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Corporate Borrowing and Debt Maturity

The Effects of Market Access and Crises

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Abstract

This paper studies how access to different markets and crises impact debt financing and maturity. Using data on worldwide corporate issuance activity in domestic and international bond and syndicated loan markets during 1991–2014, the paper shows that these markets are affected differently by crises, while providing financing to different firms at distinct maturities. During the global financial crisis and domestic banking crises, large firms moved away from the crisis-hit markets toward less affected, longer-term ones, switching their financing sources. Hence, firms that switched markets compensated for the financing shocks and maintained, or increased, their borrowing maturity. Country-level maturities also remained stable or even lengthened. However, firms that did not move across markets typically experienced declining financing and shorter borrowing maturities. Firm movements across markets are consistent with credit tightening during crises due to supply-side shocks, significantly affecting debt composition, borrowing maturity, and credit redistribution across firms of different sizes.

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Corporate Borrowing and Debt Maturity: The Effects of Market Access and Crises

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1. Introduction

During crises, financial conditions deteriorate. Financing dries up and maturities shorten. Companies experience difficulties repaying their debt and face increasing prospects of default. The existing literature typically characterizes these patterns by analyzing debt dynamics around crises within specific debt markets or countries. Though valuable, these analyses offer only a partial view of firm financing because corporations access different debt markets, domestically and internationally. In a world with perfectly integrated and frictionless markets, the specific market in which firms obtain financing would be irrelevant (Modigliani and Miller, 1958). But in practice various frictions can lead to market segmentation, with different debt markets attracting distinct types of firms and investors, delivering different volumes and terms of financing, even to the same firm.[1] In such scenario, when crises hit, some firms would change the amount and type of financing by moving across markets, while other firms would remain in specific markets.

In this paper, we expand the literature by analyzing corporate debt financing and maturity across four different markets around the world: domestic and international bonds and syndicated loans. These markets became increasingly important sources of new financing to corporations, grew faster than equity and traditional bank financing, and expanded five times faster than gross domestic product (GDP) between 1991 and 2014.[2] By focusing on financing and maturity, we show that these markets are different from each other. They provide financing to different firms at different maturities, and have their own dynamics around crises. We also show that when negative shocks affect specific

[1] For example, asymmetric information, taxes, fixed transaction costs, and regulations could inhibit some firms from using certain markets, and could result on certain investors and financial intermediaries (with specific preferences, time horizons, or abilities to diversify risk) dominating specific markets (La Porta et al.; 1997; Karolyi and Stulz, 2003; Pirinsky and Wang, 2006; Japelli and Pagano, 2008; Bekaert et al., 2011).

[2] Traditional bank financing has grown at a much lower pace during the same period (Didier et al., 2015). Some studies estimate that syndicated loans are the main vehicle through which banks lend to large corporations, accounting for roughly one-third of the total outstanding cross-border loans (Ivashina and Scharfstein, 2010; Cerutti et al., 2015). In emerging economies, bond financing has increased particularly fast during the 2000s (Turner, 2014; Caballero et al., 2016).

debt markets, some firms appear to be constrained to the crisis-hit markets, while others counteract the shocks by seeking financing elsewhere. Consequently, the amount and maturity of financing varies significantly across firms depending on which markets they access, with important aggregate effects. The 2008-09 global financial crisis (GFC) and domestic banking crises allow us to show the effects of shocks to different markets and the reaction of different firms.

To conduct the analysis, we assemble a new dataset using a comprehensive cross-section of 78 countries and 57,950 firms for 1991-2014. We collect publicly and privately placed issuances of domestic and cross-border bonds and syndicated loans with an original maturity of more than one year, encompassing issuances by listed and unlisted firms. The dataset includes 267,382 individual debt issuances conducted around the world by firms from 41 developed and 37 developing countries.

