How Long Do Corporates Borrow?
Evidence from Global Bond and Loan Issuances

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Abstract

Using a large dataset of domestic and international bond and syndicated loan issuances during 1991-2014, this paper studies to what extent access to these markets has allowed firms to borrow long term. Because different markets provide financing at different maturities, the type of debt issued matters. Whereas the overall average issuance maturity across firms and countries is 6.3 years, longer-term issuances take place in bond markets and, for developing countries, in international bond and domestic loan markets. During the global financial crisis of 2008-09, firms issued more bonds and, in developing countries, also more domestic loans. Because these latter two markets are of longer maturity, the substitution across markets allowed firms and countries to maintain their average debt maturity, even though the maturity within each market typically declined. Still, only the largest firms switched markets. The evidence suggests that firms use these different debt markets as both complements and substitutes.

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1. Introduction

Corporate debt markets have expanded rapidly at home and abroad since the early 1990s. The issuance of corporate bonds and syndicated loans around the world has grown 4 times faster than gross domestic product (GDP) between 1991 and 2014. In developed countries, debt issuance grew from 4 to 16 percent of GDP; in developing countries, from 1 to 4 percent of GDP. Corporate bond and syndicated loan markets also grew much more than equity markets and traditional bank credit to firms.

This paper exploits this rapid growth in debt issuances to study how access to different debt markets (domestic and international bonds and syndicated loans) is related to the ability of firms to borrow long term, and to how their debt maturity structure evolved as international bank credit collapsed during the global financial crisis of 2008-09. Because different markets provide financing at different terms, the type debt issued can have clear effects on the maturity of both corporate liabilities of individual firms and, at the aggregate, country-level liabilities. By analyzing simultaneously the use of domestic and international loan and bond markets, we also shed light on the extent to which different markets can act as complements or substitutes, and how they might impact the overall maturity.

The analysis in this paper has implications for at least three broad strands of the literature. First, several studies have analyzed the cross-sectional determinants of debt maturity. A strand of the empirical research examines the importance of firm characteristics within the United States (Barclay and Smith, 1995; Guedes and Opler 1996; Highfield 2008).[1] Others highlight the role of different institutional environments across countries (Demirgüç-Kunt and Maksimovic, 1999; Bae and Goyal, 2009; Fan et al., 2012), and the use of proceeds (Julio et al., 2008). Several of these studies analyze

[1] The hypotheses of this research are based on underlying theories of agency cost, growth opportunities, asymmetric information, liquidation risk, and taxation benefits (Myers, 1977; Mauer and Lewellen, 1987; Flannery, 1986; Diamond, 1991, 1993).

balance sheet data, which although informative only distinguish between maturities below and above one year, thus missing most of the action of within the so-called long-term range. While others analyze issuance data, they focus mostly on a single market, typically only bond markets, neglecting other important parts of the debt market. This paper builds on this literature in different ways. While controlling for the factors the literature highlights as key determinants of the maturity choice, we show that the market of issuance can be important for maturity structure.[2] In particular, we provide some evidence that firms constrained to one market would have a different maturity structure than firms able to obtain financing in a different market or than firms that can tap multiple markets.

Second, a related strand of the literature studies the time-series behavior of debt maturity, mostly focusing on debt maturity during tranquil and crisis times. One important finding of this literature is that not only short-term debt can lead to rollover crises, but also debt maturity shortens during crises (Julio et al., 2008; Mian and Santos, 2012; Broner et al., 2013; Chen et al., 2012; Erel et al. 2012; Derminguc-Kunt et al. 2015; Gonzalez, 2015).[3] However, this work tends to focus either on a single debt market or on balance sheet information. Debt maturity from balance sheet data can shrink because either firms do not issue during crises (and the maturity structure shortens as a result) or the new debt issued during crises is shorter term. Moreover, crises do not need to involve all parts of the financial system and firms might be able withstand the contractions in certain markets by moving across markets. Therefore, debt maturity will change depending on the relative importance of each market as crises evolve. This paper contributes to this discussion by analyzing how debt maturity reacts during crises for firms able to substitute one form of financing for another, also compared to the debt maturity of firms relying on a single debt market.

[2] Although firms choose their maturity endogenously, firms could select to issue in different markets to obtain financing at different maturities to the extent that markets specialize in particular types of financing.
[3] The literature that has linked "short-termism" to crises is quite large. A few examples are Eichengreen and Hausmann (1999), Rodrik and Velasco (2000), Tirole (2003), Jeanne (2009), Brunnermeier (2009), and Raddatz (2010).

Third, a relatively new strand of the literature has started to analyze how firms use bonds and syndicated loans to withstand credit supply shocks over time, while controlling for demand factors (Adrian et al., 2012; Becker and Ivashina, 2014).[4] While innovative and very interesting, this analysis has been conducted for U.S. firms only, and without focusing on the consequences for the maturity structure. To the extent that bonds and loans differ in their maturity or that domestic and international markets also present differences, the type of financing firms use will be related to their maturity structure. Furthermore, the composition of firms financing in those markets will impact the maturity structure at the country level. In this paper, we provide evidence of the firm-level substitution at the global level, not only between bonds and loans, but also between domestic and international markets. Importantly, we further assess what these market switches in debt financing can imply for corporate debt maturity. The global dimension of the data allows us to analyze a more heterogeneous set of firms in different markets, subject to the external shock produced by the global financial crisis.

To conduct the research, we assemble a new dataset using the most comprehensive cross-section of countries and firms and the longest time series available on corporate bonds and syndicated loans issued domestically and internationally. In particular, we collect publicly and privately placed issuances of bonds and syndicated loans with an original maturity of more than one year during 1991-2014, encompassing issuances by both listed and non-listed firms. The dataset includes 477,880 individual debt security issuances conducted around the world by 83,370 firms from 80 countries (41 developed and 39 developing). The use of these transaction data, as opposed to balance sheet information on the fraction of short- and long-term debt, allows us to estimate the entire maturity distribution of the issued debt.

[4] To isolate credit supply movements, these studies examine firms' substitution between syndicated loans and corporate bonds, conditional on firms raising new debt. Hence, the focus is on firms with non-zero demand for credit, whose debt substitution is interpreted as evidence of a shift in the supply of loans.

The main findings from the analysis can be summarized as follows. First, firms issue bonds and loans at significantly different maturities across markets. In particular, although the overall issuance maturity is on average 6.3 years, longer-term issuances take place in bond markets, as opposed to syndicated loan markets.[5] Developing country firms obtain longer maturities by tapping international bond markets rather than domestic ones, and obtain financing abroad at similar maturities than developed country firms do. Furthermore, while a large share of international bond issuances by developing countries are in foreign currency, they entail longer maturities, showing a tradeoff between possible currency and maturity mismatches.[6] In the case of loans, firms from developing countries raise capital at longer maturities domestically. These patterns hold even when controlling for country and firm fixed effects, the currency of issuance, and the use of proceeds. Hence, the results suggest that these differences in debt maturity lie in the market of issuance rather than on the issuer and that long-term markets seem to reside in certain places.

Second, during the global financial crisis, lending from international banks declined significantly but firms have substituted substantially across markets, tapping bond markets and, in the case of developing countries, also borrowing more from domestic banks. These market switches had significant effects on the maturity structure. In particular, the maturity structure typically declined in each individual market (as usually witnessed during crises). But because bond markets and domestic

[5] This result sheds light on the discussions on the importance of long-term finance. Although the observed maturity structure can be viewed as a risk sharing outcome between debtors and creditors, the literature has emphasized the benefits of long-term debt, such as allowing debtors to finance large investments as well as its potential to reduce rollover and liquidity risks (Giovannini et al., 2015; World Bank, 2015). However, there is no clear benchmark of how long maturities across countries are. The most common definitions of long-term finance involve debt with maturity exceeding one year (typically reported on national accounts) and debt with maturity exceeding 5 years (as adopted by the G-20).

[6] Several papers highlight that, due to easy financial conditions following the global financial crisis, corporations (particularly from emerging economies) have issued large amounts of bonds, exposing them to future shocks and crises (Shin, 2013; Acharya et al., 2015; IMF, 2015; McCauley et al., 2015; Lo Duca et al., 2016; The Economist, 2016). Much of this discussion, however, has centered on the currency of issuance (and its associated risks) and not on the maturity of issuance. It is possible that there is in fact a tradeoff between currency and maturity choices and that part of the increase in bond issuance is a result of the decline in the issuance of bank loans.

loan markets for developing country firms are of longer maturity, firms that switched markets maintained a stable maturity structure, and the aggregate issuance maturity across countries did not decline. However, only the largest firms were able to switch markets, indicating a compositional shift in the set of firms obtaining new debt finance.[7] Therefore, the evidence suggests that access to several markets has allowed firms to use them as complements during good times, obtaining different types of financing in each, and as substitutes when conditions deteriorate, cushioning the decline in volume in certain markets and in maturity across all individual markets.

The remainder of the paper is organized as follows. Section 2 describes de data. Section 3 shows how firms have used the growth of primary bond and syndicated loan markets to obtain financing at different maturities. Section 4 examines the provision of long-term finance by corporate bond and syndicated loan markets and by domestic and international markets. Section 5 investigates whether and how the global financial crisis of 2008-2009 affected the maturity structure of corporate debt. Section 6 analyzes which firms access different debt markets. Section 7 concludes.

2. Data

To assess the maturity structure of newly issued corporate debt in domestic and international markets, we assemble a comprehensive dataset on firms' corporate bond and syndicated loan issuances around the world from 1991 through 2014. Our data on firms' capital raising activity come from the Thomson Reuters Security Data Corporation (SDC) Platinum database, which provides transaction-level information on issuances of publicly and privately placed bonds and syndicated loans with an original

[7] These large firms that issue both bonds and syndicated loans, especially those able to issue in more than one market, tend to be few. However, they can account for a significant fraction of economic activity. See, for example, Farrant et al. (2013) for some evidence from the United Kingdom.

maturity of one year or more.[8] Given that the SDC Platinum database does not collect data on debt issuances with maturities shorter than one year, the dataset does not cover commercial paper. Because our analysis focuses on corporate financing, we exclude all public sector issuances, comprising securities issued by national, local, and regional governments, government agencies, regional agencies, and multilateral organizations. We also exclude mortgage-backed securities and other asset-backed securities. The dataset includes 83,370 (listed and non-listed) firms from around the world and 477,880 debt issuances: 282,751 bond issuances and 195,129 syndicated loan issuances.[9]

To classify corporate bonds as domestic or international, we compare the market location in which bonds are issued to the issuing firm's nationality. For offerings that take place simultaneously in more than one market, we consider tranches in each market as separate issuances. The dataset includes 193,654 issuances in domestic markets and 89,097 issuances in international markets.

