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How Firms Use Domestic and International Corporate Bond Markets

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Abstract

This paper provides the first comprehensive documentation of how firms use domestic and international corporate bond markets. Debt issues in domestic and international markets have different characteristics, not explained by differences across firms or countries. International issues tend to be larger, of shorter maturity, denominated in foreign currency, include more fixed rate contracts, and entail lower yields. These patterns remain when analyzing issues by firms from countries with more developed domestic markets and higher financial integration, and even when comparing issues conducted by the same firm in different markets. These findings are consistent with the views that (1) frictions limit the ability of investors and firms to enter into certain contracts in certain markets, (2) domestic and international markets provide distinct financial services and firms use them as complements, and (3) firms with access to domestic and international markets enjoy advantages relative to those that rely solely on domestic markets.

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1. Introduction

International financial integration 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 capital markets.

In response, a large literature analyzes why firms issue securities in foreign markets, focusing primarily on equity markets. According to one strand of this literature, firms list their shares in foreign stock exchanges to circumvent regulations, poor accounting systems, taxes, and illiquid markets that might discourage foreign investors from purchasing shares in local markets. Other research examines whether firms internationalize to "bond" themselves 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 integration. First, bond markets constitute a larger and more internationalized source of capital for firms than equity markets. For example, over the period from 1991 to 2008, bond issues accounted for almost 80 percent of all capital raised by firms through bond and equity issues around the world and for more than 90 percent of all capital raised by firms in markets outside their home country.

[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 might 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. (2001), Pagano et al. (2002), Benos and Weisbach (2004), Doidge et al. (2004), and Gozzi et al. (2008).

Second, analyzing the attributes of bonds provides unique insights into financial integration and how firms use capital markets around the world. In contrast to equities, bonds have easily observable attributes, such as maturity, currency denomination, rate type, and yield, that can—and do—differ across markets. These traits provide the opportunity to assess whether firms systematically issue securities with different characteristics in domestic and international markets; whether any such differences simply reflect firm, industry, or country traits; and whether differences in issue characteristics change as markets become more financially integrated. Thus, studying bond markets not only incorporates a much larger and more internationalized source of finance into the analyses, but also provides novel information about the functioning of domestic and international bond markets.

In this paper, we study corporate bonds and analyze whether firms use domestic and international markets to issue different types of debt securities. We examine four non-price features of debt issues in domestic and foreign markets—size, maturity, currency denomination, and type of rate (i.e., fixed vs. floating)—that have received considerable attention from the corporate finance literature, but not from the financial integration literature. We also analyze differences in bond yields across markets, following a large literature that studies financial integration by comparing rates of return across markets.[2] Hence, this paper provides the first comprehensive documentation of the major characteristics of bond issues in domestic and international bond markets. Rather than testing or proposing specific theories, this paper documents new patterns of issuance activity by bond attribute, relates these patterns to current

[2] Due to the difficulties associated with comparing yields across multiple currencies, we restrict our analysis of yields to bonds denominated in U.S. dollars, which is the most common currency of denomination for bond issues in our sample. Although this strategy makes for a more meaningful comparison of yields, it essentially restricts the sample to U.S. corporations issuing bonds in the Eurobond and domestic U.S. markets

theories, and offers new challenges to those seeking to understand financial integration and 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 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.

The main finding of this paper is that 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 are more likely to involve 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 when analyzing only those firms that actively issue debt both in domestic and international 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 specialize in bonds with different features. These findings hold for different cuts of the data and, importantly, for firms from developed countries, which are more financially integrated and have more developed domestic financial markets. Moreover, we find that issues abroad tend to entail lower yields than issues at home denominated in the same currency, after conditioning on different bond characteristics, country-year dummies, and firm-level fixed effects, and when analyzing firms that issue debt both at

home and abroad. Thus, our findings suggest that the same firm might face different borrowing costs when issuing debt securities in different markets.

The patterns documented in this paper provide suggestive and challenging information about international corporate financing decisions. First, the finding that securities issued in domestic and international markets differ in terms of their major characteristics, including yields, suggests that regulations, transaction costs, information asymmetries, or other frictions might limit the ability of investors and firms to enter into certain contracts in certain markets and to fully compete away price differences across markets. Second, the finding that firms that issue debt both abroad and at home tap these markets for different types of bond issues implies that international markets act as complements, not substitutes, for domestic markets. If international markets offered access to capital on overall better conditions than domestic markets, firms might opt out of domestic markets once they met the criteria to access international markets. Third, our findings suggest that firms that have access to international markets might enjoy advantages relative to firms that can only access domestic markets because international firms can issue a more diverse set of debt securities, potentially at lower costs. As a result, the process of financial integration might create a wedge between internationalized firms and those that for different reasons are not able to access foreign markets.

This paper contributes to at least four interrelated bodies of research. One strand studies corporate bond and equity issues around the world, focusing on the amount of capital raised and the characteristics of firms that conduct those raisings. Henderson et al. (2006) show that international debt issues are substantially more common than equity issues and highlight the role

of market timing considerations in issuance activity.[3] Gozzi et al. (2010) show that firms continue issuing securities at home after accessing international bond and equity markets.[4] In the present paper, we contribute to this literature by analyzing the characteristics of corporate bond issues in domestic and international markets, showing that firms issue bonds with different characteristics in different markets.

