AUTHOR ACCEPTED MANUSCRIPT

FINAL PUBLICATION INFORMATION

How Firms Use Corporate Bond Markets under Financial Globalization

The definitive version of the text was subsequently published in

Journal of Banking and Finance, 58 (September 2015), 2015-04-21

Published by Elsevier and found at http://dx.doi.org/10.1016/j.jbankfin.2015.03.017

THE FINAL PUBLISHED VERSION OF THIS ARTICLE IS AVAILABLE ON THE PUBLISHER'S PLATFORM

How Firms Use Corporate Bond Markets under Financial Globalization

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Forthcoming *Journal of Banking and Finance*

Abstract

This paper studies how firms from developed and developing countries have used domestic and international corporate bond markets since the 1990s. We find that debt issues in domestic and international markets have different characteristics. International issues tend to be larger, of shorter maturity, denominated in foreign currency, include more fixed rate contracts, and entail lower yields. These patterns persist even when analyzing issues by firms from countries with more developed domestic markets and higher financial integration and when comparing issues conducted by the same firm in different markets. These findings are consistent with the existence of frictions that segment domestic and international corporate bond markets and with these markets providing distinct financial services.

JEL Classification Codes: F36; G12; G15; G32

Keywords: bond markets; capital markets; capital structure; domestic and international debt issues; financial internationalization; financial globalization

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[*] We are grateful to Francisco Ceballos, Juan Jose Cortina Lorente, Sebastián Cubella, Julián Kozlowski, and Amin Mohseni for excellent research assistance. We received very helpful comments from Carol Alexander (the editor), Yiorgos Allayannis, Vihang Errunza, Michael Gallmeyer, Karen Lewis, Edith Liu, Luis Servén, an anonymous referee, and participants at the Darden School of Business, University of Virginia International Finance Conference (Charlottesville, VA) and the LACEA-LAMES Annual Meetings (Lima, Peru). We thank the World Bank Knowledge for Change Program (KCP) and the Development Economics Vice-presidency for financial support. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors and do not necessarily represent the views of the World Bank.

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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 three-fold in real terms between 1991 and 2013, 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. Though corporate bond issuance in foreign markets declined during the global financial crisis of 2008, it rebounded rapidly afterwards, prompting concerns about the exposure of emerging market firms to currency mismatches and potential changes in international investor sentiment (Avdjiev et al., 2014; IADB, 2014; IMF, 2014; The Economist, 2014a,b).

Although a large literature has examined the internationalization of equity markets, we still know surprisingly little about how firms use the biggest component of domestic and international capital markets: corporate bond markets.[1] Over the period from 1991 to 2013, 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.[2] Thus, by focusing on equity markets, most of the literature ignores a large

[1] The literature on equity market internationalization is rather large and has focused in particular on why firms list their shares in foreign stock exchanges. For theoretical arguments on why firms choose 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). 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), Reese and Weisbach (2002), Ljungqvist et al. (2003), Doidge et al. (2004), and Gozzi et al. (2008). Other papers study the effects of financial globalization from an aggregate perspective; see, for example, Levine and Zervos (1998), Edison et al. (2002), and Bekaert et al. (2005, 2006).

[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, international debt issues constitute a much larger source of new capital than international equity issues at the aggregate level.

fraction of corporate capital raising activity in domestic and international markets. Moreover, we still do not know the answers to basic questions about corporate bond markets, such as: do firms issue bonds with different characteristics in domestic and international markets? Or, do they issue bonds with similar price and non-price characteristics when tapping investors in different locations? If market frictions make it costly for investors and firms to access some markets, then the resulting market segmentation might induce firms to use domestic and international markets to issue bonds, likely with different attributes.

In this paper, we assemble a unique database on corporate debt issues and analyze how firms use corporate bond markets under financial globalization. We test whether firms systematically issue bonds in domestic and international markets with different non-price characteristics (size, maturity, currency denomination, and type of rate), and whether yields on bond issues by the same firm differ across domestic and foreign markets. While some practitioner articles and international finance textbooks (e.g., Bekaert and Hodrick, 2012) have noted differences in the characteristics of bonds issued in domestic and international markets, they do not assess whether these differences are systematic, and whether any potential differences arise because of differences between the firms that issue in these markets or because of differences between the markets themselves. Thus, we construct and analyze a new dataset that includes information on major characteristics of 143,948 corporate bond issues in domestic and international markets conducted by 18,219 firms from 101 countries (or, more precisely, economies) over the period from 1991 to 2013.

The main finding of this paper is that debt issues in domestic and international bond markets have different characteristics. In particular, international bond issues tend to be larger, denominated in foreign currency, and involve more fixed interest rate contracts. Moreover, firms

from developed countries tend to issue shorter-term bonds in foreign markets. 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 firms use domestic and international markets to issue bonds with distinct attributes. These findings hold for firms from more financially integrated countries, for which one might expect the differences between domestic and international markets to be smaller, or even non-existent. We also find that, although the global financial crisis had a significant effect on issuance activity in both domestic and international corporate bonds markets, most of the differences we find between issues abroad and at home remain when considering the period after 2008. 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, large firms that issue debt in domestic and international markets seem to face different borrowing costs when issuing in these two different places.

To provide a more complete characterization of the process of internationalization of corporate bond markets, we also present new evidence regarding the main characteristics of those firms that issue debt abroad, and how they differ from those that only issue debt at home. To do this, we match our data on corporate bond issues in domestic and international markets with data

on annual firm-level balance sheet information for publicly listed firms.[3] We find that firms that issue debt abroad are significantly larger and more leveraged than those firms that only issue debt at home. Among firms from developing countries, we also find that those issuing bonds in foreign markets tend to be older and less profitable than those that only issue bonds in domestic markets. However, as mentioned above, these differences across firms do not account for the differences that we find between debt issues at home and abroad, as the differences in bond characteristics across markets remain when we analyze issues conducted by the same firm across different markets.

The patterns documented in this paper provide information about the functioning of domestic and foreign markets under globalization. Our finding that issues abroad are different from domestic issues, even when comparing issues conducted by the same firm, is consistent with (1) market segmentation and (2) markets offering distinct financial services.[4] In a world with perfectly integrated markets, the location where firms issue securities is irrelevant, but various frictions might segment markets (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/or 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

[3] Our focus on publicly listed firms provides us with a relatively homogeneous group of firms that (vis-à-vis non-listed firms) are large, have already met listing requirements, and are formal corporations that can raise external financing.

[4] A parallel literature argues that foreign and domestic banks offer different types of financing. See, for example, Mian (2006), Berger et al., (2008), and Giannetti and Ongena (2012).

different locations specialize in securities with particular characteristics (Pagano and von Thadden, 2004). Our findings that the non-price attributes of bonds differ across markets and that bond yields do not fully converge across borders are consistent with arguments that stress the role of frictions in segmenting financial markets.

The results in this paper also inform the study and practice of corporate finance. Our finding that corporations issue bonds with different characteristics in domestic and international markets suggests that corporate financing decisions among firms with access to international markets involves a set of choices about the location and characteristics of bond issues. This finding might also help account for the finding from previous studies that firms issue securities in both domestic and foreign markets (Gozzi et al., 2010). Moreover, if having access to international markets allows firms to issue a broader range of securities, it could also affect their capital structure. Furthermore, our finding that debt issues in domestic and international markets are different might explain why the literature tends to find that access to foreign financing is related to changes in firms' capital structure (Pagano et al., 2002; Schmukler and Vesperoni, 2003; Mitton, 2006; Giannetti and Ongena, 2009; Levchenko et al. 2009).

Our paper also relates to an extensive body of work on the characteristics of securities. Research suggests that companies and investors can manage their risks and exploit arbitrage opportunities by issuing and purchasing bonds that differ with respect to maturity, currency denomination, and the type of rate (fixed vs. floating).[5] In our investigation, we do not focus on the determinants of the non-price features of corporate debt issues. Rather, we provide the first

[5] The literature suggests that short-term debt might help investors alleviate problems related to agency costs, asymmetric information, signaling, and liquidity risk (Myers, 1977; Flannery, 1986; Diamond, 1991, 1993). Foreign currency issues might help firms hedge their exchange rate risk (Graham and Harvey, 2001; Allayannis et al., 2003), and may also allow them to exploit temporary differences in interest rates across currencies (McBrady and Schill, 2007; Habib and Joy, 2010). Similar arguments apply to the choice between fixed and variable rate (Smith and Stulz, 1985; Froot et al., 1993; Faulkender, 2005).

rigorous and systematic examination of whether corporations use international and domestic markets to issue bonds with different characteristics.

We also find that there are material differences in borrowing costs between domestic and international bond issues. A large literature examines the degree of financial integration across markets by attempting to compare the prices of identical securities across different markets. A key empirical challenge for this type of analysis is identifying comparable securities across markets.[6] 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.[7]

In addition to analyzing differences in attributes between debt issues at home and abroad, we also study whether firms that issue debt abroad differ from those that only issue debt at home. Several papers analyze the characteristics of firms that list their shares abroad, either through direct cross-listings or depositary receipts (Pagano et al., 2002; Lang, Lins, and Miller, 2003; Lang, Raedy, and Yetman, 2003; Claessens and Schmukler, 2007). Gozzi et al. (2010) and Didier et al. (2014) compare the characteristics of firms that raise capital abroad and at home considering both debt and equity issues together. In this paper we focus on debt issues, which are a much more important source of capital for firms than equity issues.