For syndicated loans, the nationality of the banks that participate in the deal is used to distinguish between domestic or cross-border lending. Domestic loans are those in which only domestic banks participate in the syndication, whereas international loans entail the participation of at least one foreign bank.[10] The dataset includes 92,654 domestic syndicated loans and 102,475 international syndicated loans.[11]

We classify the issuers of bonds and syndicated loans into financial and non-financial corporations according to their Standard Industry Classification (SIC) code. Firms with a SIC code between 6000-6800 are classified as financial corporations. The dataset includes 177,502 bonds and 38,027 syndicated loan issuances by financial firms (or 63 and 19 percent of the total issuances of

[8] The database also contains information on issuances of common and preferred equity. We use these data (199,931 equity issuances by 65,713 firms) in one figure to show the relative sizes of primary debt and equity markets.
[9] Around 45 and 36 percent of bonds and syndicated loans were issued by non-listed firms.
[10] Alternatively, we also considered international syndicated lending when only foreign banks participated in the deal. The results are qualitatively similar to the reported ones.
[11] Some studies estimate that syndicated loans account for most of the loan financing to large corporations and their relative importance has increased over time (Ivashina and Scharfstein, 2010; Cerutti et al., 2014).

bonds and syndicated loans, respectively). Following the literature and in order to study a more homogeneous set of firms, we exclude financial firms from the analysis in Sections 4, 5, and 6.[12]

Countries (or economies) in the sample are classified as either developed or developing following the World Bank classification as of 2012. In particular, developed countries are those with a gross national income (GNI) per capita in 2011 above $12,476. All others are classified as developing countries. The final dataset comprises 80 countries—41 of them classified as developed and 39 as developing. All reported statistics are in U.S. dollars at 2011 constant prices. Appendix Table 1 reports the list of countries in each of these categories as well as the number of bond and syndicated loan issuances and the number of issuers by country.

The SDC database also contains information on the total assets of issuers at the time of issuance, which allows us to explore how firm size relates to the use of debt markets for long-term funding. However, the data on firm size are available for 48 percent of the corporate bond issuances and 34 percent of the syndicated loan issuances.[13]

3. Growth of debt markets and long-term financing

Primary markets for bonds and syndicated loans have expanded rapidly during the past decades (Figure 1). The total amount firms in developed countries raised through these instruments increased from around $1.2 trillion in 1991 to $7 trillion in 2014; debt issuances in developing countries increased from about $51 billion to $1 trillion over the same period. Despite the substantial growth observed in developing countries, the total amount raised in 2014 equaled about 3.5 percent of their GDP, whereas

[12] Section 3 compares the amount and average maturity of the debt issued by financial firms with those for the debt issued by non-financial firms.

[13] It is not apparent that there is a bias in the firm size data toward a certain type of firm. But for robustness, we conducted two additional exercises. First, we used the total amount raised in each debt issuance as a proxy for firm size. Second, we focused on listed firms and examined the total assets reported in their balance sheets (from Bureau Van Dijk's Orbis database). All the results are quantitatively and qualitatively similar to the ones reported in the paper.

the total raised by developed countries in the same year was equivalent to about 15 percent of GDP. Syndicated loans grew particularly fast during the early 2000s and gained in relative importance until the onset of the global financial crisis. Corporate bonds represented around 65 percent of the total debt issued annually during the 1990s, but syndicated loans accounted for 55 percent of the total during 2004-2008.

The growth in the primary corporate bond and syndicated loan markets was also substantial when contrasted with that of primary equity markets.[14] The total proceeds from debt issuances per year grew about 6-fold in developed countries and more than 16-fold in developing countries. In contrast, the use of equity rose more slowly in both groups of countries. The total amount of new equity issued increased 3-fold in developed countries (from around $243 billion in 1991 to $690 billion in 2014) and 6-fold in developing countries (from around $40 billion to $256 billion). As a consequence, the ratio of the total amount raised through debt over equity grew from 5 to 10 in developed countries and from 1 to 3 in developing countries during 1991-2014. By 2014, the two debt markets accounted for about 91 percent of the total annual new financing for firms in developed countries and for about 77 percent of the financing for developing-country firms.

The weighted average maturity of debt at issuance during the 1991-2014 period was 6.3 years (Table 1). However, there is significant heterogeneity across countries. The debt issued by developing-country firms is of longer maturity, on average, than the debt issued by developed countries: 6.2 years in the latter versus of 7.5 years in the former. Financial firms typically go shorter term than non-

[14] The value of debt issuances is not directly comparable to that of equity issuances to the extent that equity has no maturity date. To the extent that part of the proceeds from debt issuances may be used to repay maturing debt, only a fraction of debt issuances may be considered new financing. In our dataset, firms do not seem to wait until securities mature to issue new debt. For instance, firms issuing 5-year bonds and loans usually tap primary debt markets again after 1.7 and 2.2 years, respectively. Moreover, a positive correlation between the maturity at issuance and the number of months to the next issuance only seems to arise at the short end of the maturity spectrum—up to 10 years of maturity. Henderson et al. (2006) tried to adjust the debt issuance data for the rollover of debt and concluded debt issuance still constituted a much larger source of new capital than equity issuance at the aggregate level.

financial firms. For instance, financial firms from developed and developing countries issued debt with an average maturity of 5.6 and 6.9 years, respectively. Importantly, the difference in debt maturity at issuance across countries persists when we consider issuances by non-financial firms only. On average, non-financial firms from developed countries issued debt with an average maturity of 6.6 years, whereas non-financial firms from developing countries issued bonds and loans with an average maturity of 7.9 years. As mentioned above, the rest of the paper focuses on non-financial firms only, as those are the firms that have generated most interest in the related literature.

4. Debt composition and debt maturity at issuance

Next, we analyze whether firms issue bonds and syndicated loans in domestic and international markets at distinctly different maturities. To the extent that different markets provide financing at different terms, the type of debt issued would have clear effects on the maturity of corporate liabilities.

4.1. Corporate bonds versus syndicated loans

Corporate bonds are, on average, longer than syndicated loans. The difference in maturity across these two instruments is starker for corporate borrowing in developed countries: during 1991-2014, the (weighted) average maturity was 10.2 years for corporate bonds, whereas it was 5.0 years for syndicated loans (Figure 2, Panel C). Moreover, this difference between bond and loan maturities in developed countries is not only evident when comparing averages, the cumulative distribution function (CDF) of the bonds issued at different maturities lies to the right—toward relatively longer maturities—of the syndicated loans' CDF (Figure 2, Panel A). That is, for every maturity, the accumulated share of loans issued (loans shorter than that maturity) is greater than the accumulated share of total bonds issued. Put differently, 36 percent of the bonds issued have a maturity of 5 years or shorter, in contrast to 79 percent of the syndicated loans. The differences are still sizeable at the 10-year threshold, with

83 percent of all issued bonds and 97 percent of all issued syndicated loans with maturities shorter than this threshold. In developing countries, the average maturity is 8.0 years and 7.7 years for corporate bonds and syndicated loans issuances, respectively, but the CDFs formed by all the bonds and loans issued are somewhat similar (Figure 2, Panel B).

To test whether the differences in the maturity at which firms issue bonds and loans are statistically significant, we estimate panel regressions on the issuance-level data. In particular, we regress the maturity of the issuances in years on a dummy variable that equals one when the debt issuance is a loan and zero otherwise (a corporate bond). All regressions include year dummies to control for differences in maturities that reflect changing market conditions.

For robustness, we also control for country fixed effects or firm fixed effects to capture cross-country differences and to analyze whether bonds and loans have different maturities even when issued by the same firm. Lastly, in some specifications we also control for the use of the proceeds from the capital raising activity because there is significant variance across firms in how they use the proceeds from debt financing, especially in the case of syndicated loans. For example, firms in developing countries typically have a more intensive use of syndicated loans for infrastructure projects than those in developed countries, which tends to increase their weighted average maturity at issuance. Loans for project finance, a category that consists primarily of infrastructure projects, have an average maturity of 12 years and account for about 29 percent of all syndicated loans contracted by developing countries, but only 5 percent for developed countries.[15] In contrast, general corporate purposes and

[15] Most of the project finance lending around the world finances infrastructure (Blanc-Brude and Ismail, 2013). Moreover, most financing for infrastructure projects comes from syndicated loans. Engel et al. (2014) provide evidence that in the United States and other developed countries the ratio of bonds to syndicated loans for infrastructure financing is 1:5 to 1:6, respectively. The ratio in Asia (excluding China) is 1:8 and in Latin America, 1:3.

refinancing loans, which have average maturities of 4 and 5 years, account for about 32 percent each of the total syndicated loans in developed countries.[16]

Consistent with the summary statistics and CDFs discussed above, the results in Table 2 show that corporate bonds tend to have longer maturity than syndicated loans. Bond issuances are, on average, more than 4 (1) years longer than loans in developed (developing) countries when controlling for the use of the proceeds and the nationality of the issuer (columns b and c). When issued by the same firm, corporate bonds are also consistently longer than syndicated loans in both developed and developing countries. In particular, firms in developed (developing) countries issue bonds with maturity around 5 (2) years longer than loans.

4.2. Domestic markets versus international markets

The distinction between domestic and international debt markets is important as these markets could provide different funding options for firms, including different maturities.[17] For firms from countries with relatively less developed financial markets, foreign financing may be available at terms not obtainable in domestic markets. In fact, international markets do play a key role in the provision of debt financing.[18] Developed and developing countries raise a substantial amount of funds in foreign bond markets, 39 percent and 36 percent of the total amount raised with bonds, respectively.[19] In syndicated loan markets, most of the financing entails foreign bank participation: over 80 percent of the total amount raised by both developed and developing countries.

[16] Thus, the different use of the proceeds from debt capital raising activity seems to be one of the drivers that explains why firms in developing countries typically borrow longer term than those in developed countries.
[17] Gozzi et al. (2015) show how internationally issued debt differs in several non-price characteristics from domestic debt, even when issued by the same firm.
[18] Most of the international debt issuances are conducted in a few developed countries. International bond issuances take place mostly in the Euro area (61 percent), the United States (16 percent), and the United Kingdom (8 percent). The largest volumes of syndicated lending are also originated within a few developed countries, mainly the United States (31 percent) and the economies of Western Europe (36 percent).
[19] International markets represent more than 50 percent of the total capital raising activity through bonds in 64 out of the 80 countries analyzed.

One key feature emerges from the analysis of the maturity structure of bond issuances in domestic and international markets: firms from developing countries tap foreign markets at longer terms than domestic markets. Bond issuances by firms from developing countries have an average maturity of 10.1 years when issued abroad, contrasting with an average maturity of 6.8 years when issued domestically (Figure 3, Panel C). While developed-country firms go slightly shorter in international markets (around 1.6 years shorter than in domestic markets), overall they issue bonds with similar maturities than developing-country firms do in international markets. Whereas the CDF for international bonds issued by developing-country firms lies to the right of the CDF for their domestic bond issuances (indicating that shorter terms are obtained in local markets), the distribution for foreign issuances by developing countries closely resembles the CDF for bond issuances by developed countries (Figure 3, Panel A).

To assess more formally whether there are differences in the maturity of debt issuances in domestic and international markets, we estimate panel regressions using issuance-level data of the maturity of the bond issuance in years on a dummy variable that equals one when the issuance takes place internationally and zero otherwise (namely, domestically). All regressions include year dummies to control for differences in maturities that reflect changing market conditions. For robustness and akin to the analysis in the previous subsection, in the different specifications reported in Table 3, we also control for country fixed effects or firm fixed effects as well as for the use of use of the proceeds from the capital raising activity. Moreover, the currency denomination of the issuance could explain some of the observed differences between the maturities of bonds issued in domestic and international markets. For instance, the vast majority of the bond financing obtained by developing countries in foreign markets is denominated in foreign currency (95.5 percent of the amount raised in foreign markets). In contrast, developed countries usually issue in local currency (56.5 percent of the total

capital raised through bonds abroad). Hence, we also include in some specifications a dummy variable that equals one when a bond issuance is denominated in foreign currency.