Our main findings can be summarized as follows. First, we show that maturities at issuance vary significantly across the different debt markets. Although the overall debt maturity at issuance is on average 6.6 years, different markets provide financing at distinct maturities. Bonds have longer average maturity than syndicated loans. In developed countries, bonds are about 5 years longer than syndicated loans, no matter the market of issuance (domestic or international). Developing countries show a different pattern: international bonds and domestic syndicated loans have relatively longer maturities than domestic bonds and international syndicated loans. The differences in the maturity of debt issuances across markets exist even after controlling for firm-level and time-varying country fixed effects, currency of issuance, type of rate (fixed versus floating), and use of proceeds. Hence, the composition of financing across markets matters for debt maturity across firms and countries.

Second, the relative importance of each market for firm financing varies over time, with significant compositional changes during market-specific crises. When the GFC suddenly hit the banking sector of major developed countries, firms from developed countries with demand for credit moved away from the impacted syndicated loan markets toward bond markets. In developing

countries, firms reacted by moving toward the less affected domestic markets, increasing their debt issuances of both domestic syndicated loans and bonds instead of international ones. Analogously, during domestic banking crises, firms mitigated the shock in the local banking system by moving away from domestic syndicated loans toward bond and international markets. These changes in debt financing composition during crises took place both at the country level and within firms. That is, some firms with demand for credit switched one type of debt for another during crises, evidencing a negative credit supply shock in the market they leave. Nonetheless, not all firms counteracted the negative shocks by raising capital in other markets. Firms that did not move from the markets in crisis tended to experience declining debt financing in the aftermath of the shocks.

Third, the time-varying activity in each market and the ensuing changes in debt composition are reflected in borrowing maturities. During the GFC, the maturity of debt at issuance tended to decline in individual markets. However, the movement toward less affected markets translated into stable borrowing maturities, given that these markets were relatively longer term than the markets in crisis. The overall maturity at issuance during the GFC remained stable both at the country level and for those firms that switched markets. Firms issuing the same type of debt before and in the aftermath of the GFC tended to experience declining borrowing maturities. Similarly, during domestic banking crises, firms increased issuances in relatively longer-term markets, which lengthened their overall debt maturity despite shortening maturities in the shock-hit domestic syndicated loan markets. Thus, firm movements across debt markets triggered by supply-side shocks explain the stability (or even increase) in the borrowing maturity at the firm and aggregate levels during those events.

Fourth, the composition of firms obtaining financing across markets changed during market-specific crises given that different firms responded differently to the negative shocks. The largest firms moved away from the shock-hit markets during the GFC and domestic banking crises, compensating for the declines in debt financing and maturity. In contrast, firms that did not change their financing

composition during crises (the non-switchers) typically experienced declining financing and, if able to raise capital, shorter borrowing maturities. During the GFC, non-switchers in domestic markets (comprising the smallest firms in the sample) experienced lower debt financing despite the increase in total lending in the markets not directly hit by the negative shock, namely, domestic bond and syndicated loan markets in developing countries and domestic bond markets in developed countries. This latter pattern is consistent with crowding out effects caused by the larger firms moving toward the less affected domestic markets, implying a redistribution of new credit to larger corporations.

In sum, the results from this paper show that the market of issuance is relevant for firm- and country-level financing and maturity. The issuance place matters even after controlling for factors that the literature highlights as key determinants of the demand for short- and long-term debt. To the extent that individual debt markets specialize in particular types of financing, firms might select to issue in specific markets to obtain debt financing at certain maturities. Access to different debt markets also provides firms with diversification benefits, improving their resilience to shocks. Our findings indicate that access to several markets allows firms to use them as complements during good times (obtaining different types of financing in each market) and as substitutes when conditions deteriorate (cushioning the decline in financing in certain markets and in maturity across all individual markets). In contrast, when firms cannot choose markets, they are constrained to the financing and maturity dynamics of the markets where they issue. Our results show that smaller firms seem to be constrained by the funding conditions of the specific market they access. The joint analysis of a wider set of debt markets allows us to obtain a more complete perspective of the dynamics of firm- and country-level financing than analyses based on individual debt markets.