A second strand of the research examines market segmentation and its implications for capital market functioning and portfolio allocation.[5] In a frictionless world, the location of where firms issue securities is irrelevant. In practice, however, frictions might fully or partially segment domestic markets from international ones (Japelli and Pagano, 2010). For example, regulations and taxes might hinder the ability of investors to purchase securities outside their home market (Lewis, 1999; Karolyi and Stulz, 2003; Cameron et al., 2007), and information asymmetries between foreign and domestic investors might induce them to price similar assets differently (Bae et al., 2008). In this context, investors with different preferences, investment horizons, and abilities to diversify risk could dominate particular markets, so that securities with distinct traits are offered in different locations (Kim and Stulz, 1988). Securities might also differ across markets if market makers in different locations specialize in securities with particular characteristics (Pagano and von Thadden, 2004). Consequently, bond attributes might be specific to the geographic location and bond prices might not fully converge across markets. We

[3] 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.

[4] Black and Munro (2010) use unit record data for bond issuance by corporate residents of Australia; Hong Kong SAR, China; Korea; Japan; and Singapore to analyze firms' decision to issue debt abroad, and Eidenmüller et al. (2010) analyze the choice of issuer location in the European corporate debt market during the period 1980-2008.

[5] A broader literature studies the aggregate effects of financial integration on economic growth, investment, the cost of capital, and financial development. See, among many others, Levine and Zervos (1998), Edison et al. (2002), and Bekaert et al. (2005, 2006).

contribute to this literature by providing empirical evidence that the major characteristics of bonds issues do in fact differ markedly across countries, which stresses the greater dimensionality of the corporate financing decisions faced by firms with access to different markets.

Third, the research examines the determinants of non-price bond attributes, focusing mostly on domestic markets. 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).[6] In particular, short-term debt can play a disciplinary role as investors might deny further financing to the issuing firm, reducing problems of moral hazard and adverse selection.[7] To the extent that investors in international markets have less information about firms than those in local markets, these arguments would tend to predict that bond issues abroad will have shorter maturities than issues at home. This is what we find. In terms of currency choice, research argues that firms might issue debt in foreign currencies to hedge their exchange rate risk (Graham and Harvey, 2001; Allayannis et al., 2003) and exploit temporary differences in interest rates across currencies (McBrady and Schill, 2007; Habib and Joy, 2010). But, several factors could limit the ability of firms to issue foreign currency debt in their domestic markets, including thin local markets for foreign currency bonds (Cohen, 2005 and regulatory restrictions (Lanoo, 1998). Consistent with these arguments, we find that issues abroad tend to be denominated in foreign currency.[8] Regarding the type of rate, the literature argues that firms might choose the interest rate risk exposure of their debt to match that of their

[6] 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).
[7] 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).
[8] Additional estimates we conducted indicate that issues abroad 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).

assets (Smith and Stulz, 1985; Froot et al., 1993) or they might try to time the market, issuing floating rate debt when the yield curve is steep (Faulkender, 2005). Although we do not directly test and compare these views, we do find that international bond issues have a higher fraction of fixed rate contracts, which seems to suggest that investors in international markets have a lower preference for interest rate risk. Taken together, these results indicate that firms issue very different types of bonds across different markets.

Fourth, the paper contributes to a large literature that studies financial integration using price-based measures.[9] This literature builds from the premise that under full financial integration the law of one price should hold. That is, securities with identical cash flows should command the same price irrespective of the market where they are issued, and thus the literature interprets pricing differentials as evidence of market segmentation. A key empirical challenge to this type of analysis involves identifying comparable assets across markets (Levy-Yeyati et al., 2009; Japelli and Pagano, 2010). Our sample of corporate bond issues around the world helps address this challenge, as many firms issue debt securities both at home and abroad, allowing us to compare borrowing costs between issues conducted by the same firm in different markets.

The rest of the paper is organized as follows. Section 2 describes the data and presents descriptive statistics. Section 3 characterizes the main non-price features of corporate bond issues in domestic and international markets. Section 4 analyzes how firms that issue debt abroad use domestic and international bond markets following their internationalization. Section 5 discusses whether differences between issues at home and abroad depend on the firms' country

[9] Several studies use stock market data to analyze market integration (see, among many others, Bekaert and Harvey, 1995; Soydemir, 2000; Masih and Masih, 2001; Scheicher, 2001; Carrieri et al., 2007). Other papers focus on the (covered and uncovered) interest rate parity and the real interest rate parity conditions and analyze onshore-offshore return differentials (see, for example, Meese and Rogoff, 1988; MacDonald and Nagayasu, 2000). Obstfeld and Taylor (2003) and Kose et al. (2009) provide comprehensive overviews of the main operational measures of financial integration.

of origin. Section 6 analyzes differences in yield spreads between bonds issues at home and abroad. Section 7 concludes.