[6] See Levy-Yeyati et al. (2009), Gagnon and Karolyi (2010), and Japelli and Pagano (2010). For studies that use stock market data, see Bekaert and Harvey (1995), Soydemir (2000), Masih and Masih (2001), Scheicher (2001), and 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 (Meese and Rogoff, 1988; MacDonald and Nagayasu, 2000). Obstfeld and Taylor (2003) and Kose et al. (2009) provide comprehensive overviews of the main measures used to study how integrated markets are.

[7] 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 also restricts the sample of domestic issues mostly to issues conducted by U.S. firms, as explained in more detail in Sections 2 and 6.

The rest of the paper is organized as follows. Section 2 describes the data and presents some 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 the differences between issues at home and abroad vary over time and depend on the firms' country of origin. Section 6 analyzes differences in yield spreads between bonds issues at home and abroad. Section 7 compares the characteristics of firms that issue bonds in domestic and international markets. Section 8 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 2013. 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.[8] 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

[8] 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.

issues by investment funds, investment companies, and real estate investment trusts (REITs), as well as mortgage-backed securities and other asset-backed securities.[9]

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 issues 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 the 1970s, coverage of other markets starts later, with most regional databases starting in 1991.[10] Therefore, we restrict our sample to the period 1991-2013.

We conducted several, unreported robustness tests with subsets of these data; we highlight a few here. First, we were concerned that including data around the 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. We also report results in the paper analyzing whether the differences we find between issues abroad and at home changed after 2008. Second, our sample includes bond issues by both financial and non-financial firms. We

[9] Following the literature, we exclude issues by investment firms and funds as we want to focus our analysis on corporate bond issues, and the financing decisions of investment vehicles and firms may be different. In unreported robustness tests, we also estimated the regressions including these issuers and obtained similar results.

[10] 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.

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. This could raise concerns that our results might be driven by a relatively small set of firms. Therefore, as an additional robustness check, we re-estimated all our regressions excluding the top five percent of firms in terms of the number of debt issues and obtained similar results. Fourth, because firms domiciled in offshore financial centers might behave differently and might conduct their actual operations in other countries, we re-did all our analyses excluding these firms and found similar results.

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.[11,12] For offerings that take place simultaneously in more than one market, we consider tranches 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

[11] 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.

[12] 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 issues 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.

subsidiaries, among other factors. If financial decisions are highly integrated, considering firms' parent nationality might provide a more accurate classification of debt issues. 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 2013 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.

We also compare yields of bonds issued at home and abroad. For this analysis, we use only bonds denominated in U.S. dollars because the dollar is the most common currency of denomination for bond issues in our sample. Issues abroad denominated in euros are much less common than issues abroad in U.S. dollars (although they have grown significantly over our sample period). Moreover, while there is a relatively simple benchmark rate for U.S. dollar-

denominated bonds (i.e., U.S. Treasury bonds), there is no such a clear benchmark for euro-denominated ones. Focusing on dollar-denominated issues, helps deal with problems associated with comparing yields across multiple currencies. Given that most firms conduct issues denominated in their domestic currency when issuing at home, focusing on dollar-denominated issues restricts the sample of issues at home mostly to issues by U.S. firms. Therefore, when analyzing yields for firms that issue debt both at home and abroad, we are essentially comparing U.S. firms issuing bonds in the Eurobond and the domestic U.S. markets.

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.

After eliminating issues with missing data on bond characteristics and outliers (i.e., observations in the top and bottom one percent of the sample), we are left with a sample of 143,948 corporate bond issues by 18,219 firms from 101 countries covering the period 1991-2013. Appendix Table 1 lists the countries included in our dataset and their regional and income level classification.

In addition, we also analyze the characteristics of firms that issue debt abroad and compare them with those of firms that only raise debt at home. To do this, we match our data on corporate bond issues in domestic and international markets with data on annual firm-level balance sheet information for publicly listed firms from Orbis, a commercial database produced by Bureau van

Dijk. We analyze a broad set of firm-level characteristics, including measures of size, growth, profitability, and capital structure. For this analysis, we restrict the sample to the 2003-2011 period because the dataset on firm balance sheet from Orbis to which we have access only covers this period. After matching the datasets and eliminating outliers of the firm-level characteristics, we are left with a sample of 5,051 firms with 29,712 annual observations.

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 markets over the period 1991-2013, differentiating between issues at home and abroad. The figure shows that the aggregate amount raised by firms in bond markets around the world almost tripled in real terms from 1991 to 2013, increasing from 678 billion to 1.9 trillion U.S. dollars (at 2013 prices). The fraction of total debt issued abroad increased from about 35 percent in 1991 to 40 percent in 2013. Furthermore, the global financial crisis was associated with a collapse in debt issuance both at home and abroad. Domestic debt issuance decreased by 30 percent between 2006 and 2008, while international debt issues dropped by more than 40 percent. Debt issuance at home and abroad recovered relatively quickly from the global financial crisis, although they still have not surpassed the peak amounts registered in 2006. Overall, Figure 1 shows that markets have become larger and more internationalized since the early 1990s, but domestic markets continue to account for a significant fraction of issuance volume.

The statistics presented in Table 1 show that firms both from developed and developing countries raise a substantial amount of resources through bond issues in international markets. Over the period 1991-2013, firms raised 12.4 trillion U.S. dollars (at 2013 prices) in international bond markets, representing 37.3 percent of all funds raised through the issuance of debt in capital markets. Developing country firms are especially “internationalized,” raising 41 percent of the

total amount raised in bond markets during the period analyzed through issues abroad. U.S. firms are a notable exception to the substantial internationalization of corporate bond markets, even compared to firms from other developed countries with large domestic bond markets. Only 14 percent of the total amount raised in debt markets by U.S. firms over the sample period was raised abroad.

3. Differences in Non-Price Bond Attributes between 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 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. We conduct all our analyses separately for firms from developed and developing countries. We do this because, when issuing debt abroad, firms from developing countries are typically accessing deeper and more developed financial markets that are different from their home markets. Therefore, one might 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.

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, for both developed and developing countries. In the case of developed countries, while almost 50 percent of domestic issues are below 100 million U.S. dollars, 68 percent of international issues are above this amount. This pattern is even starker for developing countries, where only 22 percent of domestic issues are above 100 million dollars, compared to 75 percent of international issues. Furthermore, the fraction of issues abroad tends to increase with the size of the issue, for both developed and developing countries. Second, domestic bond issues seem to have shorter maturities than international issues, particularly for developing countries. For these countries, about 43 percent of domestic issues mature in less than three years, but only 23 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 commonly used foreign currency, for both foreign currency-denominated issues at home and abroad. The dominance of the dollar is particularly stark for developing countries, while for developed countries the euro and the yen are also quite commonly used for foreign currency-denominated issues. Fourth, the fraction of fixed rate issues is slightly higher for issues at home than abroad in the case of developed countries, while the opposite is true for developing countries.

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 expressed in U.S. dollars at 2013 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 (the log of) 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 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 the regressions are estimated using ordinary least squares, adjusting the standard errors for clustering at the firm level. Thus, the regressions for the dummy dependent variables, namely foreign currency denomination and floating rate, are linear probability models. As a robustness test for these two variables, we also estimated our regressions using Logit models to take into account their binary nature, and obtained results that are qualitatively similar to those reported throughout the paper.[13] The top panel in Table 3 shows the results for developed countries and the bottom panel for developing ones.

Table 3 shows that issues in international and domestic bond markets have different non-price characteristics, conditioning on country-year and firm fixed effects, for both developing and developed countries. First, issues abroad tend to be larger than domestic bond issues, particularly

[13] These Logit models do not include firm-level fixed effects because their large number makes convergence very difficult. We estimated these regressions including only country-year fixed effects. The results are available upon request to the authors.

for developing countries. Table 3 shows that bond issues in international markets are, on average, larger than issues in domestic markets, for both developed and developing countries, consistent with the results reported in Table 2. However, once we control for firm-level fixed effects, this difference becomes statistically insignificant in the case of developed countries, highlighting the need to account for cross-sectional differences between those firms that issue debt abroad and at home. For developing countries, the difference in terms of size between issues abroad and at home is not only statistically significant when controlling for firm-level fixed effects and country-year dummies, but also economically relevant. For instance, the results in the bottom panel of Table 3, column (c) show that within a firm, issues abroad are on average more than 90 percent larger than issues at home for firms from developing countries.

Second, for firms from developed countries, 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 by firms from developed countries tend to have shorter maturities than domestic issues by about four months, according to the estimations reported in the top panel of Table 3, column (d). This difference represents about six percent of the average maturity of issues conducted by developed country firms in our sample. In the case of firms from developing countries, the opposite seems to be the case, with issues abroad having longer maturities on average than issues at home, although the difference is only statistically significant at the ten percent level once we control for firm-level fixed effects.

Third, bonds issued in foreign markets include a higher fraction of foreign currency-denominated bonds than those issued in domestic markets, for both developed and developing countries. The probability that an issue is denominated in foreign currency is around 60 (80) percent larger for international issues than for domestic issues in the case of firms from developed (developing) countries. 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, for both developed and developing countries. For developed countries, although on average issues abroad tend to include a higher fraction of floating rate issues than those 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. The probability of having a floating rate is seven (24) percent lower for issues abroad than for issues at home for firms from developed (developing) countries (column (d)).