The results in Table 3 are consistent with the summary statistics and CDFs discussed above and show that corporate bonds tend to have different maturity characteristics depending on the market location where the issuances take place. In particular, the regressions show that: (i) corporate bonds issued in international markets by developing-country firms tend to have longer maturity than domestic issuances, and (ii) that domestic bonds issued by developed-country firms have a similar average maturity to international bonds. In developing countries, bonds issued abroad are about 2 years longer than the bonds issued domestically, whereas in developed countries the market of issuance has no economically significant impact on the maturity of bond issuances. These results are quantitatively robust to the currency denomination of the issuances. Furthermore, when the same developing-country firm issues in both domestic and international markets, it tends to go longer by about 1.7 years in its foreign bond issuances. This within-firm result indicates that the differences in maturity between domestic and international bond issuances in developing countries are not solely driven by the composition of firms issuing in different markets, but also by within-firm across-market variations.

In contrast to the results on bond financing, in syndicated loan markets developing-country firms tend to borrow from foreign markets at shorter terms than from domestic markets. Syndicated loans to developing countries involving only domestic lenders have an average maturity of 12.6 years, while loans with foreign bank participation have 6.7 years of average maturity (Figure 3, Panel C). For developed countries, the results are akin to those from bond markets. Namely, both domestic and foreign syndicated loans are obtained at somewhat similar maturities of about 5 years. The CDFs show similar patterns: the distribution of domestic syndicated loans issued by developing countries lies to

the right of the distribution of their international loans. Both distributions (for domestic and international loans for developing countries) lie to the right of the distribution of syndicated loans for developed countries.

Similarly to the regression analysis for bond markets, we also estimate panel regressions using issuance-level data of the maturity of the syndicated loan issuance in years on a dummy variable that equals one when the issuance involves foreign banks and zero otherwise (only domestic banks). All regressions in Table 4 include year dummies and in some specifications either country or firm fixed effects. We also control for the use of proceeds from the capital raising activity, which may be particularly important in explaining the observed differences in maturity for syndicated loans in different markets, as the maturity of project finance loans is on average longer than that of loans for all other purposes. Moreover, in developing countries around 60 percent of the domestic loans are for project finance and other long-term projects, while only 27 percent of the international loans fund these projects. We also include in some specifications a dummy variable that equals one when an issuance is denominated in foreign currency, as the currency of denomination of the loan could be a relevant characteristic of the issuance to account for some of the observed differences in the maturity of loans in domestic and international markets. For developing countries 87.5 percent of the amount raised through syndicated loans with foreign bank participation are denominated in foreign currency, whereas for developed countries only 17.1 percent of the syndicated loans with foreign bank participation are denominated in foreign currency.

The regressions with the pooled data and no controls (column a of Table 4) show that loans to developing countries with foreign bank participation are about 2.7 years shorter than those with only domestic bank participation. However, once the additional controls for the use of proceeds and the currency of denomination are included in the estimations, the differences in maturity between

domestic and international loans for developing-country firms become smaller to around 1.4 years (columns b and c). That is, the differences in maturity between domestic and international syndicated loans are in part explained by the different characteristics of the loans. Furthermore, the within-firm analysis (columns d and e) show that the differences in the maturity of loans issued in domestic and foreign markets narrows down even further. Domestic loans have maturities about 0.7 years longer than international loans when issued by the same developing-country firm. In sum, these results suggest that most of the reported differences in maturity between domestic and international loans in developing countries come from different firms tapping different markets at different maturities.

5. Global financial crisis

The global financial crisis of 2008-09 hit in particular the international banks, which were at the core of the crisis. This section studies how this shock to the banks affected the volume and composition of debt, as well as the maturity at issuance at the country, market, and firm level, during and after the crisis.

The global financial crisis temporarily halted the expansion in capital raising activity through debt instruments.[20] While the total amount of debt issued grew at an average annual rate of about 6.2 percent in developed economies during 2000-07, it fell by 31.1 percent between 2007 and 2008. Developing countries debt issuance, which grew at a rate of 22.6 percent per year during 2000-07, experienced a more modest growth of 4.7 percent during 2008.

[20] Following Adrian et al. (2012), we focus the analysis of this section on the financing of corporate real activities. That is, we single out "real investment" bonds and loans by excluding new debt for "acquisition financing and LBO", "refinancing and capital structure management", and other issuances whose purposes cannot be categorized as real investment (such as those with unspecified purposes or with missing information). Moreover, to provide a clearer comparison of the pre-crisis vis-à-vis the crisis and post-crisis periods, we narrow the analysis to the 2000-2014 period. Overall, out of the 63,835 corporate bonds and 133,869 syndicated loans issued during the 2000-2014 period, about 79 percent of the bond issuances and 57 percent of the syndicated loan issuances were considered to be for real investment purposes.

This temporary halt in the fast expansion of debt markets reflects two important changes in the composition of the issued debt. First, corporate debt has shifted away from bank debt toward bonds during the crisis. In fact, the reported standstill in debt capital raising activity arises from a collapse in the syndicated loan markets. Total borrowing in syndicated loan markets declined by around 60 and 28 percent in developed and developing countries, respectively, between 2007 and 2009 (Figure 4).[21] In contrast, the issuance of corporate bonds actually increased during the crisis years, partially compensating for the syndicated loans collapse—bond issuance expanded by 64.9 and 127.4 percent during 2007-09 in developed and developing countries, respectively.[22] Bond financing has continued to rise during the post-crisis period, especially in developing countries.

Second, for developing countries the composition of corporate debt shifted away from international markets toward domestic markets during the crisis years (Figure 5). Cross-border syndicated loans to developing countries declined by 59 percent between 2007 and 2009, whereas the issuance of syndicated loans with the participation of only domestic banks increased by 113 percent over the same period.[23] Domestic loans, however, started from a very low base, just slightly compensating for the cross-border collapse. Similarly, the issuance of bonds in foreign markets declined in 2008 by 51 percent, while domestic bond issuances increased by 59 percent. Therefore, the overall increase in corporate bond issuances was driven by a more prominent use of domestic

[21] Some papers explored the reasons behind these trends in syndicated loan markets. For instance, some research points at a combination of demand and supply shocks: firms scaled back expansion plans during the recession that followed the 2008 global financial crisis, while banks dealt with deleveraging pressures and tightened regulations (Ivashina and Scharfstein, 2010; Chui et al., 2010). During 2011-2013, the supply shock may have intensified in light of the financial stress experienced by European banks as a result of the sovereign debt crisis affecting several European countries (Feyen and Gonzalez del Mazo, 2013; Laeven and Tressel, 2014).

[22] However, there was a large decline in corporate bond activity in the financial sector of developed countries, which experienced a sharp and sustained fall in issuance volumes after 2007. In 2008 the issuance of bonds by the financial sector fell by 25.1 percent with respect 2007. The amount of funds raised continued to decrease during 2009—43.3 percent lower than in 2007. By 2014 financial sector corporate bond activity in developed countries was still around 27 percent lower than in that in 2007.

[23] A large fraction of cross-border syndicated loan funding to developing countries during the 2000s originated in Western European banks. Funding from this region to developing countries fell by 80 percent between 2007 and 2009.

(rather than international) bonds in developing countries. In developed countries, on the other hand, a collapse in the issuance of both domestic and international syndicated loans occurred in parallel with an increase of both domestic and international bond issuances during the crisis years. Nevertheless, it is difficult to determine from the aggregate data whether these changes in debt composition were driven by within firm substitution or a compositional change in the set of firms raising new debt. Moreover, it is also challenging to determine whether such substitutions are caused by shifts in the supply or demand of capital.

To formally assess whether the aggregate changes observed with the fall in bank credit (cross-border credit in the case of developing countries) were driven by firms issuing in different markets, by the same firms switching markets, or a combination of both, we follow a similar approach to the one used by Adrian et al. (2012) and Becker and Ivashina (2014). A key advantage of this methodology is that it isolates supply from demand effects when there is credit crunch like the one originated by the global financial crisis. It restricts the analysis to the firms that issue some type of debt, that is, to the firms that reveal a demand for financing, and focuses on the choice of financing given this demand. For instance, conditional on positive debt issuance, a within-firm switch between syndicated loans and bonds during the crisis can be interpreted as evidence of a negative bank credit supply shock.[24] This empirical approach also addresses the concern about compositional changes in the set of firms raising debt.[25] Whereas these papers have used this approach for U.S. listed firms with access to bond markets, here we extend their methodology to firms from all over the world issuing any type of debt

[24] During the aftermath of the global financial crisis other factors might play a significant role on the debt financing choice. In particular, non-conventional monetary policies are believed to have also prompted the issuance of corporate bonds worldwide (Shin, 2013; Lo Duca et al., 2016).

[25] Kashyap et al. (1993) used a similar methodology to study relative movements in bank loans and commercial paper to identify the bank lending channel of monetary transmission. However, the heterogeneity of firms in their aggregate data makes it difficult to disentangle supply from demand effects (Oliner and Redebusch, 1996).

in domestic and international markets. Importantly, we also analyze what these switches imply for the maturity structure.

We estimate discrete choice logit models to study the firms' decisions to issue (i) bonds versus syndicated loans in (ii) domestic versus international markets, aggregating the transaction-level issuances at the firm-quarter level. Thus, the dependent variable is (i) a debt choice indicator that equals one if a firm issues a bond and equals zero if the firm issues a loan in a given quarter, and (ii) a debt choice indicator that equals one if a firm issues debt domestically and equals zero if the firm issues debt abroad in a given quarter. For quarters in which a firm issues both bonds and syndicated loans, we set the debt choice indicator equal to one if the amount raised through bonds exceeds that through loans. A similar rule is applied for domestic and international issuances. We estimate these logit regressions with either country fixed effects (Table 5, columns a and b) or firm fixed effects (Table 5, columns c and d). The former captures changes in the mass of debt transactions within each country, whereas the latter provides evidence on whether individual firms switched markets during the crisis and post-crisis periods.

The estimates indicate that the issuance of corporate bonds relative to syndicated loans increased in both developed and developing countries within countries and within firms (Table 5, Panel A). Conditional on debt issuance, there was an increase in the probability of bond issuance during the crisis (in 2008-2009) of 6 percentage points (p.p.) in developed countries and 5 p.p. in developing countries. The substitution away from loans toward bonds also took place within firms. The probability of issuing bonds for firms that issued any type of debt before and during the crisis increased by 11 p.p. in developed countries and by 16 p.p. in developing countries. This increased propensity to issue bonds with respect to loans holds when comparing the pre- and post-crisis periods, especially in developing countries.

The estimations also provide evidence of an increasing use of domestic markets in developing countries relative to international markets during the crisis (Table 5, Panels B and C). Conditional on issuing corporate bonds, there was an increase of 9 p.p. in the probability of issuing domestic bonds relative to international bonds within developing countries. The estimates also show that, for developing-country firms that issued bonds both before and during the global financial crisis, the probability of issuing domestic bonds (relative to international bonds) increased by 22 p.p. Similarly, conditional on syndicated loan issuances, during the crisis there was an increase of 33 p.p. and 25 p.p. in the propensity to issue in domestic markets relative to foreign markets within countries and within firms, respectively.[26]

As a consequence of these compositional changes across markets during the crisis, the overall average maturity of debt issuances remained fairly stable in both developed and developing countries. In developed countries, the substitution away from loans toward bonds during 2008-09 occurred in parallel with a shortening of both corporate bond and syndicated loan maturities (Figure 6, Panel A). But because corporate bonds are typically longer-term instruments than loans, the overall average debt maturity did not change significantly. In developing countries, bonds had longer average maturity than syndicated loans during the pre-crisis years, which has reversed since 2008 (Figure 6, Panel B). Overall, the decrease in corporate bond maturities was partially compensated by the aggregate increase in loan maturities, leading to a relatively stable average debt maturity at issuance. As discussed in the previous section, developing countries issue in domestic markets shorter-term bonds and longer-term loans (relative to international issuances). Thus, the switch from international to domestic markets might explain part of the decrease (increase) of average maturities in bond (loan) markets at the aggregate level since the onset of the global crisis.