2. Data and Descriptive Statistics

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 the SDC Platinum database from Thomson Reuters, which provides transaction-level information on new bonds issued in public capital markets with an original maturity of one year or more.[10] 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.

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

[10] 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. According to SDC, 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.

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 the 1970s, coverage of other markets starts later, with most regional databases starting in 1991.[11] Therefore, we restrict our sample to the period 1991-2008.

In additional, unreported analyses, we considered several subsets of these data.[12] 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 a priori financial and non-financial firms might differ in their use of domestic and international bond markets, we obtained 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.

[11] The SDC database is divided into twelve regional sub-databases covering different markets: Asian Pacific Domestic (Hong Kong SAR, China; Indonesia; Malaysia; Philippines; Singapore; Taiwan, China; 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.

[12] The results are available upon request.

To classify debt issues as domestic or international, we use the main market in which the bonds are issued and compare it to the issuing firm's nationality.[13,14] For offerings that 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 might provide a more accurate classification of debt issuances. But if financing decisions are relatively decentralized, considering subsidiaries' own nationality might be a better criterion. Actual decision-making policies probably 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.

Our main analyses focus on four non-price features 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

[13] 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.

[14] 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 can trade in other European countries. However, the number of firms from Luxembourg carrying out bond issuances at home according to SDC is relatively small. We re-did all our analyses excluding these firms and obtained results similar to those reported throughout the paper.

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 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.

In addition, we compare yields of bonds issued at home and abroad. 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.[15]

After eliminating issues with missing data on bond characteristics and outliers (i.e., 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.

To illustrate the development and internationalization of corporate bond markets, Figure 1 displays the evolution of the aggregate amount raised by firms through debt issues in capital

[15] As mentioned above, for the comparison of yields across markets, we restrict the sample to U.S. dollar-denominated bond issues. This explains why we only consider U.S. Treasury securities as risk free bonds to calculate yield spreads.

markets over the period 1991-2008, differentiating between issues at home and abroad. The figure 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 peeked 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. Overall, Figure 1 shows that 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 1991-2008, firms raised 8.4 trillion U.S. dollars (at 2008 prices) in international bond markets, representing 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: Non-price Attributes

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 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 analyze instead 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. One attribute that stands out is size, but there are also significant differences in terms of profitability, valuation, and other firm characteristics that might also affect the features of the bonds that firms 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 for 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 can 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 might 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 non-price 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 Table 3, column (c) show that within a firm, issues abroad are on average more than 19 percent larger than issues at home.

Second, issues abroad 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 from the unconditional findings in Table 2, which suggests that some of the differences between issues at home and abroad reported in that table could reflect differences between those firms that issue debt in international markets and those that do not

and/or differences across countries. 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 Table 3, column (d).

Third, bonds issued in foreign markets have 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 have a smaller fraction of floating rate issues than those in domestic markets. Although on average foreign bond issuances tend to have a higher fraction of floating rate issues than issuances in domestic markets (as reported in Table 2), the results in Table 3 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.

One concern about the results in Table 3 is that they might 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 more 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. However, in unreported results, we confirmed the Table 3 findings when re-estimating the regressions for different sub-samples based on varying bond characteristics (only fixed rate issues, only medium- and long-term bonds, only dollar-denominated issues). In other words, we found significant differences between issues abroad and at home for the different sub-samples of

bond attributes, suggesting that our findings reflect differences across domestic and international 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. The results presented in Table 4 will only differ from those regressions in Table 3 (columns (c) and (d)) to the extent that firms that issue both abroad and at home are subject to different country-specific time trends than firms that do not issue in both markets.

Table 4 shows 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, and have shorter maturities, a higher fraction of foreign currency issues, and a higher fraction of fixed rate issues.

4. Do Firms Issue Different Types of Bonds across Markets after They Internationalize?

The results reported above suggest that there are indeed differences across markets, since we find significant differences in the non-price features of bond issues at home and abroad, after controlling for firm-level fixed effects and including only firms that issue bonds domestically and abroad. However, those results consider all firms that issue debt at home and abroad at some point during our sample period, including firms that issue debt at home before internationalizing

but do not issue debt at home after going abroad.[16] Moreover, these results include domestic issues that are conducted both before and after firms first access international debt markets. This might raise some concerns that the differences we find between issues abroad and at home could reflect differences between issues conducted before and after internationalization, as firms might change the type of issues they carry out in any market after going abroad, and not necessarily differences across markets.

To test whether the non-price differences across markets persist even for the same firms after internationalization, we restrict the sample to issues conducted after firms access international bond markets for the first time. That is, we explicitly test whether a firm issues different types of debt in domestic and foreign markets once it accesses international markets, conditional on the firm issuing in both markets after it internationalizes. Again, we concentrate on the size, maturity, currency, and type of rate of issues across markets.

Table 5 follows a similar structure as Tables 3 and 4, presenting (1) unconditional comparisons of the average characteristics of bond issues in domestic and international markets and (2) estimations 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 consists of only 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.