One concern with the results in Table 3 is that they might reflect differences between different types of issues. For example, if foreign currency-denominated 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 different bond characteristics: only fixed rate issues; only medium- and long-term bonds; and only dollar-denominated issues. We found

significant differences between issues abroad and at home for the different sub-samples of bond attributes, suggesting that the findings reflect differences across domestic and international markets and not simply differences between different types of bond issues. We only find two differences between the main results and those for the different bond subsamples. (1) When estimating regressions only for medium- and long-term issues for developed countries, there is no significant difference in the proportion of fixed rate contracts between issues abroad and at home. (2) When restricting the sample to dollar-denominated issues for developed countries, we find significant differences in terms of issue size between issues abroad and at home, and find no difference across markets in terms of maturity.

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 18,219 firms (143,948 debt issues) to 1,986 firms (67,960 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-varying shocks 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 have a higher fraction of foreign currency issues and a higher fraction of fixed rate issues, for both developed and developing country firms. In the case of developed countries, issues abroad tend to have shorter

maturities (once we account for cross-sectional differences across firms), while for developing countries issues abroad tend to be larger than issues at home.

4. Differences in Non-Price Bond Attributes across Markets after Internationalization

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.[14] 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 <u>after</u> 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.

[14] 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 large share of their bond issues 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.

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 bond issues abroad differ from domestic issues after a firm internationalizes, while conditioning on various combinations of country-year dummies, issue size, and firm-level fixed effects. The top panel shows results for developed countries and the bottom panel for developing countries. The sample consists only of firms that issue debt at home and abroad after internationalization and only of issues that occur after a firm internationalizes. This reduces the sample to 1,609 firms and 55,175 debt issues.

The results in Table 5 show that firms from both developed and developing countries indeed issue different types of bonds in domestic and international markets after they internationalize. In the case of developed countries, when a firm issues a bond in a foreign market, the issue tends to be of shorter maturity and is also more likely to be denominated in a foreign currency and to have a fixed rate, than when a firm issues a bond in its domestic market. In the case of developing countries, issues abroad tend to be larger and are more likely to be denominated in a foreign currency and have a fixed rate than issues at home. 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 considering only the period after a firm internationalizes.

In unreported tests, we also 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 for developed countries 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. Variation Over Time and by Country of Origin

While the results presented in Tables 3, 4, and 5 show that debt issues in domestic and international markets have different non-price characteristics, it is important to further understand the sources of these differences. 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 any market in a given period). However, it is possible that the differences between issues abroad and at home also vary over time and/or across countries. For instance, as described above, the global financial crisis had a significant effect on issuance activity in both domestic and

international corporate bonds markets and may have affected how these markets operate, which could impact some of the differences between issues at home and abroad that we find. In terms of cross-country differences, one might expect differences across countries in the degree of international financial integration to affect the differences between issues abroad and at home that we find. In more integrated countries, the frictions that segment financial markets may be smaller and investors and financial intermediaries might be able to cross borders more easily, potentially reducing the observed differences between issues abroad and at home for these countries.

Table 6 shows the effect of the global financial crisis on the differences between issues abroad and at home. In particular, we estimate regressions including both the issue abroad dummy and the interaction between this dummy and a dummy that equals one after 2008 and zero before.[15] This interaction term captures whether the difference between issues abroad and at home differs after 2008. We report regressions controlling for country-year dummies and firm-level fixed effects for the different samples of firms and bond issues analyzed above: (1) all firms (columns (a) to (d)); (2) only for firms that issue bonds both at home and abroad at some point during our sample period (columns (e) and (h)); and (3) issues that take place after a firm has internationalized, considering only firms that issue bonds at home and abroad after internationalization (columns (i) to (l)). Each column reports regression results for a different dependent variable and sample of firms and bond issues. The top panel in Table 6 shows results for developed countries and the bottom panel for developing ones.[16]

The results in Table 6 show that most of the differences documented throughout the paper between issues abroad and at home exist both before and after the global financial crisis. In

[15] We do not include the after 2008 dummy as a control variable in these regressions because it is absorbed by the country-year dummies.
[16] This table only reports results without controlling for the size of issues. Similar results are obtained in all cases if we control for issue size.

particular, we find that issues abroad are more likely to be denominated in a foreign currency and to have a fixed rate, for both developed and developing country firms, before and after the crisis. In the case of developing countries, issues abroad tend to be larger than issues at home both before and after the crisis. For developed countries, issues abroad tend to be less tilted toward foreign currency after the crisis, although the difference in currency denomination between issues abroad and at home persists after 2008. In addition, the results show that while issues abroad from developed countries tend to be larger than issues at home before the global financial crisis, the sign of this difference reverses after the crisis, with issues abroad becoming smaller than issues at home.

Table 7 studies differences across countries based on their level of international financial integration. In particular, we analyze the degree of financial integration across countries using a time-varying continuous *de jure* measure of capital account openness constructed by Chinn and Ito (2008). This variable goes from –1.88 ("least financially open") to 2.42 ("most financially open"). We estimate regressions including both the issue abroad dummy and the interaction between this dummy and the capital account openness measure in a given year.[17,18] This interaction term captures whether the difference between issues abroad and at home differs for firms from more financially integrated countries. Table 7 follows a similar structure as Table 6. For this analysis, we present the results for firms from all countries combined, without separating between developed and developing countries, because there is little variation in capital account openness over time for developed countries during our sample period.[19]

[17] We do not include the capital account openness measure as a control variable in these regressions because it is absorbed by the country-year dummies.

[18] In unreported regressions, we also interacted the issue abroad dummy with a dummy variable that equals one for countries that are above the median of the capital account openness measure in a given year, and zero otherwise, and obtained comparable results. We also conducted similar analyses using *de facto* measures of financial integration, such as the ratio of foreign assets and liabilities to GDP, and obtained broadly analogous results.

[19] The number of observations and firms in Table 7 is lower than in Tables 3,4, and 5 because the Chinn and Ito (2008) measure of capital account openness ends in 2012 and is not available for some of the countries included in our sample.

Table 7 shows that the differences we find between issues abroad and at home exist even for firms from countries with high financial integration. In particular, we find that, even in countries classified as "most financially open," issues abroad are more likely to be of shorter maturity, denominated in a foreign currency, and to have a fixed rate than domestic issues.[20] Moreover, the differences between issues at home and abroad tend to be smaller (in absolute terms) for firms from more financially integrated countries, particularly in the case of issue size and the fraction of foreign currency-denominated issues. For instance, the results in column (k) imply that, for firms from countries in the 25 percentile in terms of capital account openness in our sample (which is equal to -0.12), the probability that an issue is denominated in foreign currency is around 88 percent larger for international issues than for domestic issues.[21] For firms from "most financially open" countries, this difference is 56 percent.

In unreported estimations, we also confirmed our findings when analyzing differences in financial development across countries. In particular, we analyzed 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) and found that, consistent with the results reported above, most of the differences between issues abroad and at home exist for firms from both countries with high and low levels of financial development.

Furthermore, we also obtained similar results when excluding firms from the U.S., which has a unique bond market along a number of important dimensions compared to many other countries around the world. For example, while the U.S. is believed to have markets with longer

[20] Out of 91 countries with data on the measure of capital account openness in our sample, 39 are classified as "most financially open" for at least one year during our sample period. Of these countries, 13 are classified as "most financially open" for the whole period.

[21] This effect is calculated by taking the coefficient on the issue abroad dummy in this regression (0.864) and adding up the coefficient on the interaction term between the issue abroad dummy and capital account openness (-0.126), multiplied by the value of the capital account variable for countries in the 25 percentile in terms of capital account openness in our sample (-0.12).

maturities, the results that issues abroad by firms from developed countries have shorter maturities than issues at home are not driven by U.S. firms getting shorter maturities when issuing abroad. Firms from developed countries in Western Europe and Asia also issue at shorter maturities when issuing abroad.

The results presented in this section and in the previous ones show that issues in international and domestic bond markets have different non-price features: international bond issues tend to be larger, denominated in foreign currency, and involve more fixed interest rate contracts. Moreover, firms from developed countries tend to borrow more short term in foreign markets. 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. Moreover, the results hold as well for firms from the most financially integrated countries and for firms for those countries with more developed domestic financial markets, suggesting that issues in domestic and international markets do differ, irrespective of the characteristics of the firms' home country.

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 corporate bond issues.[22] However, studying yields across markets raises several considerations and complications that require a somewhat different approach.

To obtain the cleanest possible comparison, we restrict the sample in various ways. First, we focus only on U.S. dollar-denominated issues to avoid the problems associated with comparing rates across currencies. 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 reduce the sample size substantially. In particular, of the total 143,948 corporate bond issues by 18,219 firms used in the analysis of non-price features, we are left with 35,328 bond issues between 1991 and 2013 by 5,894 firms to analyze yields. Though

[22] Besides the literature on financial integration that analyzes pricing differences across markets 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 and includes issues in different markets by the same firm, which allows us to use firm-level fixed effects to analyze differences in yield spreads across markets for the same issuer.

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.

