummy identifying issues abroad and different sets of control variables. Only the coefficient on the issue abroad dummy is reported. The regressions in column (a) are estimated including country-year dummies. The regressions in column (b) are estimated including country-year dummies and the log of the amount raised per issue. The regressions in column (c) are estimated including firm-level fixed effects and country-year dummies. The regressions in column (d) are estimated including firm-level fixed effects, country-year dummies, and the log of the amount raised per issue. In the regressions of issue size, the dependent variable is the log of the amount raised per issue. Standard errors are estimated with clustering at the firm level. Absolute values of t-statistics are in brackets. *, **, *** mean significance at ten, five, and one percent, respectively.

| Dependent variable | Mean | | Regression coefficient on issue abroad dummy, controlling for | | | |
|---|----------------|---------------|---|--|--|---|
| | Issues at home | Issues abroad | Country-year dummies (a) | Country-year dummies + issue size (b) | Firm fixed effects and country-year dummies (c) | Firm fixed effects and country-year dummies + issue size (d) |
| Issue size (amount raised per issue) | 220.4 | 286.4 | 0.206 *** [3.465] | | 0.184 *** [3.151] | |
| Maturity (years) | 5.3 | 5.3 | -0.305 * [1.916] | -0.313 * [1.945] | -0.538 *** [2.928] | -0.513 *** [2.770] |
| Foreign currency denominated | 0.06 | 0.67 | 0.593 *** [24.636] | 0.598 *** [24.478] | 0.576 *** [23.029] | 0.579 *** [22.835] |
| Floating rate | 0.40 | 0.36 | -0.099 *** [3.571] | -0.103 *** [3.642] | -0.076 *** [2.883] | -0.081 *** [2.975] |
| No. of observations | 36,055 | 18,082 | | | | |
| No. of firms | 1,597 | 1,597 | | | | |

Table 5

Comparison between Bond Issues in Domestic and International Markets - By Country Income Level

This table compares the characteristics of bond issues at home and abroad conducted by firms over the 1991-2008 period. The top panel reports regression results for developed countries. The bottom panel reports results for developing countries. See Appendix Table 1 for a list of the countries included in each income group. Issues at home are those carried out in the firm's home country. Issues abroad are those conducted outside the firm's home country. Data on amount raised are in million U.S. dollars at 2008 prices. Columns (a), (b), (c), and (d) report least squares regressions of the different bond characteristics on a dummy identifying issues abroad and different sets of control variables. Only the coefficient on the issue abroad dummy is reported. The regressions in columns (a) and (c) are estimated including firm-level fixed effects and country-year dummies. The regressions in columns (b) and (d) are estimated including firm-level fixed effects, country-year dummies, and the log of the amount raised per issue. In the regressions of issue size, the dependent variable is the log of the amount raised per issue. Standard errors are estimated with clustering at the firm level. Absolute values of t-statistics are in brackets. *, **, *** mean significance at ten, five, and one percent, respectively.