[16] In unreported tests, we find that a significant fraction of firms remain active in domestic markets after they first access international bond markets, conducting a significant share of their bond issuances at home. Of the firms in our sample, about half completely substitutes 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. In other words, the evidence suggests that firms do not overwhelmingly abandon domestic corporate bond markets after they issue debt abroad. See Gozzi et al. (2010) for more discussion on the issuance behavior of firms after they access international capital markets.

The results in Table 5 show that firms indeed 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 and of shorter maturity; the issue is also more likely to be denominated in a foreign currency and have a fixed rate, than when a firm issues a bond in its domestic market. These findings hold for all the regressions in Table 5 that condition on various combinations of country-year dummies and firm-level fixed effects. These results complement those in Table 4. While the latter table 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 in time (including the periods before and after a firm internationalizes), Table 5 shows that these differences hold when only considering the period after a firm internationalizes.

In unreported tests, we analyzed whether the non-price 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 also 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 5 confirm that this is the case.

In sum, the results in Table 5 suggest that cross-market non-price differences in bond characteristics reflect differences in the markets per se, not differences between the firms that access those markets. Given that 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 across

countries 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. Does the Country of Origin Matter?

While the results presented in Tables 3, 4, and 5 show that debt issues in domestic and international markets have different characteristics, it is important to understand whether these results are driven by firms from certain countries. Including country-year dummies as we do in the regressions reported above 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 are 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 could mostly reflect, for example, that when issuing debt abroad firms from developing countries are accessing deeper and more developed financial markets that are very different from those at home. 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 are likely to have more active domestic bond markets and which are more financially integrated.

To analyze whether the differences in bond features between issues in domestic and international markets hold across developed and developing countries, Table 6 presents separate estimations for each group of countries. We report regressions controlling for country-year dummies and firm-level fixed effects for all firms (columns (a) and (b)) and only for firms that issue bonds both at home and abroad at some point during our sample period (columns (c) and

(d)). The last two columns (columns (e) and (f)) show results for issues that take place after a firm has internationalized, using only firms that issue bonds at home and abroad after internationalization.

Table 6 shows that most of the differences we find between issues abroad and at home hold for firms from both developed and developing countries. In particular, the results show that bonds issued abroad by firms from developed and developing countries tend to be larger, and are more likely to be in foreign currency and to have a floating rate. The only noticeable difference between firms from 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.

In unreported estimations, we also confirmed the paper's findings when examining (a) countries with high and low domestic financial development and (b) countries with high and low levels of international financial integration, using regressions similar to those reported in Table 6. 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 also classified countries according to their degree of financial integration, using both *de jure* measures of capital account openness and *de facto* measures of overall financial integration. We found that, consistent with the results reported in Table 6, most of the differences between issues abroad and at home exist for firms from countries with high and low levels of financial development and financial integration.

The results presented in this section and the previous ones show that issues in international and domestic bond markets have different non-price features: 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 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, given that we find significant differences between issues at home and abroad even when analyzing only developed country firms.

6. Differences in Yield Spreads between Bond Issues at Home and Abroad

In addition to the non-price attributes analyzed above, we also study whether there are differences in terms of borrowing costs between domestic and international bond issues.[17]

[17] Besides the literature on pricing differences discussed in the Introduction, several papers focus on the yields of corporate debt in international markets. The earlier literature compares yields between issues in the Eurobond and U.S. markets by U.S. firms, using data for a period with much lower financial integration (Finnerty et al., 1980; Finnerty and Nunn, 1985; Kidwell et al., 1985; Mahajan and Fraser, 1986). More recently, other papers have studied other markets. For instance, Miller and Puthenpurackal (2002) analyze the yields of Yankee bonds (bonds issued in the U.S. by non-U.S. firms). Miller and Puthenpurackal (2005) and Petrasek (2010) compare spreads on global bonds (those issued and traded simultaneously in several markets around the world) with those issued in the Eurobond and U.S. markets. Carey and Nini (2007) compare interest rate spreads on syndicated loans to corporate borrowers between the European and U.S. markets. Relative to this literature, our sample is significantly larger, which allows us to use fixed effects to analyze differences across markets for the same issuer.

However, studying yields across markets raises several considerations and complications that require a somewhat different type of analysis and a more specialized comparison.

To obtain the cleanest possible comparison, we restrict significantly the sample of bond issues 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 of non-price features, 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 that analyzes 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 section essentially 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 non-price bond features 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.[18] In particular, issues abroad are larger and have shorter maturities than issues at home, consistent with our results for the full sample. 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.

We estimate ordinary least square regressions of 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) 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 issues could 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 can affect yields, such as whether the issue is subordinated and whether it has

[18] The estimations are available upon request.

a sinking fund. Given that some of the bond characteristics might 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 results on non-price features presented throughout the paper. In particular, we present results including all firms (Table 7), only firms that issue both at home and abroad during our sample period (Table 8), and restricting the sample to firms that issue debt at home and abroad after internationalization and only issues that occur after a firm internationalizes (Table 9).