[26] The increased propensity to issue domestic syndicated loans (relative to international loans) continued during the post-crisis period.

Complementing the graphs, country-level and firm-level regressions shed additional light on the evolution of debt maturity at issuance. For developed countries, the two sets of regressions show similar patterns. Despite a shortening in corporate bond maturities, by more than 13 months on average, debt maturity at issuance slightly increased during the crisis (Table 6, Panel A). Similarly, within-firm regressions show that in spite of a shortening in corporate bond maturities during the crisis years, the higher propensity to use this longer-term instrument supported a relatively stable average debt maturity during 2008-09 vis-à-vis to the pre-crisis period. During 2010-2014, the maturity of bonds and loans issued by the same firms lengthened beyond their pre-crisis levels, pushing up the overall debt maturity at issuance.

For developing countries, the country-level regressions show a decrease in corporate bond maturities and an increase in syndicated loan maturities during the crisis (Table 6, Panel B), which is consistent with the previous graphical evidence. However, the firm-level regressions indicate that loan maturities did not increase significantly within firms, which suggests that the increase in loan maturities during the crisis and post-crisis periods was driven by new firms tapping these markets (mostly through domestic loans). The within-firm regressions also show that in spite of a shortening in corporate bond maturities during the crisis years (of about 8 months), the overall debt maturity did not significantly change on average during 2008-09 vis-à-vis to the pre-crisis period.

6. Which firms use debt markets?

An immediate question that arises from the evidence in the previous section is which firms were able to switch markets when the supply shock hit global banking. This section sheds light on this issue by examining how many and how large are these firms compared to firms that have relied solely on one source of debt.

An analysis of the median firm in the median country reveals that there are significant differences in firm size between those that use more than one debt market and those that rely on just one. In particular, firms issuing both bonds and loans are fewer, but larger than single instrument issuers (Table 7, Panel A). Around 14 percent of the issuing firms borrowed funds through both bonds and syndicated loans issuances in developed countries during 2000-2014, and had total assets of about $3,932 million, whereas bond issuers had $879 million in assets and syndicated loan issuers had $845 million. Similar patterns are observed in developing countries, where around 8 percent of the firms issued both bonds and loans and had $2,657 million in assets (which is more than 3 times the size of bond issuers and around 2 times the size of loan issuers). The differences between these two set of firms, i.e. multiple instrument versus single instrument issuers, are also substantial when comparing the median size of the issuances. The median bond issued by bond and loan issuers almost doubles in size the median issuance of single issuers.

Furthermore, there are significant differences between firms that relied solely on domestic markets in comparison with those that raised capital abroad. Firms that accessed international bond markets are typically larger than those issuing only in domestic markets (Table 7, Panels B and C). The median international bond issuer in developed countries was around 4-times larger than the median domestic bond issuer, which had $886 million in assets. Similarly, in developing countries the median international bond issuer had $1,560 million in assets, whereas the median size of a domestic issuer was of $801 million. Firms issuing cross-border loans are also larger than domestic loan issuers. For example, international issuers were around 3-times larger than domestic loan issuers in developed and developing countries.

These results seem to indicate that only relatively large firms are able to tap different markets to obtain financing. We also established in the previous section that during the global financial crisis

there was a within-firm substitution across markets. Hence, when the global supply shock hit debt markets in 2008-2009, we would expect an increase in the average firm size in the cross-section of firms issuing debt during those years.

Indeed, a regression analysis shows that relatively larger firms issued debt during the global financial crisis relative to the previous period, especially in the markets toward which firms were switching (Table 8).[27] For instance, the average corporate bond issuer was 27 and 75 percent larger during the crisis years compared to the pre-crisis period in developed and developing countries. Firms from developing countries issuing syndicated loans were also larger during 2008-2009 than in 2000-2007, especially when considering only domestic issuers. Issuance size data also indicates a similar pattern (Table 9). Larger corporate bonds were issued during the crisis compared to the pre-crisis period in both developed and developing countries. Moreover, there was an increase in the average size of syndicated loan issuances in developing countries.

7. Conclusions

The extent to which firms borrow short versus long term has generated much interest and research in recent years, but little evidence still exists on the precise maturity at which firms borrow, especially when firms access more than one market. In this paper, we exploit the large increase in domestic and international bonds and syndicated loans since the early 1990s to study how firms from around the world have used this expansion to issue debt at different maturities. Of particular interest is both where long-term issuances occur and how firms used the different markets to borrow short and long term when faced with the collapse in international loan markets during the global financial crisis.

[27] This pattern is also consistent with the idea that financial constraints intensify information asymmetries during crises, leaving only the highest quality firms with access to public debt markets while the riskier, smaller firms are screened out of the credit markets (Bernanke and Gertler, 1989; Gertler and Gilchrist, 1994; Oliner and Redebusch 1996; Erel et al. 2012).

We find that firms issue debt with maturity of 6.3 years on average, but there is significant heterogeneity across markets, even for the same firms and countries. In particular, corporate bonds tend to be of longer maturity than syndicated loans. International bond markets as well as domestic banks are especially important in the provision of long-term financing to developing countries. Given this heterogeneity across markets, the place of issuance is informative for the overall maturity structure. During the global financial crisis, firms issued more bonds and, in the case of developing countries, also more domestic loans. Because these latter two markets are of longer maturity, the substitution across markets allowed firms and countries to maintain their average debt maturity, even when the maturity within each market declined. However, only the largest firms were able to compensate for the collapse in international bank lending by switching markets.

The findings from this paper have implications for different discussions related to long- and short-term borrowing and debt markets more generally, which we summarize below under three broad groups. First, our paper shows that when firms obtain financing from different sources, it is important to analyze these different types of financing jointly. While the study of domestic and foreign bond and syndicated loan financing to firms is by no means complete (firms have other debt financing options), this paper shows that firms could use these markets as complements to the extent that they provide financing at different terms. For example, bonds seem to be better instruments than bank loans for long-term financing, while banks might cover the shorter-term financing needs. On the other hand, having access to different markets might allow firms to compensate for fluctuations in particular markets by raising funds elsewhere, as it happened during the global financial crisis when markets provided to some degree the "spare tire" function advocated for capital markets (Greenspan, 1999). While recent research has already shown evidence of this substitution for some U.S. listed firms with access to bond markets, this paper is the first to provide evidence of firm-level substitution at the

global level. The substitutions that happened across markets during the global financial crisis seem to have materially impacted the maturity structure. These effects are difficult to observe when studying the dynamics within only one market or when using just balance sheet information.

Second, the composition of financing matters for the corporate maturity structure at the country level.[28] For example, the observation that the large firms are the ones that typically issue bonds and syndicated loans and access more than one market could partly explain why the maturity structure of developed and developing countries is similar. Thus, our results indicate that the claim in the literature (mostly based on balance sheet data) that developing countries borrow overall more short term than developed countries do arises from other debt markets (such as the more traditional bank loans) or from the set of smaller firms (those that do not issue securities).

Third, understanding the degree of long-term financing is relevant for the discussions on access to finance and the possible risks related to the expansion in debt markets. Although a large body of literature has examined the different roles played by short- and long-term debt in firms' financial decisions, little evidence exists on the actual maturity at which firms borrow in primary debt markets. Long-term issuances might be mitigating, to some extent, the risk of debt and foreign currency financing, at least for the firms that are able to issue a those maturities. However, our paper also shows that firms accessing different markets are subject to supply side shocks specific to those markets (as witnessed during the global financial crisis) and firms react as a consequence. The tradeoffs of different types of debt and the reaction of different types of firms to different shocks deserve more work going forward, and have implications for both academics and policy makers.

[28] Custodio et al. (2012) make a similar point for the United States.

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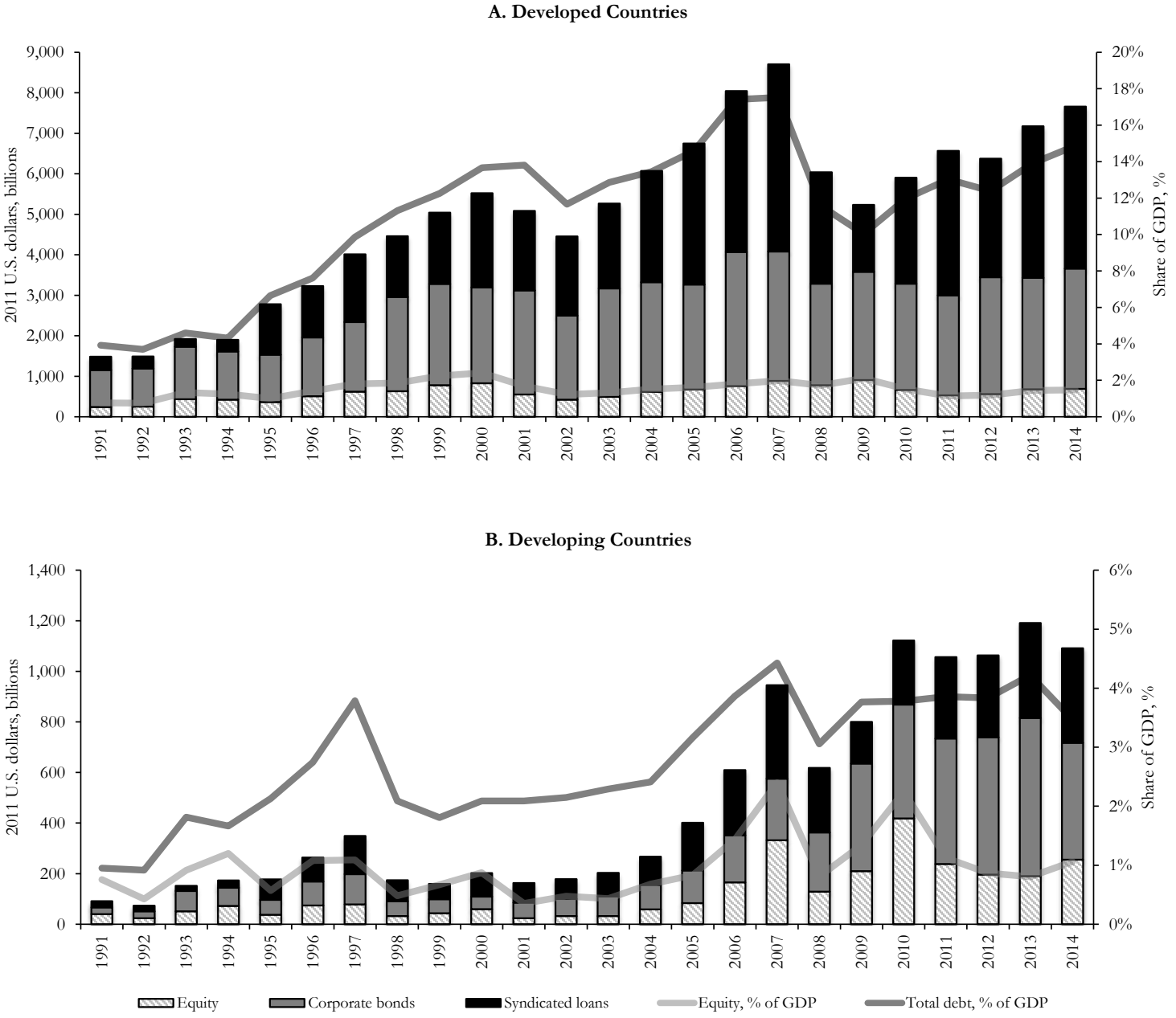
Figure 1
Total Amount Raised in Equity, Corporate Bond, and Syndicated Loan Markets