By restricting the sample to dollar-denominated issues, the domestic debt issues in our sample are basically those conducted by U.S. firms (most firms issue debt denominated in their domestic currency when issuing at home). Specifically, in the sub-sample analyzed in this section, U.S. firms account for 96 percent of the issues at home (compared to 52 percent of issues at home for the whole sample) and for 85 percent of the issues conducted by firms that issue debt both at home and abroad (compared to 39 percent for the whole sample), which are the ones that drive our within-firm results. Moreover, most of the dollar-denominated issues abroad by U.S. firms are conducted in the Eurobond market. Thus, most of the analyses in this section essentially compare 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. 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 linear 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.[23] We also control for the size of issues, by including the log of the amount raised per issue in U.S. dollars (at 2013 prices), for the maturity of issues, and for whether the issue is subordinated or not, as these bond characteristics could also affect yields. 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 8), only firms that issue debt both at home and abroad during our sample period (Table 9), 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 10). Given that the sample of firms that conduct dollar-denominated issues only includes a smaller subset of firms from developing countries, we estimate these regressions for all countries together, without separating developed and developing countries.

The results in Table 8 show that issues abroad tend to have lower yield spreads than issues at home after controlling for different combinations of bond characteristics, country-year

[23] For a few developing countries, Standard and Poor's rates domestic corporate bond issues using a national credit rating scale, which provides a relative measure of creditworthiness only within a given country. This could generate some concerns that for these countries, credit ratings on domestic debt issues may not be directly comparable to ratings on issues abroad, which are rated on a global scale. As reported on Tables 8, 9, and 10, all our results are robust to excluding credit ratings as a control variable. Moreover, we find similar results if we focus on developed countries, for which all issues (both domestic and at home) are rated using the same global credit ratings scale.

dummies, and firm-level fixed effects. The fact that the difference is only statistically significant once we control for firm-level fixed effects highlights the need to account for cross-sectional differences between firms when comparing yields across different markets. The difference in yields between issues abroad and at home 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 16 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 9 and 10 show that we obtain similar conclusions when analyzing different samples of firms and issues. In particular, Table 9 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 10 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 8, 9, and 10 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 yield 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. U.S. firms 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 increase the cost to investors of purchasing securities outside of their home market and/or increase the cost to corporations of issuing securities 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 is difficult to adequately control 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. Although we do not identify the source of the yield differentials, our findings indicate 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. Differences between Firms that Conduct Bond Issues at Home and Abroad

This section analyzes the characteristics of firms that issue debt in international capital markets, comparing them to firms that only issue debt in domestic markets. The analyses presented in the rest of the paper focus on differences in the main features of corporate bond issues conducted abroad and at home. To provide a more complete characterization of the process of internationalization of corporate bond markets, this section studies the firm-level differences between those firms that issue debt abroad and those that rely solely on domestic bond markets, analyzing a broad set of firm-level characteristics, including measures of size, growth, profitability, and capital structure.

Table 11 presents the median of several firm-level variables for different groups of firms classified according to their debt issuance activity over the period for which firm balance sheet data are available in our dataset (2003-2011). In particular, this table shows information for firm size and growth, measured by the level and annual growth rate of total assets in U.S. dollars (at 2011 prices) and the number of employees. It also displays data on leverage (defined as total debt

over assets), profitability (measured by the return on assets, ROA), and firm age (as of 2011). We present data separately for firms that only issue debt at home ("domestic bond issuers") and for firms that issue debt abroad ("foreign bond issuers"), and include a non-parametric test of equality of medians between these two groups for the different variables.[24] Columns (1) to (3) show the results for developed countries and columns (4) to (6) for developing ones.

Table 11 indicates that there are significant differences between those firms that rely only on domestic bond markets and those that issue debt abroad. One attribute that stands out is size. Firms that issue debt abroad tend to be significantly larger than those that only issue debt at home. The median domestic bond issuer in developed countries has assets of 877 million U.S. dollars (at 2011 prices) and 1,618 employees, while the median foreign bond issuer is almost twice as large, having assets of about $1.6 billion U.S. dollars and 3,046 employees. Similar patterns are observed for developing countries, where the median domestic bond issuer has assets of about 751 million U.S. dollars and 2,381 employees, while the median foreign bond issuer has assets of about 959 million U.S. dollars and 3,350 employees. Despite these differences in firm size, we do not find significant differences in terms of growth rates between firms that issue debt abroad and at home.

The results in Table 11 also show that international bond issuers tend to have significantly higher leverage than domestic bond issuers, in both developed and developing countries. Moreover, we also find that in developing countries, firms that issue debt abroad have lower return on assets and tend to be older than firms that only issue debt at home. These results stress the need to account for differences across firms, as we do in Tables 3-10, to reach any meaningful conclusions when comparing debt issues at home and abroad.

[24] The sample of "foreign bond issuers" includes firms that issue bonds both at home and abroad during our sample period.

Figures 2 and 3 complement the results from Table 11, displaying the distribution of the different firm characteristics separately for those firms that rely only on domestic bond markets and those that issue debt abroad. Figure 2 shows these distributions for developed countries and Figure 3 for developing ones. Consistent with the results in Table 1, Figures 2 and 3 show that the size distribution of firms that issue debt abroad is shifted to the right relative to the size distribution of firms that only issue debt at home, indicating that firms that use international debt markets are typically larger than the other firms. Wilcoxon rank-sum tests show that the size distributions of domestic and foreign issuers are statistically different from each other. On the other hand, we cannot reject that the distributions for growth rates (measured in terms of assets or the number of employees) for domestic and foreign issuers are the same. Moreover, Figures 2 and 3 show that the distribution of leverage for foreign issuers is tilted to the right relative to that of domestic issuers, consistent with the estimates in Table 11.

The results presented in this section show that firms that issue debt abroad are different from those that only issue debt at home. In particular, firms that issue debt in international markets tend to be significantly larger and more leveraged. Moreover, in the case of developing countries, we also find that firms that issue debt abroad are older and tend to be less profitable. These differences suggest that only firms with certain characteristics might be able to access international debt markets. These findings also highlight the need to account for differences across firms when comparing debt issues at home and abroad. Given that we find that the differences in bond characteristics across markets remain when we analyze issues conducted by the same firm at home and abroad, we can conclude that the differences across firms do not account for the differences documented throughout the paper between domestic and international issues.

8. Conclusions

This paper analyzes the major characteristics of corporate bond issues in domestic and international markets and studies how firms use these markets. We find that firms issue different types of bonds in domestic and international markets. International bond issues are larger, tend to be denominated in foreign currency, and are more likely to be fixed interest rate contracts. Firms from developed countries tend to borrow more short term in international markets. 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. The results also hold for firms from countries that are more financially integrated and have more developed domestic financial markets, and when splitting the sample before and after the global financial crisis. These findings suggest that domestic and international bond markets offer different types of securities and that firms face different borrowing conditions in different markets.

As the internationalization of capital markets increases, the choice of where to issue securities becomes increasingly important for firms, and our findings provide new information about international corporate financing behavior and how markets work in a globally integrated environment. First, the finding that bonds 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 suggests 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 meet the criteria to access international markets. Third, the finding that domestic markets offer different financial contracts suggests that even for the companies that are able to meet the minimum threshold to go abroad, domestic markets might continue to provide useful financial services. Fourth, our findings imply that firms that have access to international markets might enjoy some advantages relative to firms that can only access domestic markets, since they might be able issue larger amounts and have access to a more diverse set of debt securities, apparently at lower costs. Fifth, the fact that firms that issue abroad are larger than those that rely only on domestic corporate bond markets is consistent with higher transaction costs associated with issuing in foreign markets. To the extent that foreign markets complement domestic ones, only larger firms will benefit from the advantages of issuing different securities at home and abroad.

This paper's findings also relate to research in international finance that studies why short-term debt and foreign currency debt arise. Short-term debt can play a disciplinary role as investors may deny further financing, reducing problems of moral hazard and adverse selection (Rodrik and Velasco, 1999; Jeanne, 2009; Broner et al., 2013). Therefore, when information asymmetries are large, borrowers 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 for firms from developed countries. Foreign currency debt can help hedge exchange rate risk, but several factors might limit the ability to issue foreign currency debt in domestic markets. For instance, given size constraints, it may be difficult to develop deep liquid local 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.[25] Moreover, 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), according to which emerging market borrowers cannot borrow abroad in their domestic currencies.

[25] 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, and so forth).

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Figure 1
Evolution of Bond Issues 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 1991-2013 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 2013 prices.