The results in Table 7 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 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 results in Tables 8 and 9 show that when analyzing different samples of firms and issues we obtain similar conclusions. In particular, Table 8 shows that issues abroad tend to have lower yield spreads than issues at home, when restricting the sample to firms that issue debt at home and abroad. Table 9 confirms that these differences also hold when considering only issues conducted after a firm internationalizes, for firms that issue both at home and abroad.

The results in Tables 7, 8, and 9 are robust to a number of alternative specifications not reported here. For example, we obtained similar results when we used the log of spreads instead

of spreads as dependent variable. Moreover, while the reported regressions use Standard & Poor's credit ratings, we reached similar conclusions when we combined data from Standard & Poor's and Moody's (considering either the lowest credit rating of the two or an average). Also, we obtained broadly similar results when we used ratings converted to a numerical scale as a control variable, instead of controlling for dummies for the different credit rating categories. Furthermore, we found 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 section show that there are pricing differences across markets, reaffirming the main conclusion of the paper that domestic and international markets seem to 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.

Our finding that yields spreads differ across markets, even when comparing issues by the same firm, raises the question of why lenders and borrowers might fail to compete these pricing differences away. Borrowers that issue bonds both in the domestic U.S. and Eurobond markets (which constitute the bulk of the sample used in these regressions) tend to be big corporations, many with international operations, and investors in these markets are mostly large, sophisticated institutional investors. One might expect that such market participants would notice persistent differences in pricing across markets and would attempt to exploit them. However, as discussed above, several factors, including regulations, transaction costs, and information asymmetries,

might hinder the ability of investors to purchase securities outside their home market and/or of firms to issue abroad. Market segmentation might prevent competition that would cause prices to converge across markets. Moreover, the existence of pricing differences across markets does not necessarily imply that there are unexploited arbitrage opportunities. Issues abroad and at home might differ along some dimension that is relevant for pricing, but that cannot be adequately controlled for in the empirical analysis. For instance, differences between the domestic U.S. and Eurobond markets in terms of tax treatment, issuance procedures, flotation costs, liquidity, and covenant enforcement could potentially generate the lower spreads for issues abroad that we find. It is also possible that some factors already identified in the literature for which we account in our analysis affect bond pricing differently across markets. Regardless of the underlying cause, our results show that pricing differences between dollar-denominated issues at home and abroad persist even after controlling for several bond characteristics highlighted by the literature and after accounting for unobserved time-varying country-specific factors and for differences across firms.

7. Conclusions

This paper offers the first comprehensive documentation of the major characteristics of corporate bond issues in domestic and international markets and analyzes how firms use these markets. We find that firms issue different types of bonds in domestic and international markets. International bond issues are larger, of shorter maturity, tend to be denominated in foreign currency, and are more likely to be fixed interest rate contracts. Moreover, we find that issues abroad tend to entail lower yield spreads than issues at home. All of these results hold after conditioning on different bond characteristics, country-year dummies, and firm-level fixed effects, and even when

analyzing only firms that issue debt both at home and abroad. These findings suggest that firms face different borrowing costs in different markets and that domestic and international bond markets offer different types of securities. Firms seem to be using these markets as complements rather than as substitutes.

The findings in this paper pose challenging questions to the corporate and international finance literatures, including some very basic queries about the nature of international finance. For example, why do domestic and international markets tend to specialize in providing distinct types of debt securities? Further research would be necessary to understand whether home bias in investor portfolios and informational asymmetries between different investor groups can account for the patterns of issuance documented in this paper. Research on market microstructure might also provide additional insights on why different markets provide different types of securities. Furthermore, these findings raise questions about the distributional effects of financial globalization. Since those firms with access to international markets can issue a more diverse set of debt securities, apparently at lower cost, than firms without access to those markets, financial internationalization might have cross-firm distributional effects that shape product market competition and economic efficiency.

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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.