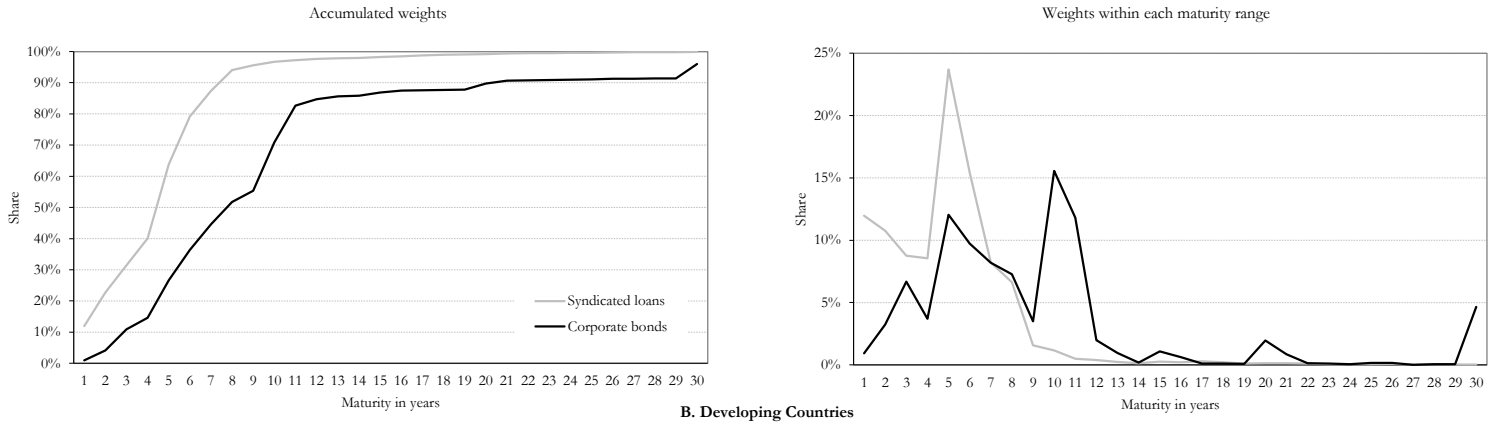


This figure presents the aggregate amount raised per year in equity, corporate bond, and syndicated loan markets by developed (Panel A) and developing countries (Panel B). Figures are reported in billions of 2011 U.S. dollars.

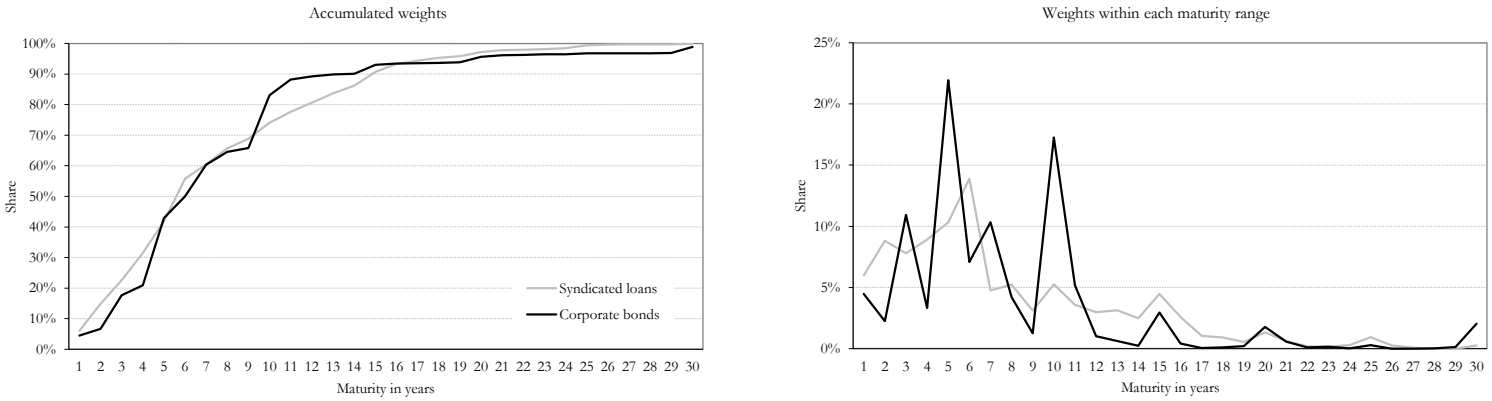
Figure 2

Maturity of Corporate Bonds and Syndicated Loans

A. Developed Countries



B. Developing Countries



C. Average Maturities

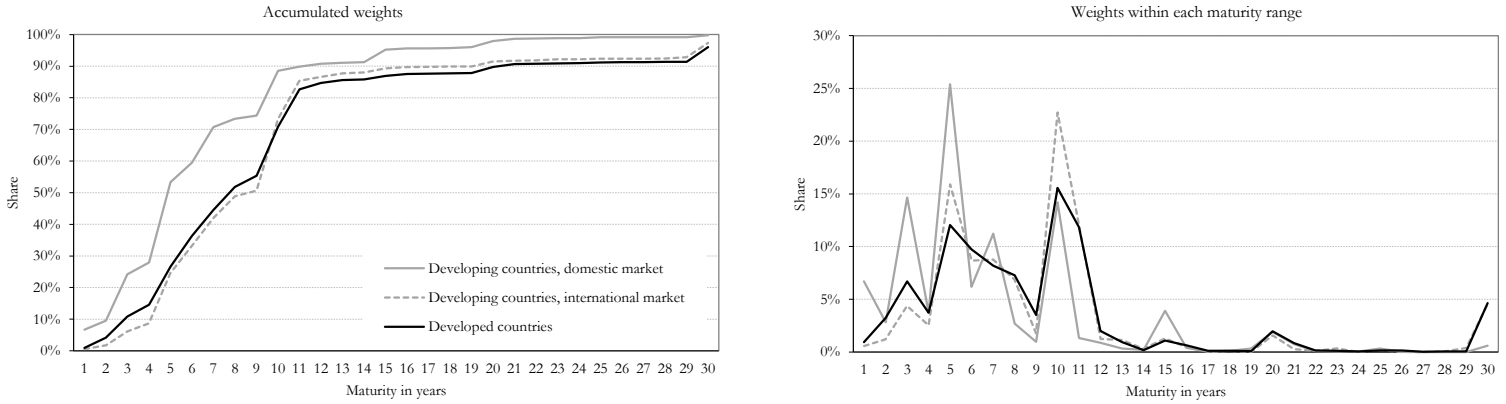
Country type	Corporate bonds (a)	Syndicated loans (b)	Amount raised with loans, share of the total
Developed countries	10.2	5.0	68%
Developing countries	8.0	7.7	55%

This figure presents the cumulative distribution functions representing the maturity structure of newly issued corporate bonds and syndicated loans as well as the weights within each maturity range (Panels A and B). Panel C reports the weighted average maturity of corporate bonds and syndicated loans issued by firms from developed and developing countries. The sample period is 1991-2014.

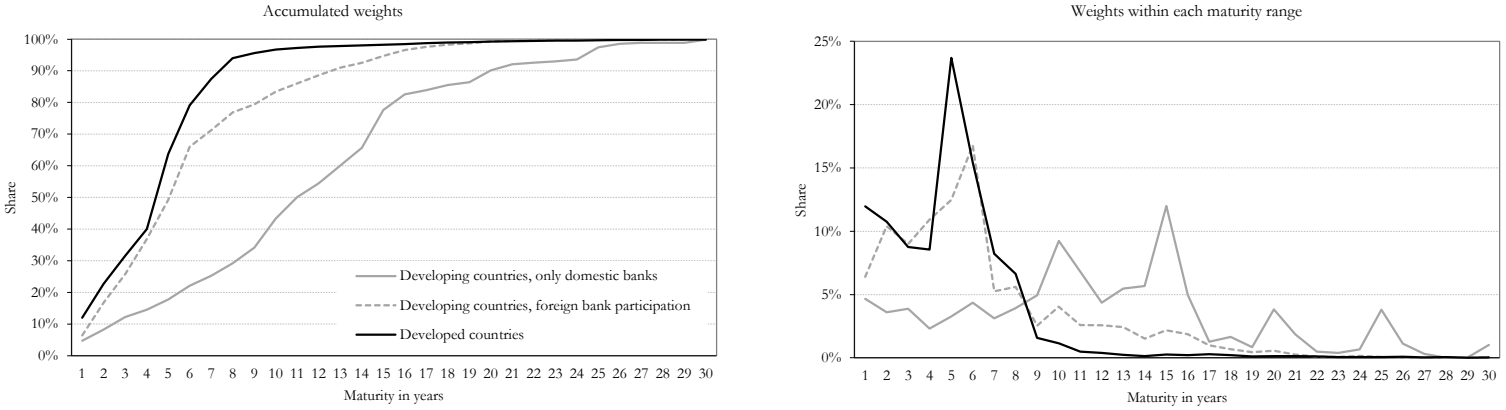
Figure 3

Maturity of Domestic and International Issuances

A. Corporate Bonds



B. Syndicated Loans

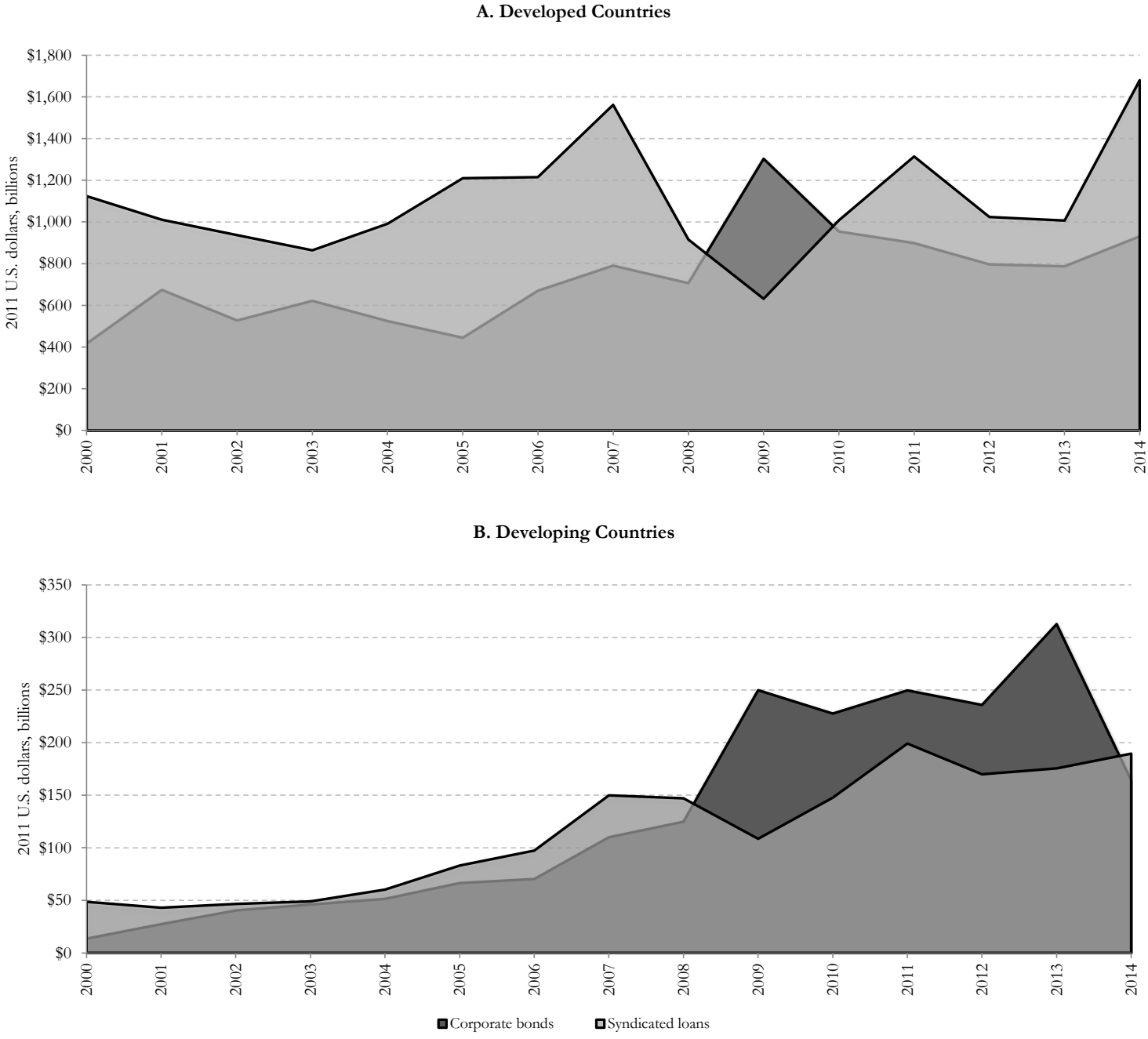


C. Average Maturities

	Corporate bonds			Syndicated loans		
Country type	Domestic market (a)	International market (b)	Amount raised abroad, share of the total (c)	Only domestic banks (d)	Foreign bank participation (e)	Amount raised with foreign bank participation, share of the total (f)
Developed countries	10.8	9.2	38.8%	4.7	5.0	87.2%
Developing countries	6.8	10.1	36.2%	12.6	6.7	82.2%