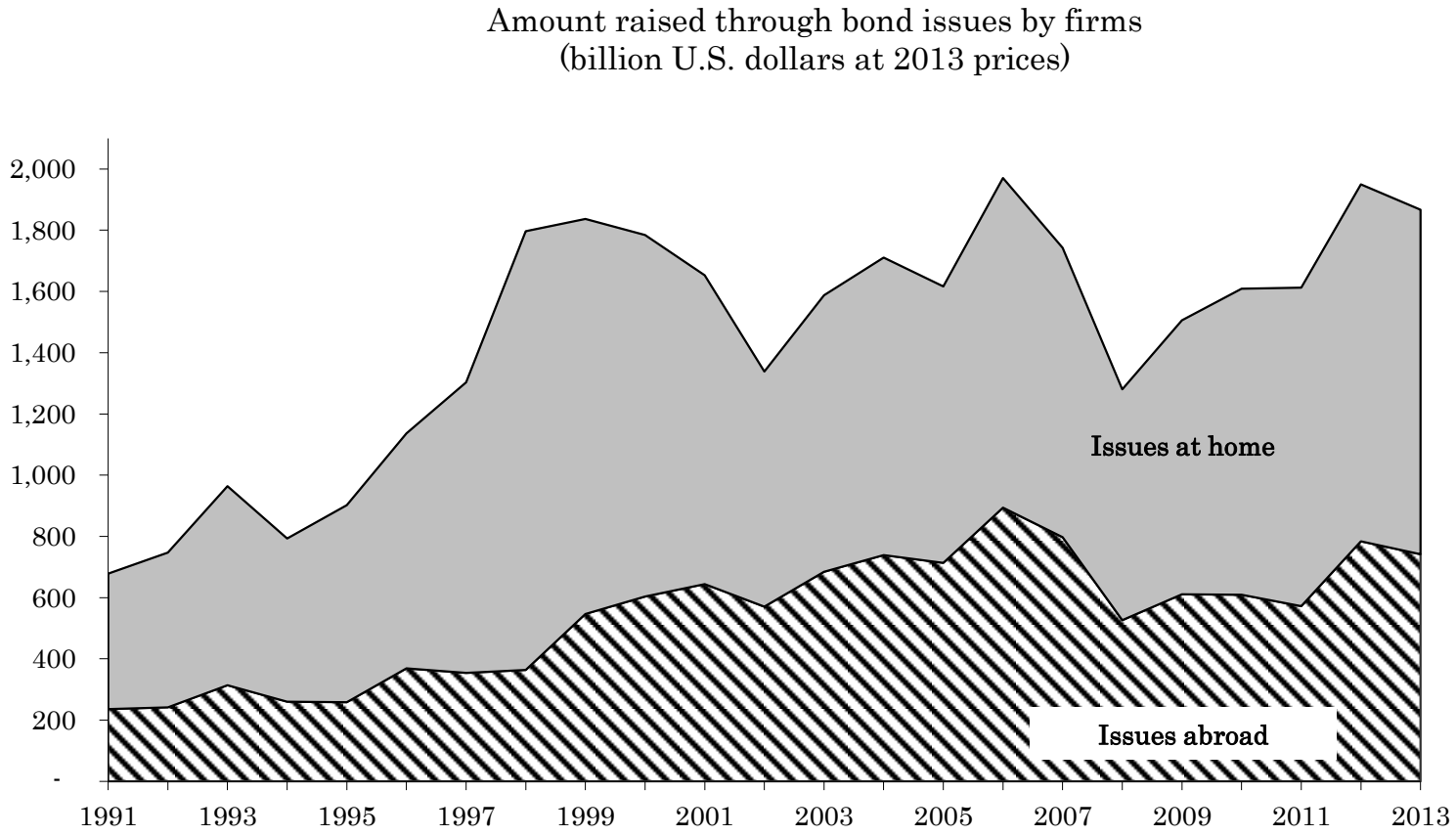

Figure 2
Distribution of Firm Characteristics
Developed Countries

This figure shows density plots of different firm characteristics for firms from developed countries over the 2003-2011 period. Firms classified as domestic issuers are those that only conducted bond issues in their domestic market during this period. Firms classified as foreign issuers are those that carried out bond issues outside their home country during this period. Note that these firms may have also conducted bond issues at home during this period. Total assets are measured in thousands of U.S. dollars at 2011 prices. Densities are estimated using the Epanechnikov kernel function with a bandwidth of one. The figures show the p-value from a Wilcoxon rank-sum test of equality of distributions between the two types of issuers. See Appendix Table 1 for a list of the countries included in each income group.

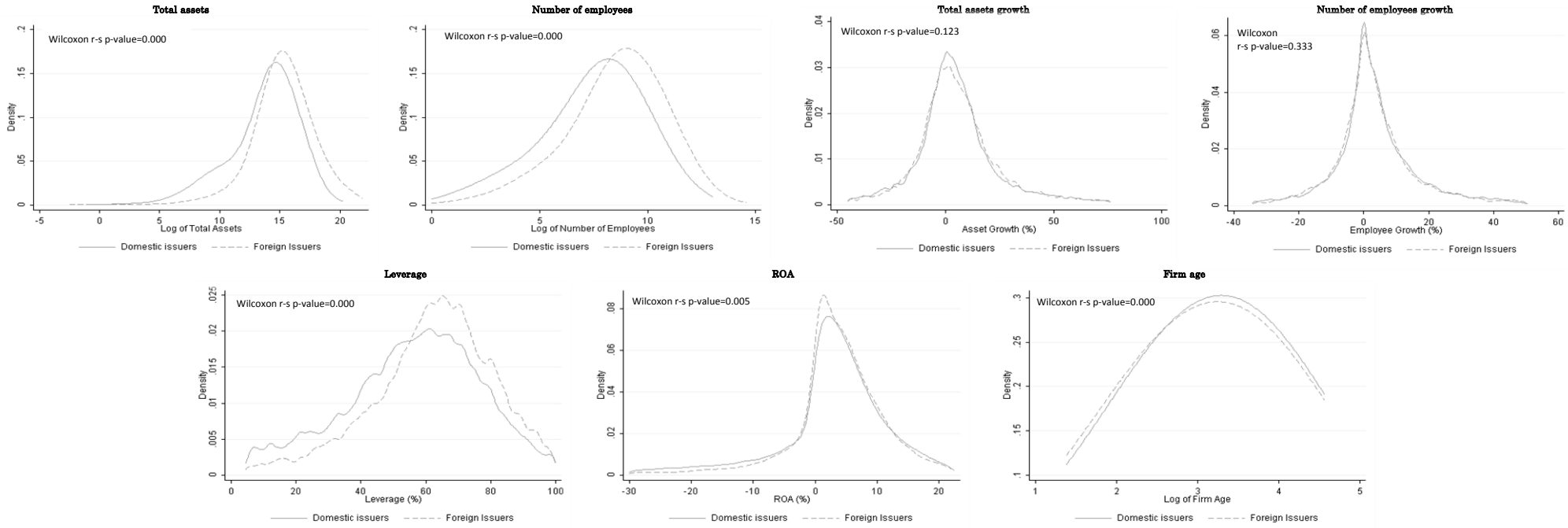

Figure 3
Distribution of Firm Characteristics
Developing Countries

This figure shows density plots of different firm characteristics for firms from developing countries over the 2003-2011 period. Firms classified as domestic issuers are those that only conducted bond issues in their domestic market during this period. Firms classified as foreign issuers are those that carried out bond issues outside their home country during this period. Note that these firms may have also conducted bond issues at home during this period. Total assets are measured in thousands of U.S. dollars at 2011 prices. Densities are estimated using the Epanechnikov kernel function with a bandwidth of one. The figures show the p-value from a Wilcoxon rank-sum test of equality of distributions between the two types of issuers. See Appendix Table 1 for a list of the countries included in each income group.

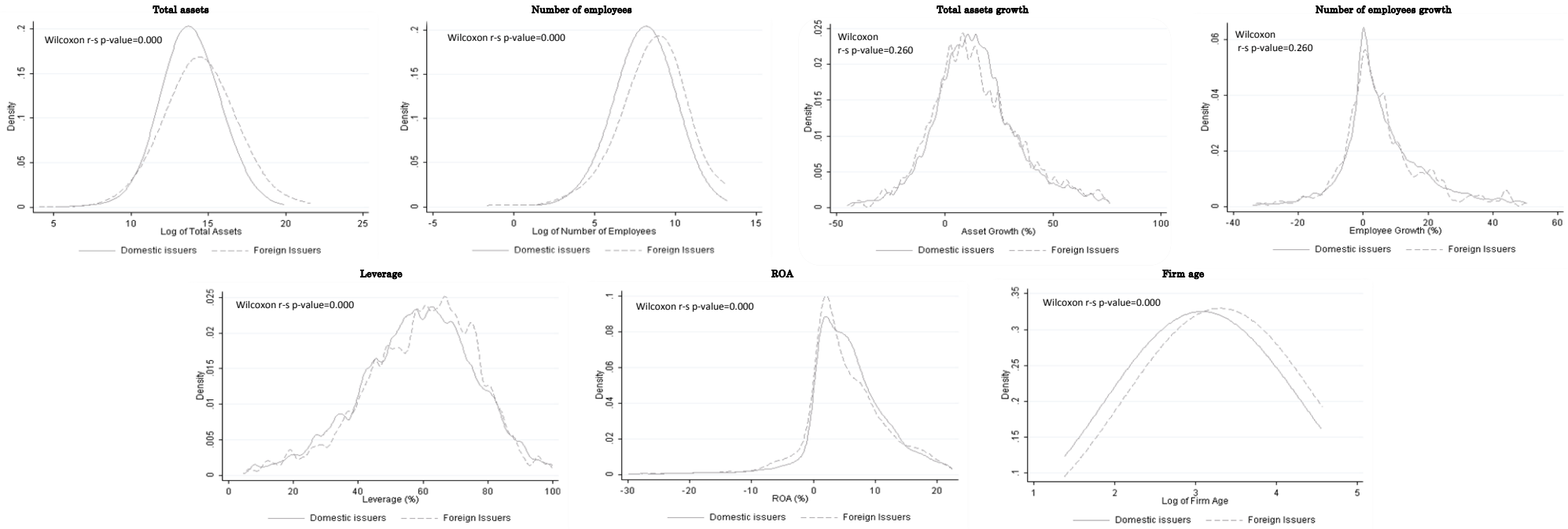

Table 1
Amount Raised, Number of Issues, and Number of Firms by Issuer Country/Region