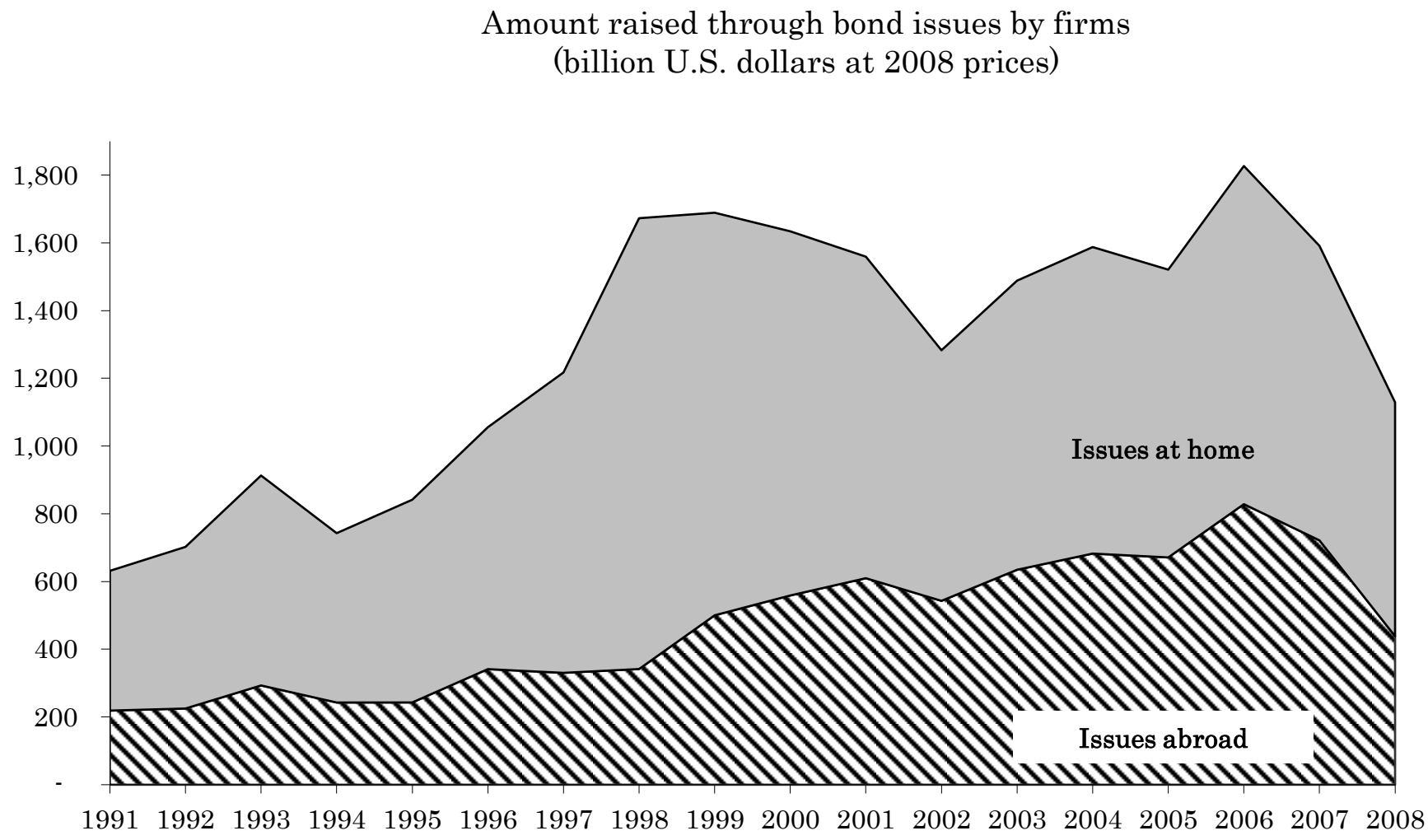

Table 1
Amount Raised, Number of Issues, and Number of Firms by Issuer Country/Region

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

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.

	Mean		Regression coefficient on issue abroad dummy, controlling for			
Dependent variable	**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)	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.

	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
Dependent variable			(a)	(b)	(c)	(d)
Issue size	220.4	286.4	0.206 ***		0.184 ***	
(amount raised per issue)			[3.465]		[3.151]	
Maturity (years)	5.3	5.3	-0.305 *	-0.313 *	-0.538 ***	-0.513 ***
			[1.916]	[1.945]	[2.928]	[2.770]
Foreign currency-denominated	0.06	0.67	0.593 ***	0.598 ***	0.576 ***	0.579 ***
			[24.636]	[24.478]	[23.029]	[22.835]
Floating rate	0.40	0.36	-0.099 ***	-0.103 ***	-0.076 ***	-0.081 ***
			[3.571]	[3.642]	[2.883]	[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
Only Firms that Issue Bonds at Home and Abroad After Internationalization - Only 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 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.

	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
Dependent variable			(a)	(b)	(c)	(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				

Table 6
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. The table shows the results of 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), (c), and (e) are estimated including firm-level fixed effects and country-year dummies. The regressions in columns (b), (d), and (f) 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.

	Developed countries					
	All firms		Only firms that issue bonds at home and abroad		Only firms that issue bonds at home and abroad after internationalization - Only issues after internationalization	
	Regression coefficient on issue abroad dummy, controlling for					
	Firm fixed effects and country-year dummies (a)	Firm fixed effects and country-year dummies + issue size (b)	Firm fixed effects and country-year dummies (c)	Firm fixed effects and country-year dummies + issue size (d)	Firm fixed effects and country-year dummies (e)	Firm fixed effects and country-year dummies + issue size (f)
Issue size (amount raised per issue)	0.173 *** [2.953]		0.166 *** [2.761]		0.155 ** [2.250]	
Maturity (years)	-0.567 *** [3.098]	-0.558 *** [3.042]	-0.560 *** [2.984]	-0.537 *** [2.838]	-0.550 ** [2.540]	-0.521 ** [2.391]
Foreign currency-denominated	0.573 *** [22.494]	0.576 *** [22.320]	0.572 *** [22.149]	0.576 *** [21.931]	0.584 *** [20.625]	0.588 *** [20.330]
Floating rate	-0.067 ** [2.477]	-0.072 *** [2.582]	-0.071 ** [2.573]	-0.075 *** [2.654]	-0.083 *** [2.768]	-0.088 *** [2.809]
No. of observations	105,240	105,240	52,551	52,551	16,341	16,341
No. of firms	10,777	10,777	1,389	1,389	749	749