This figure presents the cumulative distribution functions representing the maturity structure of corporate bonds (Panel A) and syndicated loans (Panel B) as well as their respective weights within each maturity range. For developing countries the figure distinguishes between domestic and international issuances. Panel C reports the weighted average maturity of domestic and international corporate bonds and syndicated loans issued by firms from developed and developing countries. The sample period is 1991-2014.

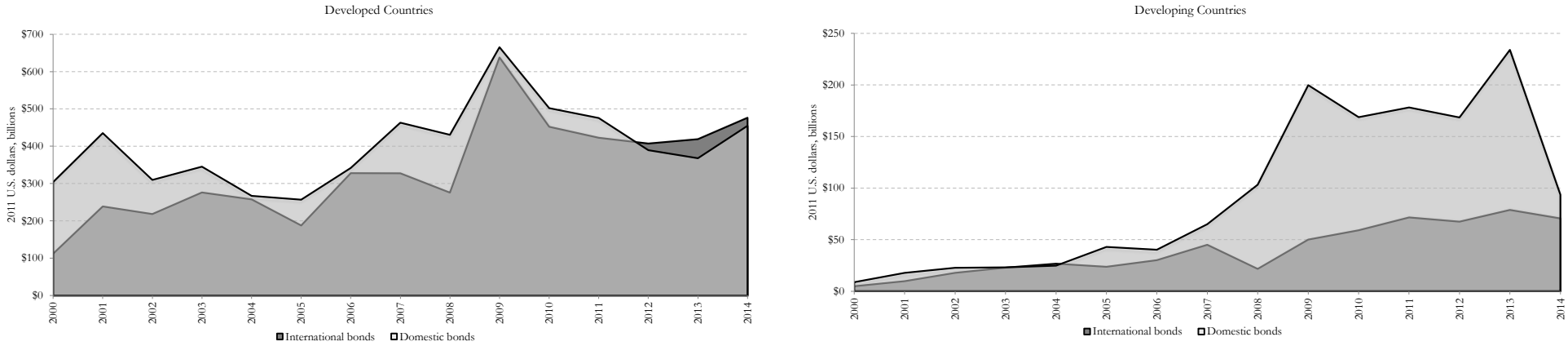
Figure 4
Composition of Debt Issuance over Time: Corporate Bonds vs. Syndicated Loans



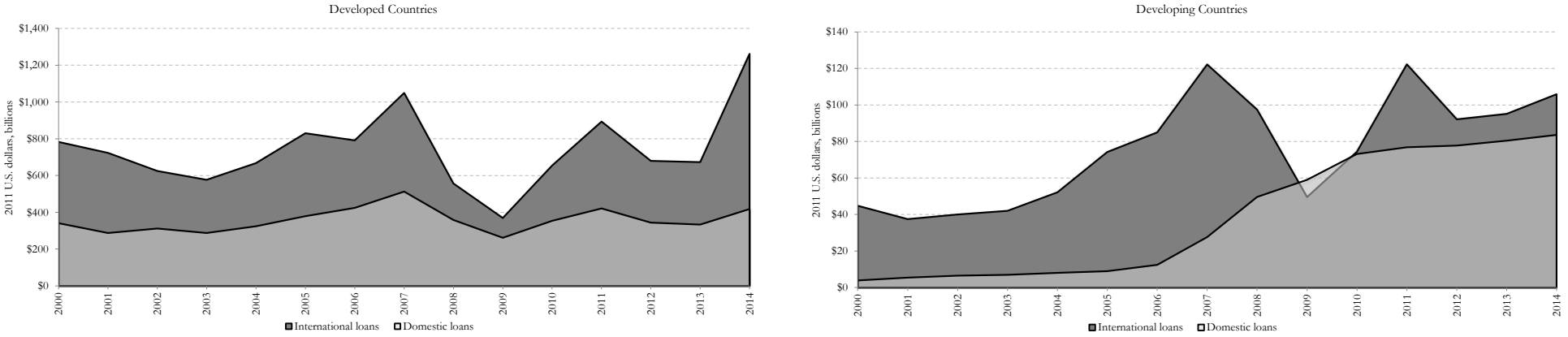
This figure presents the aggregate amount raised per year in corporate bond and syndicated loan markets in developed (Panel A) and developing countries (Panel B). Figures are reported in billions of 2011 U.S. dollars.

Figure 5
Composition of Debt Issuance over Time: Domestic vs. International Markets

A. Corporate Bonds

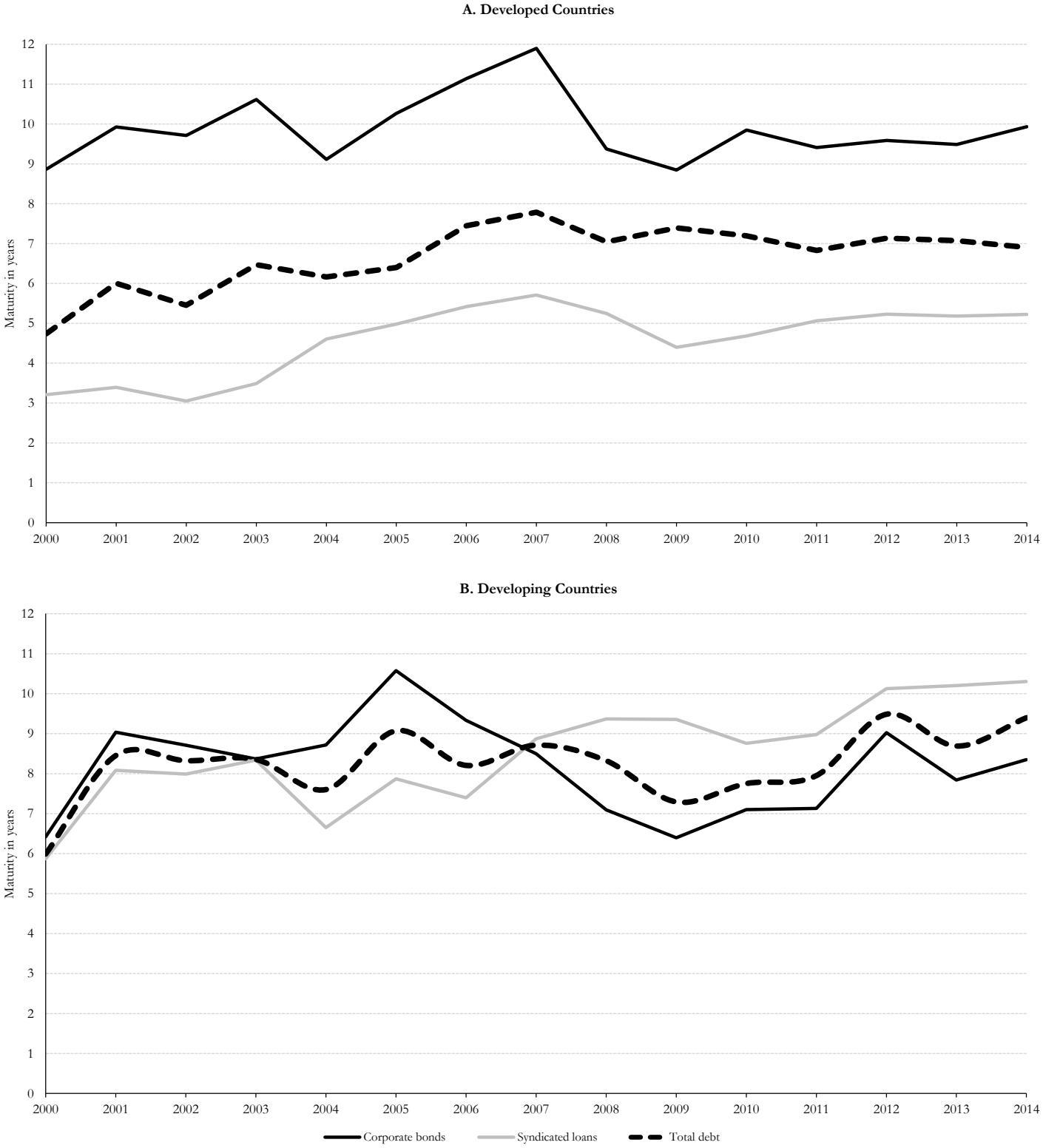


B. Syndicated Loans



This figure presents the aggregate amount raised per year in domestic and international corporate bond (Panel A) and syndicated loan markets (Panel B) by developed and developing countries. Figures are reported in billions of 2011 U.S. dollars.

Figure 6
Debt Maturity over Time



This figure presents the weighted average maturity per year of corporate bonds, syndicated loans, and total debt issued by developed (Panel A) and developing countries (Panel B).

Table 1
Summary Statistics

Country type	Firm type	Maturity (years)	Number of firms issuing debt and amount raised	
			No. of firms	Amount (billions)
All countries	All firms	6.3	83,370	115,524
Developed countries	All firms	6.2	68,779	106,878
Developing countries	All firms	7.5	14,591	8,646
			Share of the total	
			No. of firms	Amount raised
Developed countries	Non-financials	6.6	69%	58%
	Financials	5.6	31%	42%
			Share of the total	
			No. of firms	Amount raised
Developing countries	Non-financials	7.9	63%	62%
	Financials	6.9	37%	38%

This table reports the total amount of capital raised and the weighted average maturity of all debt issued by firms from developed and developing countries during the 1991-2014 period. Data on the amount raised are in billions of 2011 U.S. dollars.