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 1991-2013 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 2013 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 2013 prices)				Number of issues				Number of firms			
	Home	Abroad	Total	*% abroad*	Home	Abroad	Total	*% abroad*	Home	Abroad	Total	*% abroad*
Germany	1,998,057	1,315,840	3,313,897	*39.7%*	6,383	4,745	11,128	*42.6%*	473	317	660	*48.0%*
Japan	1,979,089	408,865	2,387,954	*17.1%*	8,017	1,434	9,451	*15.2%*	1,239	628	1,506	*41.7%*
United States	11,197,858	1,831,980	13,029,837	*14.1%*	54,104	4,732	58,836	*8.0%*	4,214	681	4,573	*14.9%*
Africa	6,421	36,737	43,158	*85.1%*	39	101	140	*72.1%*	26	46	69	*66.7%*
Asia	890,011	392,637	1,282,647	*30.6%*	12,937	1,575	14,512	*10.9%*	2,449	939	3,189	*29.4%*
Australia & New Zealand	89,786	655,821	745,607	*88.0%*	355	2,405	2,760	*87.1%*	148	215	328	*65.5%*
Eastern Europe & Central Asia	139,661	254,750	394,410	*64.6%*	738	649	1,387	*46.8%*	331	324	603	*53.7%*
Latin America & Caribbean	474,798	394,360	869,158	*45.4%*	7,284	1,443	8,727	*16.5%*	2,004	588	2,410	*24.4%*
Middle East	6,891	106,967	113,858	*93.9%*	14	491	505	*97.2%*	9	100	107	*93.5%*
Western Europe	4,164,822	6,952,831	11,117,653	*62.5%*	14,634	20,858	35,492	*58.8%*	3,017	2,355	4,672	*50.4%*
Other	0	85,069	85,069	*100.0%*	0	1,010	1,010	*100.0%*	0	102	102	*100.0%*
Developed countries	**19,671,762**	**11,564,412**	**31,236,174**	*37.0%*	**88,587**	**36,430**	**125,017**	*29.1%*	**9,774**	**4,799**	**12,931**	*37.1%*
Developing countries	**1,275,631**	**871,444**	**2,147,074**	*40.6%*	**15,918**	**3,013**	**18,931**	*15.9%*	**4,136**	**1,496**	**5,288**	*28.3%*
Total	**20,947,392**	**12,435,856**	**33,383,248**	*37.3%*	**104,505**	**39,443**	**143,948**	*27.4%*	**13,910**	**6,295**	**18,219**	*34.6%*

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 1991-2013 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 2013 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. See Appendix Table 1 for a list of the countries included in each income group and region.

	Developed Countries			Developing Countries		
	Composition of issues at home	Composition of issues abroad	*% abroad*	Composition of issues at home	Composition of issues abroad	*% abroad*
Issue size (amount raised per issue)						
Size below 40 million U.S. dollars	30.1%	13.7%	*15.7%*	57.1%	6.9%	*2.2%*
Size between 40 and 100 million U.S. dollars	17.1%	18.2%	*30.4%*	20.5%	17.9%	*14.2%*
Size between 100 and 250 million U.S. dollars	24.5%	28.2%	*32.1%*	15.2%	37.3%	*31.8%*
Size above 250 million U.S. dollars	28.4%	40.0%	*36.7%*	7.3%	37.9%	*49.7%*
Maturity						
Short term	39.4%	32.5%	*25.3%*	43.4%	23.4%	*9.3%*
Medium term	45.3%	54.1%	*33.0%*	47.3%	66.4%	*21.0%*
Long term	15.3%	13.4%	*26.5%*	9.4%	10.2%	*17.0%*
Currency denomination						
Domestic currency	95.4%	36.3%	*13.5%*	91.3%	4.6%	*0.9%*
Foreign currency	4.6%	63.7%	*85.1%*	8.7%	95.4%	*67.5%*
Currency denomination of foreign currency issues						
U.S. dollar	28.7%	35.4%	*87.5%*	99.4%	84.1%	*63.7%*
British pound	3.9%	7.6%	*91.7%*	0.0%	0.5%	*100.0%*
Japanese yen	21.2%	6.1%	*61.9%*	0.0%	1.9%	*100.0%*
Swiss franc	1.4%	10.1%	*97.6%*	0.0%	1.4%	*100.0%*
Euro	27.8%	14.4%	*74.7%*	0.1%	5.2%	*98.7%*
Other	16.9%	26.5%	*89.9%*	0.4%	6.9%	*97.1%*
Rate type						
Fixed rate	72.2%	64.3%	*26.8%*	72.7%	88.4%	*18.7%*
Floating rate	27.8%	35.7%	*34.6%*	27.3%	11.6%	*7.5%*
Total number of issues	**88,587**	**36,430**	***29.1%***	**15,918**	**3,013**	***15.9%***

Table 3
Comparison between Bond Issues in Domestic and International Markets

This table compares the non-price attributes of bond issues at home and abroad conducted by firms over the 1991-2013 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 2013 prices. Column (3) reports the difference in the mean between issues abroad and at home and the results of the t-test of equality of means between these two groups. 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. See Appendix Table 1 for a list of the countries included in each income group.

	Developed Countries						
Dependent variable	**Mean**			**Regression coefficient on issue abroad dummy, controlling for**			
	Issues at home	**Issues abroad**	**Difference**	**Country-year dummies**	**Country-year dummies + issue size**	**Firm fixed effects and country-year dummies**	**Firm fixed effects and country-year dummies + issue size**
	(1)	**(2)**	**(3) = (2)-(1)**	**(a)**	**(b)**	**(c)**	**(d)**
Issue size	222.1	317.4	95.38 ***	0.168 **		0.033	
(amount raised per issue)			[5.997]	[2.340]		[0.425]	
Maturity (years)	5.87	5.50	-0.38	-0.706 ***	-0.710 ***	-0.362 **	-0.358 **
			[1.319]	[5.851]	[5.861]	[2.141]	[2.116]
Foreign currency denominated	0.05	0.64	0.59 ***	0.567 ***	0.569 ***	0.556 ***	0.557 ***
			[25.198]	[29.753]	[29.505]	[20.920]	[20.636]
Floating rate	0.28	0.36	0.08 ***	-0.017	-0.020	-0.070 ***	-0.071 ***
			[3.474]	[1.034]	[1.198]	[2.788]	[2.759]
No. of observations	88,587	36,430					
No. of firms	9,774	4,799					

	Developing Countries						
Dependent variable	**Mean**			**Regression coefficient on issue abroad dummy, controlling for**			
	Issues at home	**Issues abroad**	**Difference**	**Country-year dummies**	**Country-year dummies + issue size**	**Firm fixed effects and country-year dummies**	**Firm fixed effects and country-year dummies + issue size**
	(1)	**(2)**	**(3) = (2)-(1)**	**(a)**	**(b)**	**(c)**	**(d)**
Issue size	80.1	289.2	209.09 ***	1.414 ***		0.920 ***	
(amount raised per issue)			[21.349]	[26.353]		[12.921]	
Maturity (years)	5.30	6.03	0.73 ***	0.751 ***	-0.089	0.557 *	0.493 *
			[3.338]	[4.614]	[0.493]	[1.893]	[1.673]
Foreign currency denominated	0.09	0.95	0.87 ***	0.862 ***	0.849 ***	0.791 ***	0.780 ***
			[48.232]	[78.211]	[75.591]	[28.232]	[27.586]
Floating rate	0.27	0.12	-0.16 ***	-0.298 ***	-0.293 ***	-0.239 ***	-0.237 ***
			[7.063]	[18.478]	[17.908]	[7.199]	[7.145]
No. of observations	15,918	3,013					
No. of firms	4,136	1,496					

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

This table compares the non-price attributes of bond issues at home and abroad conducted by firms over the 1991-2013 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 2013 prices. Column (3) reports the difference in the mean between issues abroad and at home and the results of the t-test of equality of means between these two groups. 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. See Appendix Table 1 for a list of the countries included in each income group.

Dependent variable	Developed Countries						
	Mean			Regression coefficient on issue abroad dummy, controlling for			
	Issues at home	Issues abroad	Difference	Country-year dummies	Country-year dummies + issue size	Firm fixed effects and country-year dummies	Firm fixed effects and country-year dummies + issue size
	(1)	(2)	(3) = (2)-(1)	(a)	(b)	(c)	(d)
Issue size	267.2	320.1	52.86 **	0.005		0.028	
(amount raised per issue)			[2.116]	[0.055]		[0.364]	
Maturity (years)	5.29	5.38	0.09	-0.225	-0.225	-0.365 **	-0.359 **
			[0.279]	[1.532]	[1.513]	[2.256]	[2.212]
Foreign currency denominated	0.07	0.66	0.60 ***	0.569 ***	0.570 ***	0.556 ***	0.556 ***
			[14.881]	[23.177]	[22.767]	[21.488]	[21.167]
Floating rate	0.38	0.35	-0.03	-0.091 ***	-0.091 ***	-0.072 ***	-0.073 ***
			[0.946]	[3.728]	[3.700]	[2.948]	[2.912]
No. of observations	41,778	22,923					
No. of firms	1,642	1,642					

Dependent variable	Developing Countries						
	Mean			Regression coefficient on issue abroad dummy, controlling for			
	Issues at home	Issues abroad	Difference	Country-year dummies	Country-year dummies + issue size	Firm fixed effects and country-year dummies	Firm fixed effects and country-year dummies + issue size
	(1)	(2)	(3) = (2)-(1)	(a)	(b)	(c)	(d)
Issue size	138.2	357.1	218.89 ***	1.066 ***		0.925 ***	
(amount raised per issue)			[5.726]	[14.561]		[12.509]	
Maturity (years)	6.14	6.54	0.40	0.462	-0.054	0.420	0.410
			[0.688]	[1.506]	[0.150]	[1.337]	[1.295]
Foreign currency denominated	0.07	0.93	0.86 ***	0.791 ***	0.762 ***	0.781 ***	0.758 ***
			[11.050]	[28.833]	[26.167]	[26.138]	[23.821]
Floating rate	0.24	0.11	-0.13 **	-0.270 ***	-0.256 ***	-0.223 ***	-0.209 ***
			[2.507]	[8.597]	[8.443]	[6.551]	[6.069]
No. of observations	2,435	824					
No. of firms	344	344					

Table 5
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 non-price attributes of bond issues at home and abroad conducted by firms over the 1991-2013 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 2013 prices. Column (3) reports the difference in the mean between issues abroad and at home and the results of the t-test of equality of means between these two groups. 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. See Appendix Table 1 for a list of the countries included in each income group.