	Developing countries					
	All firms		Only firms that issue bonds at home and abroad		Only firms that issue bonds at home and abroad after internationalization - Only issues after internationalization	
	Regression coefficient on issue abroad dummy, controlling for					
Dependent variable	Firm fixed effects and country-year dummies (a)	Firm fixed effects and country-year dummies + issue size (b)	Firm fixed effects and country-year dummies (c)	Firm fixed effects and country-year dummies + issue size (d)	Firm fixed effects and country-year dummies (e)	Firm fixed effects and country-year dummies + issue size (f)
Issue size (amount raised per issue)	0.858 *** [9.992]		0.887 *** [8.291]		0.940 *** [5.422]	
Maturity (years)	0.401 [1.181]	0.377 [1.107]	0.344 [0.893]	0.344 [0.855]	-0.016 [0.033]	-0.201 [0.402]
Foreign currency-denominated	0.748 *** [21]	0.734 *** [20]	0.718 *** [15.555]	0.696 *** [14.503]	0.670 *** [7.640]	0.643 *** [7.025]
Floating rate	-0.295 *** [6.543]	-0.291 *** [6.508]	-0.299 *** [5.422]	-0.276 *** [5.146]	-0.298 *** [3.018]	-0.257 ** [2.622]
No. of observations	11,098	11,098	1,586	1,586	253	253
No. of firms	3,143	3,143	208	208	69	69

Table 7
Comparison of Yield Spreads between Bond Issues in Domestic and International Markets

This table compares the yield spread at issue 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. The sample includes only U.S. dollar-denominated fixed rate issues. The table reports least squares regressions of the yield spread at issue (in basis points) on a dummy identifying issues abroad and different sets of control variables. The regressions in columns (a), (b), and (c) are estimated including country-year dummies. The regressions in columns (d), (e), and (f) are estimated including firm-level fixed effects and country-year dummies. The yield spread at issue is defined as the difference between the yield to maturity on a given bond and the yield to maturity on a risk-free bond with a similar maturity on the issuance date. The yield to maturity on a risk-free bond is measured as the yield to maturity on the constant maturity Treasury securities published by the Federal Reserve. Data on amount raised are in million U.S. dollars at 2008 prices. Credit rating dummies are based on Standard and Poor's credit ratings. The excluded rating category dummy is that for bonds rated AA- and above. 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: Bond yield spread at issue					
	(a)	(b)	(c)	(d)	(e)	(f)
Issue abroad dummy	-22.907 **	-11.313 **	-13.844 ***	-15.133 ***	-15.555 ***	-14.563 ***
	[2.573]	[2.011]	[2.659]	[3.376]	[3.549]	[3.301]
Issue rated CCC- to CCC+ dummy		428.814 ***	411.176 ***		296.807 ***	261.675 ***
		[10.404]	[9.889]		[9.215]	[9.307]
Issue rated B- to B+ dummy		342.456 ***	329.012 ***		156.588 ***	145.212 ***
		[45.952]	[43.101]		[7.902]	[7.260]
Issue rated BB- to BB+ dummy		161.500 ***	157.355 ***		74.629 ***	74.661 ***
		[6.325]	[6.559]		[4.007]	[3.880]
Issue rated BBB- to BBB+ dummy		62.098 ***	54.436 ***		28.016 ***	25.344 ***
		[10.964]	[11.674]		[4.912]	[4.499]
Issue rated A- to A+ dummy		27.605 ***	23.865 ***		3.889	1.831
		[5.810]	[5.722]		[1.379]	[0.674]
Issue not rated dummy		15.785 ***	23.010 ***		5.529	5.521
		[3.179]	[4.742]		[1.500]	[1.609]
Log of issue size			4.161 ***			1.575 **
			[3.671]			[2.092]
Issue maturity			2.536 ***			1.660 ***
			[14.710]			[12.698]
Subordinated issue dummy			23.202 ***			32.983 ***
			[6.320]			[7.912]
Sinking fund dummy			21.149 **			-1.244
			[2.385]			[0.304]
Country-year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm-level fixed effects	No	No	No	Yes	Yes	Yes
No. of observations	30,828	30,828	30,828	30,828	30,828	30,828
No. of firms	4,763	4,763	4,763	4,763	4,763	4,763

Table 8
Comparison of Yield Spreads between Bond Issues in Domestic and International Markets
Only Firms that Issue Bonds at Home and Abroad