| Dependent variable | Developed countries | | | |
|--------------------------------------|---|--|--|--|
| | All firms | | Only firms that issue bonds at home and abroad | |
| | Regression coefficient on issue abroad dummy, controlling for | | | |
| | Firm fixed effects and country-year dummies | Firm fixed effects and country-year dummies + issue size | Firm fixed effects and country-year dummies | Firm fixed effects and country-year dummies + issue size |
| | (a) | (b) | (c) | (d) |
| Issue size (amount raised per issue) | 0.173 *** [2.953] | | 0.166 *** [2.761] | |
| Maturity (years) | -0.567 *** [3.098] | -0.558 *** [3.042] | -0.560 *** [2.984] | -0.537 *** [2.838] |
| Foreign currency denominated | 0.573 *** [22.494] | 0.576 *** [22.320] | 0.572 *** [22.149] | 0.576 *** [21.931] |
| Floating rate | -0.067 ** [2.477] | -0.072 *** [2.582] | -0.071 ** [2.573] | -0.075 *** [2.654] |
| No. of observations | 105,240 | 105,240 | 52,551 | 52,551 |
| No. of firms | 10,777 | 10,777 | 1,389 | 1,389 |
| Dependent variable | Developing countries | | | |
| | All firms | | Only firms that issue bonds at home and abroad | |
| | Regression coefficient on issue abroad dummy, controlling for | | | |
| | Firm fixed effects and country-year dummies | Firm fixed effects and country-year dummies + issue size | Firm fixed effects and country-year dummies | Firm fixed effects and country-year dummies + issue size |
| | (a) | (b) | (c) | (d) |
| Issue size (amount raised per issue) | 0.858 *** [9.992] | | 0.887 *** [8.291] | |
| Maturity (years) | 0.401 [1.181] | 0.377 [1.107] | 0.344 [0.893] | 0.344 [0.855] |
| Foreign currency denominated | 0.748 *** [21] | 0.734 *** [20] | 0.718 *** [15.555] | 0.696 *** [14.503] |
| Floating rate | -0.295 *** [6.543] | -0.291 *** [6.508] | -0.299 *** [5.422] | -0.276 *** [5.146] |
| No. of observations | 11,098 | 11,098 | 1,586 | 1,586 |
| No. of firms | 3,143 | 3,143 | 208 | 208 |

Table 6
Bond Issuance Activity in Domestic Markets After Internationalization

This table shows the bond issuance activity in domestic markets of firms that issue bonds abroad at some point during the 1991-2008 period. The displayed variables are, for different types of issues, averages across firms of the ratio of the amount raised through bond issues at home to the total amount raised through bond issues in each year after their first issue abroad. The sample includes only firms that conduct bond issues after their first issue abroad during the sample period. The first issue abroad is included in the calculations. The number of observations used to calculate the averages in each case is in parentheses. Issues at home are those carried out in the firm's home country. Issues abroad are those conducted outside the firm's home country. Short-term issues are those with a maturity of three years or less. Medium-term issues are those with a maturity between three and ten years. Long-term issues are those with a maturity of more than ten years. Data on amount raised are in U.S. dollars at 2008 prices.

| | Amount raised through bond issues at home/total amount raised through bond issues in each year (average across firms) | | | | | | |
|--|--|--------------------------|--------------------------|--------------------------|--|-------------------------------|--------------------------|
| | All issues | Short-term issues | Medium- term issues | Long-term issues | Issues above 40 million U.S. dollars | Foreign currency issues | Fixed rate issues |
| | (a) | (b) | (c) | (d) | (e) | (f) | (g) |
| Year of first bond issue abroad | 8.3% (2,753) | 18.7% (838) | 8.7% (2,101) | 19.0% (590) | 8.4% (2,614) | 1.6% (2,034) | 9.8% (2,226) |
| One year after first bond issue abroad | 28.1% (1,536) | 35.0% (634) | 28.8% (1,196) | 37.1% (422) | 27.5% (1,442) | 5.8% (985) | 29.9% (1,247) |
| Two years after first bond issue abroad | 32.6% (1,229) | 33.0% (496) | 33.4% (929) | 40.4% (384) | 32.3% (1,163) | 5.4% (750) | 36.8% (975) |
| Three years after first bond issue abroad | 36.0% (959) | 35.6% (426) | 36.7% (718) | 46.5% (290) | 36.0% (910) | 8.4% (587) | 40.9% (760) |
| More than three years after first bond issue abroad | 46.5% (4,408) | 36.2% (1,897) | 48.7% (3,491) | 51.4% (1,297) | 46.2% (4,240) | 8.5% (2,181) | 50.8% (3,656) |
| <i>All issues following internationalization (including first issue abroad)</i> | <i>24.4% (2,753)</i> | <i>29.4% (1,505)</i> | <i>24.9% (2,528)</i> | <i>32.4% (1,194)</i> | <i>24.1% (2,697)</i> | <i>4.1% (2,234)</i> | <i>25.9% (2,508)</i> |
| <i>All issues following internationalization (excluding issues in month of first issue abroad)</i> | <i>32.5% (2,709)</i> | <i>33.1% (1,389)</i> | <i>34.3% (2,330)</i> | <i>39.1% (1,058)</i> | <i>32.2% (2,589)</i> | <i>6.4% (1,827)</i> | <i>34.8% (2,367)</i> |