	Developed Countries						
Dependent variable	**Mean**			**Regression coefficient on issue abroad dummy, controlling for**			
	Issues at home	**Issues abroad**	**Difference**	**Country-year dummies**	**Country-year dummies + issue size**	**Firm fixed effects and country-year dummies**	**Firm fixed effects and country-year dummies + issue size**
	(1)	**(2)**	**(3) = (2)-(1)**	**(a)**	**(b)**	**(c)**	**(d)**
Issue size	280.7	315.2	34.48	-0.017		0.016	
(amount raised per issue)			[1.305]	[0.179]		[0.192]	
Maturity (years)	5.45	5.36	-0.08	-0.211	-0.214	-0.359 **	-0.355 **
			[0.248]	[1.285]	[1.280]	[2.036]	[2.008]
Foreign currency denominated	0.08	0.67	0.59 ***	0.568 ***	0.568 ***	0.563 ***	0.563 ***
			[12.398]	[21.301]	[20.840]	[20.433]	[20.062]
Floating rate	0.40	0.35	-0.05	-0.102 ***	-0.102 ***	-0.081 ***	-0.081 ***
			[1.262]	[3.834]	[3.821]	[3.086]	[3.037]
No. of observations	30,685	22,153					
No. of firms	1,364	1,364					

	Developing Countries						
Dependent variable	**Mean**			**Regression coefficient on issue abroad dummy, controlling for**			
	Issues at home	**Issues abroad**	**Difference**	**Country-year dummies**	**Country-year dummies + issue size**	**Firm fixed effects and country-year dummies**	**Firm fixed effects and country-year dummies + issue size**
	(1)	**(2)**	**(3) = (2)-(1)**	**(a)**	**(b)**	**(c)**	**(d)**
Issue size	132.0	353.7	221.78 ***	1.110 ***		0.979 ***	
(amount raised per issue)			[4.997]	[12.326]		[10.860]	
Maturity (years)	6.08	6.32	0.24	0.300	-0.214	-0.042	-0.085
			[0.327]	[0.768]	[0.501]	[0.102]	[0.209]
Foreign currency denominated	0.08	0.94	0.86 ***	0.769 ***	0.741 ***	0.755 ***	0.726 ***
			[9.756]	[21.772]	[19.751]	[18.398]	[16.554]
Floating rate	0.21	0.12	-0.09	-0.240 ***	-0.229 ***	-0.175 ***	-0.155 ***
			[1.526]	[6.265]	[6.193]	[4.044]	[3.605]
No. of observations	1,672	665					
No. of firms	245	245					

Table 6
Comparison between Bond Issues in Domestic and International Markets
Differences Before and After the Global Financial Crisis

This table compares the non-price attributes of bond issues at home and abroad conducted by firms over the 1991-2013 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 2013 prices. The table shows the results of least squares regressions of the different bond characteristics on a dummy identifying issues abroad and firm-level fixed effects and country-year dummies. All regressions also include an interaction between the issue abroad dummy and a dummy variable that equals one from 2008 onwards, and zero before. Row (3) reports the sum of the coefficients on the issue abroad dummy and the interaction between the issue abroad dummy and the after 2008 dummy, and the Wald test of whether this sum is different from zero. Standard errors are estimated with clustering at the firm level. Absolute values of t-statistics are in brackets. F-statistics for the Wald tests are in brackets *, **, *** mean significance at ten, five, and one percent, respectively. See Appendix Table 1 for a list of the countries included in each income group.

	Developed Countries											
	All firms				Only firms that issue bonds at home and abroad				Only firms that issue bonds at home and abroad - issues after internationalization			
					Controlling for firm fixed effects and country-year dummies							
	Issue size (amount raised per issue)	Maturity (years)	Foreign currency denominated	Floating rate	Issue size (amount raised per issue)	Maturity (years)	Foreign currency denominated	Floating rate	Issue size (amount raised per issue)	Maturity (years)	Foreign currency denominated	Floating rate
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
Issue abroad dummy (1)	0.149 **	-0.452 **	0.571 ***	-0.070	0.152 **	-0.468 ***	0.571 ***	-0.070	0.149 **	-0.452 **	0.579 ***	-0.078 ***
	[2.372]	[2.535]	[21.84]	[2.552]	[2.440]	[2.669]	[22.29]	[2.598]	[2.203]	[2.330]	[21.09]	[2.681]
Issue abroad dummy *After 2008 (2)	-0.662 ***	0.515	-0.085 **	-0.003	-0.707 ***	0.588	-0.086 **	-0.012	-0.730 ***	0.509	-0.086 **	-0.016
	[3.399]	[1.383]	[2.555]	[0.0883]	[3.662]	[1.551]	[2.449]	[0.325]	[3.748]	[1.270]	[2.313]	[0.407]
No. of observations	125,017	125,017	125,017	125,017	64,701	64,701	64,701	64,701	52,838	52,838	52,838	52,838
No. of firms	12,931	12,931	12,931	12,931	1,642	1,642	1,642	1,642	1,364	1,364	1,364	1,364
Issue abroad -After 2008 [(1)+(2)] (3)	-0.513 **	0.063	0.486 ***	-0.073 **	-0.555 ***	0.120	0.485 ***	-0.083 **	-0.581 ***	0.057	0.493 ***	-0.094 ***
	[6.32]	[0.03]	[157.50]	[4.21]	[7.78]	[0.12]	[154.60]	[5.79]	[8.18]	[0.02]	[147.10]	[6.79]

	Developing Countries											
	All firms				Only firms that issue bonds at home and abroad				Only firms that issue bonds at home and abroad - issues after internationalization			
					Controlling for firm fixed effects and country-year dummies							
	Issue size (amount raised per issue)	Maturity (years)	Foreign currency denominated	Floating rate	Issue size (amount raised per issue)	Maturity (years)	Foreign currency denominated	Floating rate	Issue size (amount raised per issue)	Maturity (years)	Foreign currency denominated	Floating rate
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
Issue abroad dummy (1)	0.910 ***	0.135	0.776 ***	-0.257 ***	0.916 ***	0.153	0.755 ***	-0.273 ***	0.962 ***	-0.164	0.710 ***	-0.222 ***
	[10.00]	[0.416]	[21.24]	[5.503]	[9.070]	[0.448]	[17.71]	[5.337]	[7.706]	[0.380]	[12.22]	[3.290]
Issue abroad dummy *After 2008 (2)	0.022	0.972 **	0.036	0.042	0.019	0.585	0.058	0.111 *	0.037	0.262	0.096	0.101
	[0.193]	[2.058]	[0.830]	[0.789]	[0.148]	[1.178]	[1.121]	[1.842]	[0.233]	[0.413]	[1.397]	[1.289]
No. of observations	18,931	18,931	18,931	18,931	3,259	3,259	3,259	3,259	2,337	2,337	2,337	2,337
No. of firms	5,288	5,288	5,288	5,288	344	344	344	344	245	245	245	245
Issue abroad -After 2008 [(1)+(2)] (3)	0.932 ***	1.107 **	0.812 ***	-0.215 ***	0.935 ***	0.738	0.813 ***	-0.162 ***	0.999 ***	0.098	0.806 ***	-0.121 ***
	[104.20]	[6.57]	[588.50]	[37.08]	[96.87]	[2.63]	[545.50]	[22.03]	[74.39]	[0.03]	[305.70]	[7.94]

Table 7
Comparison between Bond Issues in Domestic and International Markets
Country-level Financial Integration

This table compares the non-price attributes of bond issues at home and abroad conducted by firms over the 1991-2013 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 2013 prices. The table shows the results of least squares regressions of the different bond characteristics on a dummy identifying issues abroad and firm-level fixed effects and country-year dummies. All regressions also include an interaction between the issue abroad dummy and a continuous variable that measures de jure capital account openness at the country-year level, as defined by Chinn and Ito (2008). Row (3) reports the difference between issues abroad and at home for "most financially open" countries (defined as those with the highest value of the capital account openness measure) and the Wald test of whether this difference is different from zero. This difference is calculated by taking the coefficient on the issue abroad dummy in each regression and adding up the coefficient on the interaction term between the issue abroad dummy and capital account openness multiplied by the value of the capital account measure for countries classified as "most financially open" (2.42). Standard errors are estimated with clustering at the firm level. Absolute values of t-statistics are in brackets. F-statistics for the Wald tests are in brackets. *, **, *** mean significance at ten, five, and one percent, respectively.