Table 2
Maturity of Corporate Bonds and Syndicated Loans

Dependent variable: maturity of debt issuances

A. Developed Countries

	(a)	(b)	(c)	(d)	(e)
Syndicated loans	-2.880 ***	-4.163 ***	-4.612 ***	-4.944 ***	-5.279 ***
	[0.0905]	[0.101]	[0.106]	[0.0945]	[0.0949]
Use 2: general corporate purposes		-1.318 ***	-0.847 ***		-0.404 ***
		[0.0374]	[0.0458]		[0.0487]
Use 3: others		-3.630 ***	-2.162 ***		-1.764 ***
		[0.103]	[0.0990]		[0.101]
Use 4: project finance and LT investments		4.794 ***	5.154 ***		1.824 ***
		[0.113]	[0.119]		[0.228]
Use 5: Refinancing and capital structure management		-0.657 ***	-0.367 ***		-0.270 ***
		[0.0402]	[0.0389]		[0.0464]
Year dummies	Yes	Yes	Yes	Yes	Yes
Country fixed effects	No	No	Yes	No	No
Firm fixed effects	No	No	No	Yes	Yes
No. of observations	234,487	234,487	234,487	234,487	234,487
No. of clusters	47,767	47,767	47,767	47,767	47,767
R-squared	0.078	0.159	0.209	0.534	0.539

B. Developing Countries

	(a)	(b)	(c)	(d)	(e)
Syndicated loans	0.599 ***	-1.097 ***	-1.027 ***	-1.649 ***	-1.870 ***
	[0.136]	[0.128]	[0.123]	[0.235]	[0.238]
Use 2: general corporate purposes		0.794 ***	1.069 ***		0.979 ***
		[0.146]	[0.174]		[0.303]
Use 3: others		1.344 ***	1.606 ***		0.938 **
		[0.224]	[0.230]		[0.371]
Use 4: project finance and LT investments		5.937 ***	5.869 ***		2.945 ***
		[0.178]	[0.202]		[0.407]
Use 5: Refinancing and capital structure management		0.825 ***	0.837 ***		0.900 ***
		[0.157]	[0.182]		[0.324]
Year dummies	Yes	Yes	Yes	Yes	Yes
Country fixed effects	No	No	Yes	No	No
Firm fixed effects	No	No	No	Yes	Yes
No. of observations	27,864	27,864	27,864	27,864	27,864
No. of clusters	9,274	9,274	9,274	9,274	9,274
R-squared	0.019	0.148	0.218	0.641	0.645

This table reports the regression results of the maturity of debt issuances (in years) as the dependent variable regressed on a dummy variable that equals one when the type of issuance is a syndicated loan and zero otherwise (bond issuances). Columns b, c, and d also include dummies for the different uses of the proceeds raised (acquisition financing and LBO is omitted). The regressions use transaction-level issuance data and are estimated using ordinary least squares, clustering the standard errors at the firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively. The sample period is 1991-2014.

Table 3

Maturity of Domestic and International Corporate Bonds

Dependent variable: maturity of corporate bond issuances

A. Developed Countries

	(a)	(b)	(c)	(d)	(e)
International issuance	-0.099	0.358 **	-0.759 ***	-0.496 ***	-0.379 **
	[0.149]	[0.173]	[0.160]	[0.144]	[0.163]
Year dummies	Yes	Yes	Yes	Yes	Yes
Use of proceeds dummies	No	Yes	Yes	No	Yes
Foreign currency dummy	No	Yes	Yes	No	Yes
Country fixed effects	No	No	Yes	No	No
Firm fixed effects	No	No	No	Yes	Yes
No. of observations	90,353	90,353	90,353	90,353	90,353
No. of clusters	19,562	19,562	19,562	19,562	19,562
R-squared	0.030	0.069	0.178	0.501	0.504

B. Developing Countries

	(a)	(b)	(c)	(d)	(e)
International issuance	1.966 ***	2.591 ***	1.784 ***	1.633 ***	1.813 ***
	[0.267]	[0.426]	[0.355]	[0.419]	[0.491]
Year dummies	Yes	Yes	Yes	Yes	Yes
Use of proceeds dummies	No	Yes	Yes	No	Yes
Foreign currency dummy	No	Yes	Yes	No	Yes
Country fixed effects	No	No	Yes	No	No
Firm fixed effects	No	No	No	Yes	Yes
No. of observations	14,896	14,896	14,896	14,896	14,896
No. of clusters	4,735	4,735	4,735	4,735	4,735
R-squared	0.047	0.054	0.201	0.585	0.585

This table reports the regression results of the maturity of corporate bond issuances (in years) as the dependent variable regressed on a dummy variable that equals one for international issuances and zero otherwise (domestic issuances). The regressions use transaction-level issuance data and are estimated using ordinary least squares, clustering the standard errors at the firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively. The sample period is 1991-2014.

Table 4

Maturity of Domestic and International Syndicated Loans

Dependent variable: maturity of syndicated loan issuances

A. Developed Countries

	(a)	(b)	(c)	(d)	(e)
International issuance	1.098 ***	0.564 ***	0.329 ***	0.353 ***	0.312 ***
	[0.0349]	[0.0283]	[0.0255]	[0.0331]	[0.0319]
Year dummies	Yes	Yes	Yes	Yes	Yes
Use of proceeds dummies	No	Yes	Yes	No	Yes
Foreign currency dummy	No	Yes	Yes	No	Yes
Country fixed effects	No	No	Yes	No	No
Firm fixed effects	No	No	No	Yes	Yes
No. of observations	144,134	144,133	144,133	144,134	144,133
No. of clusters	36,186	36,186	36,186	36,186	36,186
R-squared	0.037	0.255	0.296	0.731	0.734

B. Developing Countries

	(a)	(b)	(c)	(d)	(e)
International issuance	-2.686 ***	-1.374 ***	-1.469 ***	-0.941 **	-0.685 *
	[0.173]	[0.170]	[0.200]	[0.389]	[0.389]
Year dummies	Yes	Yes	Yes	Yes	Yes
Use of proceeds dummies	No	Yes	Yes	No	Yes
Foreign currency dummy	No	Yes	Yes	No	Yes
Country fixed effects	No	No	Yes	No	No
Firm fixed effects	No	No	No	Yes	Yes
No. of observations	12,968	12,968	12,968	12,968	12,968
No. of clusters	5,527	5,527	5,527	5,527	5,527
R-squared	0.074	0.321	0.353	0.821	0.826

This table reports the regression results of the maturity of syndicated loan issuances (in years) as the dependent variable regressed on a dummy variable that equals one for international issuances and zero otherwise (domestic issuances). The regressions use transaction-level issuance data and are estimated using ordinary least squares, clustering the standard errors at the firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively. The sample period is 1991-2014.

Table 5

Debt Market Choice and the Global Financial Crisis

A. Corporate Bonds versus Syndicated Loans

Dependent variable: dummy=1 if the firm issued a bond in quarter t, dummy=0 if the firm issued a loan in quarter t

	Country evidence		Firm evidence	
	Developed countries	Developing countries	Developed countries	Developing countries
	(a)	(b)	(c)	(d)
Crisis	0.258 ***	0.224 ***	0.457 ***	0.592 ***
(2008-2009)	[0.0290]	[0.0667]	[0.0460]	[0.134]
Post-crisis	0.112 ***	0.148 ***	0.185 ***	0.727 ***
(2010-2014)	[0.0245]	[0.0568]	[0.0347]	[0.106]
Country fixed effects	Yes	Yes	No	No
Firm fixed effects	No	No	Yes	Yes
No. of observations	70,165	12,666	24,550	2,890
No. of clusters	29,990	6,872	3,874	536

B. Domestic versus International Corporate Bonds

Dependent variable: dummy=1 if the firm issued a domestic bond in quarter t, dummy=0 if the firm issued an international bond in quarter t

	Country evidence		Firm evidence	
	Developed countries	Developing countries	Developed countries	Developing countries
	(a)	(b)	(c)	(d)
Crisis	0.091	0.844 ***	-0.113	0.943 ***
(2008-2009)	[0.0562]	[0.114]	[0.0847]	[0.197]
Post-crisis	-0.530 ***	0.527 ***	-0.445 ***	0.168
(2010-2014)	[0.0503]	[0.107]	[0.0688]	[0.153]
Country fixed effects	Yes	Yes	No	No
Firm fixed effects	No	No	Yes	Yes
No. of observations	24,382	7,343	7,227	1,448
No. of clusters	10,150	3,531	1,275	264

C. Domestic versus International Syndicated Loans

Dependent variable: dummy=1 if the firm issued a domestic loan in quarter t, dummy=0 if the firm issued an international loan in quarter t

	Country evidence		Firm evidence	
	Developed countries	Developing countries	Developed countries	Developing countries
	(a)	(b)	(c)	(d)
Crisis	0.227 ***	1.460 ***	0.127	1.785 ***
(2008-2009)	[0.0401]	[0.136]	[0.0794]	[0.396]
Post-crisis	-0.085 ***	1.991 ***	-0.434 ***	1.489 ***
(2010-2014)	[0.0286]	[0.112]	[0.0558]	[0.334]
Country fixed effects	Yes	Yes	No	No
Firm fixed effects	No	No	Yes	Yes
No. of observations	47,198	4,711	9,144	378
No. of clusters	23,806	3,353	2,202	89

This table reports regression estimates characterizing the of debt market choice around the global financial crisis. For all the reported specifications, the transaction-level data on debt issuances are aggregated at the firm-quarter level. Panel A shows the logit regression results of the bond versus loan financing choice. The dependent variable is a dummy that equals one if a firm issues a bond in a given quarter or zero if it issues a loan in that same quarter. If a firm did not issue any debt in a given quarter, it is excluded from the sample in that quarter. Panel B shows the logit regression results of the domestic versus international bond financing choice. The dependent variable is a dummy that equals one if a firm issues a domestic bond in a given quarter or zero if it issues an international bond in that same quarter. If a firm did not issue any bond in a given quarter, it is excluded from the sample in that quarter. Panel C shows the logit regression results of the domestic versus international syndicated loan financing choice. The dependent variable is a dummy that equals one if a firm issues a domestic loan in a given quarter or zero if it issues an international loan in that same quarter. If a firm did not issue any loan in a given quarter, it is excluded from the sample in that quarter. The independent variables in all regressions are a crisis dummy (equal to one in all quarters of 2008 and 2009 and zero otherwise) and a post-crisis dummy (equal to one in all quarters during 2010-2014 and zero otherwise). Either country fixed effects (columns a and b) or firm fixed effects (columns c and d) are included in the regressions. Standard errors are clustered at the firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively. The sample period is 2000-2014.

Table 6
Debt Maturity and the Global Financial Crisis

Dependent variable: maturity of debt issuances

A. Developed Countries

	Country-level regressions			Firm-level regressions		
	Corporate bonds	Syndicated loans	Total debt	Corporate bonds	Syndicated loans	Total debt
	(a)	(b)	(c)	(d)	(e)	(f)
Crisis	-1.063 ***	0.154 ***	0.009	-1.523 ***	-0.084	-0.230 **
(2008-2009)	[0.137]	[0.0587]	[0.0654]	[0.204]	[0.0555]	[0.0961]
Post-crisis	-0.367 ***	0.348 ***	0.084	0.127	0.409 ***	0.412 ***
(2010-2014)	[0.127]	[0.0403]	[0.0534]	[0.220]	[0.0531]	[0.0970]
Country fixed effects	Yes	Yes	Yes	No	No	No
Firm fixed effects	No	No	No	Yes	Yes	Yes
No. of observations	24,402	47,392	70,165	24,402	47,392	70,165
No. of clusters	10,166	23,949	29,990	10,166	23,949	29,990
R-squared	0.13	0.17	0.06	0.64	0.88	0.62

B. Developing Countries

	Country-level regressions			Firm-level regressions		
	Corporate bonds	Syndicated loans	Total debt	Corporate bonds	Syndicated loans	Total debt
	(a)	(b)	(c)	(d)	(e)	(f)
Crisis	-0.535 ***	1.079 ***	0.264 **	-0.587 **	0.469	-0.094
(2008-2009)	[0.168]	[0.198]	[0.131]	[0.285]	[0.448]	[0.234]
Post-crisis	-0.459 ***	1.338 ***	0.440 ***	0.311	0.416	0.466 **
(2010-2014)	[0.174]	[0.150]	[0.119]	[0.286]	[0.394]	[0.237]
Country fixed effects	Yes	Yes	Yes	No	No	No
Firm fixed effects	No	No	No	Yes	Yes	Yes
No. of observations	7,461	5,375	12,684	7,461	5,375	12,684
No. of clusters	3,616	3,835	6,886	3,616	3,835	6,886
R-squared	0.19	0.13	0.12	0.70	0.92	0.76

This table reports the regression results of the maturity of debt issuances (in years) as the dependent variable regressed on a dummy variable that equals one for the crisis period (or zero otherwise) and another dummy variable that equals one for post-crisis period (or zero otherwise). For all the reported specifications, the transaction-level data are aggregated at the firm-quarter level. If a firm did not issue any debt in a given quarter, it is excluded from the sample in that quarter. These regressions are estimated using ordinary least squares with either country fixed effects (columns a, b, and c) or firm fixed effects (columns d, e, and f), clustering the standard errors at the firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively. The sample period is 2000-2014.