The evidence in this paper contributes to different strands of the literature. One strand analyzes how firms use syndicated loan and bond markets to withstand credit supply shocks (Adrian

et al., 2013; Becker and Ivashina, 2014).[3] Though innovative, this analysis was conducted only for U.S. publicly listed firms, without an examination of the consequences of such substitutions on the new terms of financing. In this paper, we use a similar methodology to identify supply-side shocks and to study how firms change the composition of their financing at the time of these shocks. But we examine a wider and more heterogeneous set of firms and debt markets: listed and unlisted firms from around the world raising capital in domestic and international bond and syndicated loan markets. We provide evidence of firm-level substitution across markets at the global level during both domestic and external financial crises. Importantly, these market switches during crises are consequential for corporate debt maturity and financing of both firms that move across markets and those that do not. The overall evidence suggests that not all firms react to shocks in the same manner. Relatively smaller firms can be constrained to the markets in crisis, limiting their funding options. The different behavior of smaller and larger firms is consistent with findings based on balance sheet data showing that, following negative loan supply shocks, the leverage of smaller (more bank-dependent) firms falls relative to that of larger firms with access to different markets (Leary, 2009).

Another strand of the literature emphasizes the risks associated with the use of short-term debt and the benefits related to long-term debt. Although the maturity structure is a risk-sharing outcome between debtors and creditors, long-term debt allows the former to finance large investments and reduce rollover risks associated with crises.[4] When firms rely more intensively on short-term debt,

[3] Kashyap et al. (1993) use a similar a similar methodology to study the relative movements in bank loans and commercial paper after monetary shocks. However, the use of aggregate data makes it difficult to truly disentangle supply from demand effects (Oliner and Redebusch, 1995, 1996). Hale (2007) provides empirical evidence that default on sovereign debt has an impact on the composition of international debt instruments used by private and sovereign borrowers from emerging markets.

[4] The literature that links "short-termism" to crises is quite large (e.g., Eichengreen and Hausmann, 1999; Rodrik and Velasco, 2000; Tirole, 2003; Brunnermeier, 2009; Jeanne, 2009; Raddatz, 2010; Beltratti and Stulz, 2012). Some papers argue that the bonds issued by corporations (particularly from emerging economies) in the aftermath of the GFC exposed them to shocks (Shin, 2013; Acharya et al., 2015; IMF, 2015; McCauley et al., 2015; Lo Duca et al., 2016; The Economist, 2016). Much of this discussion has centered on the currency of issuance and its associated risks (Bruno and Shin, 2016; Hale et al., 2016). But it is possible that there is a trade-off between currency and maturity (Shin, 2016) and that part of the increase in bond issuance is a response to the decline in bank loans.

they can experience higher financial constraints during credit crunches, leading to significant real effects (Almeida et al., 2011). Consequently, the discussions have focused on the need to understand the extent and causes of "short-termism" as well as on efforts aimed at lengthening debt maturity (G20, 2013; Giovannini et al., 2015; World Bank, 2015; Beck, 2016; Cortina et al., 2018). However, evidence on the actual debt maturity across countries and where long- and short-term debt originates is still scant.[5] This paper helps fill this void by analyzing the borrowing maturity around the world across different debt markets, as well as how they fluctuate around crises across different types of issuing firms. The results indicate that at least part of the changes in maturity over time and of the differences across firms and countries lie on the type of debt markets that firms access.