Table 7

Comparison of Bond Issuance Activity at Home Before and After Internationalization

This table reports the average annual amount raised by firms through bond issues in domestic markets before and after their first bond issue abroad over the 1991-2008 period for different types of issues. The sample includes only firms that issue bonds at home and abroad at some point during our sample period. Data on amount raised are in million U.S. dollars at 2008 prices. Years without bond issues are assigned a zero. The year of the first issue abroad is excluded from the estimations. Issues at home are those carried out in the firm's home country. Issues abroad are those conducted outside the firm's home country. Columns (a) and (b) report least squares regressions for the different types of bond issues of the log of (one plus the amount issued) on a dummy identifying the period after internationalization and different sets of control variables. Only the coefficient on the after internationalization dummy is reported. The regressions in column (a) are estimated including country-year dummies. The regressions in column (b) are estimated including firm-level fixed effects and country-year dummies. Short-term issues are those with a maturity of three years or less. Medium-term issues are those with a maturity between three and ten years. Long-term issues are those with a maturity of more than ten years. Standard errors are estimated with clustering at the firm level. Absolute values of t-statistics are in brackets. *, **, *** mean significance at ten, five, and one percent, respectively.

| | Annual amount raised through bond issues at home (average across firms) | | Regression coefficient on after internationalization dummy, controlling for | |
|--------------------------------------|--|----------------------------|---|--|
| | Before internationalization | After internationalization | Country-year dummies (a) | Firm fixed effects and country-year dummies (b) |
| | | | | |
| All issues | 142.3 | 331.1 | 0.830 *** [10.548] | 0.863 *** [9.630] |
| <i>Issues by size</i> | | | | |
| Issues below 40 million U.S. dollars | 4.7 | 6.2 | 0.177 *** [5.938] | 0.162 *** [5.071] |
| Issues above 40 million U.S. dollars | 137.6 | 324.9 | 0.796 *** [10.155] | 0.824 *** [9.267] |
| <i>Issues by maturity</i> | | | | |
| Short-term issues | 56.6 | 127.9 | 0.333 *** [5.715] | 0.431 *** [7.053] |
| Medium-term issues | 64.0 | 153.0 | 0.617 *** [9.514] | 0.592 *** [8.091] |
| Long-term issues | 21.7 | 50.1 | 0.395 *** [8.575] | 0.380 *** [7.427] |
| <i>Issues by currency</i> | | | | |
| Domestic currency issues | 138.0 | 306.8 | 0.774 *** [10.071] | 0.774 *** [8.952] |
| Foreign currency issues | 4.3 | 24.3 | 0.130 *** [5.058] | 0.179 *** [5.719] |
| <i>Issues by type of rate</i> | | | | |
| Floating rate issues | 48.6 | 131.2 | 0.376 *** [6.315] | 0.469 *** [7.519] |
| Fixed rate issues | 93.7 | 199.9 | 0.746 *** [10.309] | 0.721 *** [8.923] |
| No. of observations | 10,329 | 16,820 | | |
| No. of firms | 1,311 | 1,570 | | |

Table 8

Comparison between Bond Issues in Domestic and International Markets

Only Firms that Issue Bonds at Home and Abroad After Internationalization - Issues After Internationalization

This table compares the characteristics of bond issues at home and abroad conducted by firms over the 1991-2008 period. The sample includes only firms that issue bonds both at home and abroad after their first bond issue abroad and includes only bond issues conducted after internationalization. Issues at home are those carried out in the firm's home country. Issues abroad are those conducted outside the firm's home country. Data on amount raised are in million U.S. dollars at 2008 prices. Columns (a), (b), (c), and (d) report least squares regressions of the different bond characteristics on a dummy identifying issues abroad and different sets of control variables. Only the coefficient on the issue abroad dummy is reported. The regressions in column (a) are estimated including country-year dummies. The regressions in column (b) are estimated including country-year dummies and the log of the amount raised per issue. The regressions in column (c) are estimated including firm-level fixed effects and country-year dummies. The regressions in column (d) are estimated including firm-level fixed effects, country-year dummies, and the log of the amount raised per issue. In the regressions of issue size, the dependent variable is the log of the amount raised per issue. Standard errors are estimated with clustering at the firm level. Absolute values of t-statistics are in brackets. *, **, *** mean significance at ten, five, and one percent, respectively.