	All firms				Only firms that issue bonds at home and abroad Controlling for firm fixed effects and country-year dummies				Only firms that issue bonds at home and abroad - issues after internationalization			
	Issue size (amount raised per issue)	Maturity (years)	Foreign currency denominated	Floating rate	Issue size (amount raised per issue)	Maturity (years)	Foreign currency denominated	Floating rate	Issue size (amount raised per issue)	Maturity (years)	Foreign currency denominated	Floating rate
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)
Issue abroad dummy (1)	0.637 ***	-0.222	0.802 ***	-0.112 ***	0.601 ***	-0.367	0.813 ***	-0.100 ***	0.536 ***	-0.765 *	0.864 ***	-0.039
	[8.104]	[0.956]	[38.330]	[4.817]	[6.615]	[1.417]	[33.519]	[3.765]	[3.607]	[1.810]	[23.942]	[1.120]
Issue abroad dummy * capital account openness (2)	-0.252 ***	-0.059	-0.104 ***	0.014	-0.239 ***	-0.001	-0.110 ***	0.009	-0.221 ***	0.169	-0.126 ***	-0.022
	[5.698]	[0.518]	[7.507]	[1.020]	[4.788]	[0.007]	[7.002]	[0.565]	[2.951]	[0.871]	[5.896]	[1.082]
No. of observations	130,753	130,753	130,753	130,753	63,857	63,857	63,857	63,857	46,647	46,647	46,647	46,647
No. of firms	16,138	16,138	16,138	16,138	1,885	1,885	1,885	1,885	986	986	986	986
Difference between issues abroad and at home for "most financially open" countries (3)	0.027	-0.365 **	0.550 ***	-0.078 ***	0.023	-0.369 **	0.547 ***	-0.078 ***	0.001	-0.356 *	0.559 ***	-0.092 ***
	[0.127]	[4.515]	[401.376]	[9.230]	[0.086]	[4.593]	[381.593]	[8.949]	[0.000]	[3.401]	[329.267]	[10.428]

Table 8
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 1991-2013 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 2013 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	-9.493	-7.902	-9.798 *	-14.162 ***	-15.260 ***	-15.967 ***
	[-0.962]	[-1.400]	[-1.834]	[-3.116]	[-3.573]	[-3.698]
Issue rated CCC- to CCC+ dummy		481.642 ***	472.986 ***		300.376 ***	291.939 ***
		[17.770]	[17.045]		[9.496]	[8.784]
Issue rated B- to B+ dummy		364.364 ***	354.333 ***		187.895 ***	180.846 ***
		[51.627]	[49.836]		[10.428]	[9.898]
Issue rated BB- to BB+ dummy		187.695 ***	184.088 ***		95.571 ***	95.284 ***
		[8.479]	[8.727]		[5.226]	[5.115]
Issue rated BBB- to BBB+ dummy		65.840 ***	60.614 ***		38.345 ***	36.037 ***
		[12.282]	[13.133]		[7.224]	[6.765]
Issue rated A- to A+ dummy		23.770 ***	20.868 ***		3.372	1.557
		[5.110]	[5.071]		[1.152]	[0.552]
Issue not rated dummy		29.532 ***	35.090 ***		7.064	7.533
		[5.581]	[6.588]		[1.337]	[1.463]
Log of issue size			3.690 ***			2.149 ***
			[3.315]			[2.918]
Issue maturity			2.354 ***			1.679 ***
			[12.181]			[11.584]
Subordinated issue dummy			24.017 ***			27.186 ***
			[6.645]			[7.070]
Country-year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm-level fixed effects	No	No	No	Yes	Yes	Yes
No. of observations	35,328	35,327	35,327	35,328	35,327	35,327
No. of firms	5,894	5,894	5,894	5,894	5,894	5,894

Table 9
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 1991-2013 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 2013 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	-16.915 **	-17.078 ***	-15.468 ***	-15.658 ***	-17.065 ***	-17.446 ***
	[-2.380]	[-3.411]	[-3.104]	[-3.688]	[-4.507]	[-4.278]
Issue rated B- to B+ dummy		368.219 ***	363.312 ***		312.376 ***	308.193 ***
		[9.690]	[10.101]		[10.179]	[10.149]
Issue rated BB- to BB+ dummy		221.228 ***	218.749 ***		205.676 ***	203.699 ***
		[7.609]	[7.619]		[5.841]	[5.723]
Issue rated BBB- to BBB+ dummy		90.786 ***	87.144 ***		63.885 ***	61.659 ***
		[8.478]	[8.512]		[4.862]	[4.788]
Issue rated A- to A+ dummy		31.302 ***	27.965 ***		6.361	4.202
		[4.536]	[4.653]		[1.080]	[0.750]
Issue not rated dummy		26.758 **	24.921 *		-7.323	-5.270
		[2.027]	[1.898]		[-0.661]	[-0.471]
Log of issue size			-0.142			2.471 **
			[-0.110]			[2.442]
Issue maturity			2.361 ***			2.291 ***
			[5.487]			[6.744]
Subordinated issue dummy			6.876			0.351
			[1.040]			[0.049]
Country-year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm-level fixed effects	No	No	No	Yes	Yes	Yes
No. of observations	8,159	8,158	8,158	8,159	8,158	8,158
No. of firms	232	232	232	232	232	232

Table 10
Comparison of Yield Spreads 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 yield spread at issue of bond issues at home and abroad conducted by firms over the 1991-2013 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 2013 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	-22.520 ***	-22.679 ***	-22.819 ***	-19.946 ***	-22.711 ***	-24.765 ***
	[-3.876]	[-4.547]	[-4.308]	[-4.410]	[-5.960]	[-5.813]
Issue rated B- to B+ dummy		330.092 ***	324.846 ***		304.424 ***	300.849 ***
		[11.924]	[12.794]		[15.154]	[15.001]
Issue rated BB- to BB+ dummy		220.618 ***	216.972 ***		222.808 ***	216.790 ***
		[4.559]	[4.458]		[4.500]	[4.475]
Issue rated BBB- to BBB+ dummy		103.670 ***	105.487 ***		96.952 ***	93.738 ***
		[5.111]	[5.610]		[3.960]	[4.074]
Issue rated A- to A+ dummy		25.956 ***	23.918 ***		17.762 *	13.932
		[4.090]	[3.751]		[1.744]	[1.400]
Issue not rated dummy		23.024	23.788		-4.436	-4.171
		[1.232]	[1.233]		[-0.278]	[-0.275]
Log of issue size			1.779			4.564 ***
			[0.907]			[2.837]
Issue maturity			1.994 ***			2.696 ***
			[2.931]			[5.145]
Subordinated issue dummy			14.829			-15.178
			[1.634]			[-1.305]
Country-year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Firm-level fixed effects	No	No	No	Yes	Yes	Yes
No. of observations	4,624	4,624	4,624	4,624	4,624	4,624
No. of firms	116	116	116	116	116	116

Table 11
Comparison between Firms that Issue Bonds in Domestic and International Markets

This table reports the median of different firm characteristics for the 2003-2011 period. Firms classified as domestic bond issuers are those that only conducted bond issues in their domestic market during this period. Firms classified as foreign bond issuers are those that carried out bond issues outside their home country during this period. Note that these firms may have also conducted bond issues at home during this period. Total assets are measured in thousands of U.S. dollars at 2011 prices. Columns (3) and (6) report the difference in the median firm characteristic between domestic and foreign issuers and the result of the test of equality of medians between these two groups. Standard errors are estimated with clustering at the firm level. Chi-squared statistics for the non-parametric test of the equality of medians are in parentheses. *, **, *** mean significance at ten, five, and one percent, respectively. See Appendix Table 1 for a list of the countries included in each income group.

	Developed Countries			Developing Countries		
	Domestic bond issuers (1)	Foreign bond issuers (2)	Difference in medians (3) = (2) - (1)	Domestic bond issuers (4)	Foreign bond issuers (5)	Difference in medians (6) = (5) - (4)
Total assets	877,088	1,639,760	762,672 ***	751,131	959,490	208,359 ***
			[103.157]			[6.095]
Number of employees	1,618	3,046	1,428 ***	2,381	3,350	969 ***
			[69.025]			[9.304]
Total assets growth	3.46%	3.69%	0.23%	13.16%	12.22%	-0.94% *
			[0.341]			[0.317]
Number of employees growth	1.90%	1.78%	-0.13%	3.58%	3.43%	-0.15%
			[1.748]			[0.032]
Leverage	57.91%	63.75%	5.84% ***	59.01%	61.04%	2.03% ***
			[65.594]			[1.083]
ROA	3.53%	3.63%	0.10%	5.12%	4.15%	-0.97% ***
			[8.973]			[4.747]
Firm age	26	25	-1 *	20	25	5 ***
			[0.406]			[18.352]
No. of observations	14,465	7,154		5,754	2,339	
No. of firms	2,334	1,452		858	407	

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 2012. Developed countries correspond to high-income economies according to the World Bank classification, those with a GNI per capita of 12,476 U.S. dollars or higher in 2011. Developing countries correspond to low- and middle-income economies according to the World Bank classification, those with a GNI per capita below 12,476 U.S. dollars in 2011. * means the country is classified as developed.

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