Table 7
Debt Issuance and Firm Attributes

A. Corporate Bonds and Syndicated Loans

Country type	Issuer type	Firm size (a)	Issuance size (b)	Maturity (c)	No. of issuances (d)	No. of firms (e)
Developed countries	Only bond issuers	879	144	5.5	17,417	6,045
	Only loan issuers	845	99	5.6	49,267	19,827
	Bond and loan issuers	3,932				4,156
	- Bond issuances		250	7.0	21,652	
	- Loan issuances		285	5.0	18,816	
Developing countries	Only bond issuers	872	92	5.0	8,202	3,051
	Only loan issuers	1,409	97	6.8	5,856	3,269
	Bond and loan issuers	2,657				566
	- Bond issuances		140	6.5	2,939	
	- Loan issuances		149	4.8	1,827	

B. Domestic and International Corporate Bonds

Country type	Issuer type	Firm size (a)	Issuance size (b)	Maturity (c)	No. of issuances (d)	No. of firms (e)
Developed countries	Only domestic bond issuers	886	60	5.0	16,037	5,889
	International bond issuers	3,455				4,312
	- Domestic issuances		199	5.7	10,195	
	- International issuances		202	7.0	12,837	
Developing countries	Only domestic bond issuers	801	33	5.0	7,808	2,732
	International bond issuers	1,560				885
	- Domestic issuances		88	5.3	1,688	
	- International issuances		227	6.5	1,645	

C. Domestic and International Syndicated Loans

Country type	Issuer type	Firm size (a)	Issuance size (b)	Maturity (c)	No. of issuances (d)	No. of firms (e)
Developed countries	Only domestic loan issuers	552	65	6.6	33,923	12,833
	International loan issuers	1,654				11,150
	- Domestic issuances		133	5.0	6,384	
	- International issuances		161	5.1	27,776	
Developing countries	Only domestic loan issuers	882	79	9.3	2,043	1,349
	International loan issuers	2,549				2,486
	- Domestic issuances		146	9.5	317	
	- International issuances		104	6.0	5,323	

This table reports the median attributes for different types of debt issuing firms during the 2000-2014 period. Panel A reports separately the median attributes for (i) only bond issuers, (ii) only loan issuers, and (iii) issuers of both bonds and loans. Panel B reports the median attributes for (i) only domestic bond issuers and (ii) international bond issuers. Panel C reports the median attributes for (i) only domestic loan issuers and (ii) international loan issuers. Issuing firms are classified into these difference groups according to their issuance activity during the sample period. The statistics reported in columns a, b, and c are calculated as the median across countries of the median firm within each country. The firm-level data are averages across time for each firm. Columns d and e report the total number of issuances and issuers by type of firm. Total assets are reported in millions of 2011 U.S. dollars. The sample period is 2000-2014.

Table 8

Firm Size and the Global Financial Crisis

Dependent variable: size of issuing firms

A. Developed Countries

	Corporate bonds	Domestic bonds	International bonds	Syndicated loans	Domestic loans	International loans
	(a)	(b)	(c)	(d)	(e)	(f)
Crisis	0.238 ***	0.304 ***	0.422 ***	0.053	0.058	0.125 *
(2008-2009)	[0.0612]	[0.0725]	[0.103]	[0.0380]	[0.0436]	[0.0683]
Post-crisis	-0.209 ***	0.163 **	-0.652 ***	0.237 ***	0.170 ***	0.245 ***
(2010-2014)	[0.0563]	[0.0675]	[0.0961]	[0.0299]	[0.0388]	[0.0443]
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	13,333	9,678	4,099	17,387	10,749	6,994
No. of clusters	6,358	4,893	2,415	6,734	4,426	3,515
R-squared	0.19	0.21	0.23	0.08	0.03	0.09

B. Developing Countries

	Corporate bonds	Domestic bonds	International bonds	Syndicated loans	Domestic loans	International loans
	(a)	(b)	(c)	(d)	(e)	(f)
Crisis	0.561 ***	0.505 ***	0.568 ***	0.344 **	1.025 ***	0.391 **
(2008-2009)	[0.0778]	[0.0815]	[0.208]	[0.143]	[0.392]	[0.155]
Post-crisis	0.700 ***	0.604 ***	0.935 ***	0.759 ***	1.468 ***	0.846 ***
(2010-2014)	[0.0760]	[0.0845]	[0.180]	[0.117]	[0.357]	[0.124]
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	3,102	2,424	789	1,114	254	878
No. of clusters	1,512	1,182	522	646	176	516
R-squared	0.19	0.17	0.38	0.24	0.15	0.28

This table reports the regression results of the size of issuing firms (proxied by the latest available information on firms' total assets at the time of issuance) as the dependent variable regressed on a dummy variable that equals one for the crisis period (or zero otherwise) and another dummy variable that equals one for post-crisis period (or zero otherwise). The regressions use transaction-level issuance data and are estimated using ordinary least squares, clustering the standard errors at the firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively. The sample period is 2000-2014. Total assets are measured in logs of millions of 2011 U.S. dollars.

Table 9

Issuance Size and the Global Financial Crisis

Dependent variable: issuance size

A. Developed Countries

	Corporate bonds	Domestic bonds	International bonds	Syndicated loans	Domestic loans	International loans
	(a)	(b)	(c)	(d)	(e)	(f)
Crisis	0.241 ***	0.306 ***	0.213 ***	-0.199 ***	-0.076 ***	-0.339 ***
(2008-2009)	[0.0640]	[0.0845]	[0.0589]	[0.0248]	[0.0288]	[0.0416]
Post-crisis	0.001	0.169 **	-0.300 ***	-0.127 ***	-0.082 ***	-0.221 ***
(2010-2014)	[0.0546]	[0.0760]	[0.0493]	[0.0183]	[0.0222]	[0.0280]
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	39,069	26,232	12,837	68,083	40,307	27,776
No. of clusters	10,166	7,208	4,281	23,949	15,184	11,119
R-squared	0.24	0.30	0.14	0.12	0.08	0.07

B. Developing Countries

	Corporate bonds	Domestic bonds	International bonds	Syndicated loans	Domestic loans	International loans
	(a)	(b)	(c)	(d)	(e)	(f)
Crisis	0.237 ***	0.318 ***	0.012	0.248 ***	0.352 **	0.205 ***
(2008-2009)	[0.0837]	[0.0922]	[0.156]	[0.0543]	[0.137]	[0.0571]
Post-crisis	0.164 **	0.166 **	0.332 **	0.037	-0.168	0.134 **
(2010-2014)	[0.0689]	[0.0733]	[0.135]	[0.0467]	[0.116]	[0.0525]
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	11,141	9,496	1,645	7,683	2,360	5,323
No. of clusters	3,616	3,011	885	3,835	1,476	2,486
R-squared	0.38	0.45	0.28	0.08	0.08	0.12

This table reports the regression results of issuance size (measured by the total proceeds raised by each issuance) as the dependent variable regressed on a dummy variable that equals one for the crisis period (or zero otherwise) and another dummy variable that equals one for post-crisis period (or zero otherwise). The regressions use transaction-level issuance data and are estimated using ordinary least squares, clustering the standard errors at the firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively. The sample period is 2000-2014. The total proceeds raised by each debt issuance are measured in logs of millions of 2011 U.S. dollars.

Appendix Table 1

Total Number of Issuances and Number of Firms per Country

Developed countries				Developing countries			
Country	Number of bond issuances	Number of syndicated loan issuances	Number of firms	Country	Number of bond issuances	Number of syndicated loan issuances	Number of firms
Australia	8,549	4,994	2,115	Argentina	1,249	332	398
Austria	1,910	214	263	Azerbaijan	5	65	22
Bahrain	57	145	55	Bangladesh	4	45	24
Belgium	790	662	314	Bolivia	175	17	52
Canada	9,023	6,485	3,178	Brazil	3,689	950	1482
Croatia	21	161	55	Bulgaria	13	109	48
Cyprus	44	89	51	Chile	1,024	437	314
Czech Republic	81	287	132	China	4,333	3,151	3867
Denmark	1,305	326	177	Colombia	1,303	147	323
Finland	1,575	576	407	Costa Rica	294	28	53
France	9,583	6,236	2,092	Ecuador	230	14	117
Germany	15,992	4,513	1,821	Egypt	29	201	70
Greece	262	431	188	El Salvador	462	33	41
Hong Kong	7,139	2,665	1,798	Ghana	2	73	26
Hungary	124	307	109	India	8,069	2,936	1738
Iceland	235	165	50	Indonesia	1,171	1,580	871
Ireland-Rep	2,298	562	351	Jamaica	26	46	19
Israel	315	110	63	Jordan	3	36	22
Italy	3,210	2,847	1,241	Kazakhstan	123	191	90
Japan	13,588	24,864	7,609	Lebanon	36	6	18
Kuwait	25	146	78	Malaysia	3,731	934	913
Luxembourg	2,098	494	488	Mauritius	14	47	31
Netherlands	8,891	2,526	1,285	Mexico	2,551	884	771
New Zealand	631	1,157	297	Morocco	7	58	24
Norway	1,422	1,081	533	Nigeria	15	143	66
Oman	18	153	63	Pakistan	41	161	89
Poland	104	416	203	Panama	209	241	218
Portugal	1,498	580	722	Peru	1,133	168	215
Qatar	73	203	82	Philippines	497	432	244
Saudi Arabia	40	384	149	Romania	14	182	80
Singapore	1,986	1,589	1,005	Russian Fed	1,434	1,278	798
Slovak Rep	15	98	46	South Africa	323	482	239
Slovenia	13	131	38	Sri Lanka	10	42	18
South Korea	26,981	2,676	3,918	Thailand	1,933	1,233	658
Spain	2,579	4,299	1,735	Tunisia	14	50	17
Sweden	3,123	1,015	424	Turkey	172	1,170	290
Switzerland	3,434	1,013	647	Ukraine	83	177	75
Taiwan	6,688	4,897	1,665	Venezuela	233	87	133
United Kingdom	15,077	10,317	3,960	Vietnam	56	217	124
United States	96,877	86,327	29,082	**Total**	**34,710**	**18,383**	**14,598**
Utd Arab Em	367	667	283				
Total	**248,041**	**176,808**	**68,772**				

This table reports, for each country in the sample, the total number of issuances in corporate bond and syndicated loan markets and the number of firms per country. The sample period is 1991-2014.