| Dependent variable | Mean | | Regression coefficient on issue abroad dummy, controlling for | | | |
|---|----------------|---------------|---|--|--|---|
| | Issues at home | Issues abroad | Country-year dummies (a) | Country-year dummies + issue size (b) | Firm fixed effects and country-year dummies (c) | Firm fixed effects and country-year dummies + issue size (d) |
| Issue size (amount raised per issue) | 237.1 | 282.6 | 0.180 ** [2.575] | | 0.164 ** [2.425] | |
| Maturity (years) | 5.5 | 5.2 | -0.374 * [1.952] | -0.370 * [1.917] | -0.543 ** [2.537] | -0.514 ** [2.381] |
| Foreign currency denominated | 0.08 | 0.69 | 0.591 *** [21.217] | 0.596 *** [20.961] | 0.586 *** [20.940] | 0.590 *** [20.669] |
| Floating rate | 0.42 | 0.35 | -0.112 *** [3.560] | -0.115 *** [3.565] | -0.086 *** [2.903] | -0.091 *** [2.949] |
| No. of observations | 21,948 | 16,594 | | | | |
| No. of firms | 818 | 818 | | | | |

**Appendix Table 1
Country Classification**

This table presents the list of countries that constitute the different regions and their classification by income level. Countries are classified as developed or developing based on the World Bank income level classification in 2008. Developed countries correspond to high-income economies according to the World Bank classification, those with a GNI per capita of 11,456 U.S. dollars or higher in 2007. Developing countries correspond to low- and middle-income economies according to the World Bank classification, those with a GNI per capita below 11,456 U.S. dollars in 2007. * means the country is classified as developed.

| | Africa | Asia | Eastern Europe & Central Asia | Latin America & Caribbean | Middle East | Western Europe | Other |
|-----------------|----------------------|--------------------|----------------------------------|------------------------------|------------------|------------------|------------------------|
| Australia * | Central African Rep. | China | Bulgaria | Argentina | Bahrain * | Austria * | Aruba * |
| Germany * | Egypt | Hong Kong, China * | Croatia | Barbados * | Iran | Belgium * | Bahamas * |
| Japan * | Ghana | India | Czech Republic * | Bolivia | Israel * | Cyprus * | Bermuda * |
| New Zealand * | Liberia | Indonesia | Estonia * | Brazil | Jordan | Denmark * | Cayman Islands * |
| United States * | Mauritius | Malaysia | Georgia | Chile | Kuwait * | Finland * | Guernsey * |
| | Morocco | Mongolia | Hungary * | Colombia | Lebanon | France * | Jersey * |
| | Nigeria | Pakistan | Kazakhstan | Costa Rica | Qatar * | Greece * | Netherlands Antilles * |
| | South Africa | Philippines | Latvia | Dominican Rep. | Saudi Arabia * | Iceland * | Puerto Rico * |
| | Tanzania | Singapore * | Lithuania | Ecuador | UAE (United | Ireland * | |
| | Tunisia | Sri Lanka | Poland | El Salvador | Arab Emirates) * | Italy * | |
| | | Taiwan * | Romania | Guatemala | | Liechtenstein * | |
| | | Thailand | Russian Federation | Jamaica | | Luxembourg * | |
| | | Vietnam | Serbia & Montenegro | Mexico | | Malta * | |
| | | | Slovak Republic * | Panama | | Netherlands * | |
| | | | Turkey | Peru | | Norway * | |
| | | | Ukraine | Uruguay | | Portugal * | |
| | | | | Venezuela | | Slovenia * | |
| | | | | | | Spain * | |
| | | | | | | Sweden * | |
| | | | | | | Switzerland * | |
| | | | | | | United Kingdom * | |