This table compares the yield spread at issue 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. The sample includes only U.S. dollar-denominated fixed rate issues and only firms that issue this type of bonds both at home and abroad at some point during the sample period. The table reports least squares regressions of the yield spread at issue (in basis points) on a dummy identifying issues abroad and different sets of control variables. The regressions in columns (a), (b), and (c) are estimated including country-year dummies. The regressions in columns (d), (e), and (f) are estimated including firm-level fixed effects and country-year dummies. The yield spread at issue is defined as the difference between the yield to maturity on a given bond and the yield to maturity on a risk-free bond with a similar maturity on the issuance date. The yield to maturity on a risk-free bond is measured as the yield to maturity on the constant maturity Treasury securities published by the Federal Reserve. Data on amount raised are in million U.S. dollars at 2008 prices. Credit rating dummies are based on Standard and Poor's credit ratings. The excluded rating category dummy is that for bonds rated AA- and above. 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: Bond yield spread at issue					
	(a)	(b)	(c)	(d)	(e)	(f)
Issue abroad dummy	-23.383 ***	-19.153 ***	-17.273 ***	-16.640 ***	-16.522 ***	-13.721 ***
	[3.568]	[4.056]	[3.511]	[4.039]	[4.071]	[3.105]
Issue rated B- to B+ dummy		306.814 ***	308.698 ***		262.668 ***	260.458 ***
		[18.363]	[18.170]		[17.837]	[15.475]
Issue rated BB- to BB+ dummy		163.792 ***	163.231 ***		162.523 ***	158.898 ***
		[3.952]	[3.886]		[3.866]	[3.618]
Issue rated BBB- to BBB+ dummy		75.757 ***	74.799 ***		45.523 ***	42.692 ***
		[5.955]	[5.746]		[2.781]	[2.700]
Issue rated A- to A+ dummy		29.788 ***	27.212 ***		3.137	-0.119
		[4.772]	[4.706]		[0.514]	[0.020]
Issue not rated dummy		25.469 ***	28.431 ***		-10.359	-7.328
		[2.780]	[3.099]		[0.948]	[0.690]
Log of issue size			-0.068			0.727
			[0.046]			[0.667]
Issue maturity			2.129 ***			2.202 ***
			[5.040]			[8.562]
Subordinated issue dummy			3.181			2.769
			[0.462]			[0.376]
Sinking fund dummy			-43.291			-44.277
			[1.646]			[1.367]
Country-year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm-level fixed effects	No	No	No	Yes	Yes	Yes
No. of observations	6,715	6,715	6,715	6,715	6,715	6,715
No. of firms	189	189	189	189	189	189

Table 9
Comparison of Yield Spreads between Bond Issues in Domestic and International Markets
Only Firms that Issue Bonds at Home and Abroad After Internationalization - Only Issues After Internationalization

This table compares the yield spread at issue 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. The sample includes only U.S. dollar-denominated fixed rate issues and only firms that issue this type of bonds both at home and abroad after their first bond issue abroad during the sample period. Only bond issues conducted after internationalization are included. The table reports least squares regressions of the yield spread at issue (in basis points) on a dummy identifying issues abroad and different sets of control variables. The regressions in columns (a), (b), and (c) are estimated including country-year dummies. The regressions in columns (d), (e), and (f) are estimated including firm-level fixed effects and country-year dummies. The yield spread at issue is defined as the difference between the yield to maturity on a given bond and the yield to maturity on a risk-free bond with a similar maturity on the issuance date. The yield to maturity on a risk-free bond is measured as the yield to maturity on the constant maturity Treasury securities published by the Federal Reserve. Data on amount raised are in million U.S. dollars at 2008 prices. Credit rating dummies are based on Standard and Poor's credit ratings. The excluded rating category dummy is that for bonds rated AA- and above. 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: Bond yield spread at issue					
	(a)	(b)	(c)	(d)	(e)	(f)
Issue abroad dummy	-25.261 ***	-23.766 ***	-22.271 ***	-18.255 ***	-19.738 ***	-16.961 ***
	[4.809]	[5.306]	[4.018]	[3.606]	[4.310]	[3.330]
Issue rated B- to B+ dummy		297.315 ***	298.676 ***		281.110 ***	279.057 ***
		[19.090]	[17.751]		[14.576]	[13.842]
Issue rated BB- to BB+ dummy		151.335 **	149.256 **		196.289 ***	193.138 ***
		[2.400]	[2.325]		[3.399]	[3.262]
Issue rated BBB- to BBB+ dummy		89.547 ***	93.761 ***		65.235 **	62.919 ***
		[3.860]	[4.218]		[2.585]	[2.695]
Issue rated A- to A+ dummy		28.592 ***	27.594 ***		9.719	5.797
		[4.259]	[4.117]		[0.882]	[0.555]
Issue not rated dummy		32.165 ***	35.163 ***		-6.810	-3.098
		[2.742]	[2.929]		[0.444]	[0.207]
Log of issue size			0.785			1.686
			[0.357]			[1.000]
Issue maturity			1.861 ***			2.545 ***
			[2.712]			[5.225]
Subordinated issue dummy			1.049			-10.809
			[0.108]			[0.902]
Sinking fund dummy			-13.131			-11.741
			[0.420]			[0.332]
Country-year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm-level fixed effects	No	No	No	Yes	Yes	Yes
No. of observations	3,738	3,738	3,738	3,738	3,738	3,738
No. of firms	102	102	102	102	102	102

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 Arab Emirates) *	Ireland *	
	Tunisia	Sri Lanka	Poland	El Salvador		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 *	