Several studies examine the cross-sectional determinants of short- and long-term debt by focusing on the demand side of capital. Theories of agency cost, commitment, growth opportunities, asymmetric information, liquidation risk, and taxation show how firm attributes affect their debt maturity (Myers, 1977; Mauer and Lewellen, 1987; Flannery, 1986; Calomiris and Kahn, 1991; Diamond, 1991; Greenwood et al., 2010; Brunnermeier and Oehmke, 2013; Dangl and Zechner, 2016).[6] The empirical research examines these predictions for firms in the United States, mostly using firm balance sheets (Barclay and Smith, 1995; Guedes and Opler, 1996; Berger et al., 2006; Highfield, 2008; Custodio et al., 2013). However, these data only distinguish between debt with maturities below and above one year, missing most of the action within the so-called long-term range. Although others analyze debt issuance data, they usually focus on a single market (typically bonds), neglecting other important debt markets and their potential interactions. By using transaction-level data for more than

[5] There is no widely accepted benchmark of what long term is. Most studies addressing issues associated with long-term finance focus on the share of debt with maturity exceeding one year (typically reported on national accounts and on firm and bank balance sheets) and, in some cases, on the share of debt with maturity exceeding five years.
[6] Others highlight the role of different institutional environments across countries (Demirgüç-Kunt and Maksimovic, 1999; Bae and Goyal, 2009; Fan et al., 2012).

one debt market from around the world, we focus on the supply side by analyzing the borrowing maturity in different markets over time. We show how firms' use of different markets during crises is reflected in aggregate and firm-level debt maturity at issuance, controlling for the demand side and other factors.

Another strand of the literature studies the time-series behavior of short- and long-term debt and maturity, typically focusing on tranquil versus crisis times (Erel et al., 2012; Broner et al., 2013; Chen et al., 2012; He and Milbradt, 2016; Demirgüç-Kunt et al., 2015; Gonzalez, 2015; Bruche and Segura, 2017; Mian and Santos, 2018). On the theoretical side, research tends to highlight supply-side factors (such as risk aversion and liquidity) in explaining the behavior of both sovereign and corporate debt. On the empirical side, studies examine firm balance sheet information or data for a single debt market, finding that debt maturity shortens during crises. However, debt maturity from balance sheet data can shrink because either firms do not issue during crises (hence, the maturity structure of the existing debt shortens) or the new debt issued during crises is shorter term. Moreover, crises do not need to involve all markets. Firms might be able to withstand credit contractions in certain markets by moving to other markets, as we argue in this paper. Therefore, debt maturity will change depending on the relative importance of each market as crises evolve. We contribute to this discussion by analyzing how issuance activity and borrowing maturity react in different markets during crises, and how the main patterns vary across different types of firms and on aggregate.

The remainder of the paper is organized as follows. Section 2 describes the 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 investigates how different crises impact debt markets. Section 5 studies how different firms behave during crises. Section 6 concludes.

2. Data

To conduct the analysis, we assemble a comprehensive transaction-level dataset on newly issued corporate bonds and syndicated loans in domestic and international markets from countries around the world from 1991 through 2014. Our data on firm capital raising activity come from Thomson Reuters' Security Data Corporation (SDC) Platinum (June 2016 version), which provides information on the characteristics of issuances of publicly and privately placed bonds and syndicated loans with an original maturity of more than one year.[7] Given that SDC Platinum does not collect data on debt issuances with maturities shorter than one year, the dataset does not cover commercial paper. We exclude all financial sector issuances and conduct our analysis on financing to the non-financial sector, which is the primary focus of a large part of the literature.[8] We also exclude all public-sector issuances, comprising issuances by national, local, and regional governments, government agencies, regional agencies, and multilateral organizations. We exclude all mortgage-backed and other asset-backed issuances. Moreover, we exclude countries whose markets are considered offshore financial centers.[9] We end up with 57,950 listed and unlisted non-financial firms and 267,382 debt issuances: 108,184 bond issuances and 159,198 syndicated loan issuances.

To study how firms borrow in different markets, we distinguish not only the instrument type (bonds or syndicated loans), but also the market location (domestic or international). For corporate bonds, 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 82,249 bond issuances in domestic markets and

[7] Around 60 and 38 percent of bonds and syndicated loans, respectively, were issued by unlisted firms. The database also contains information on issuances of common and preferred equity (157,578 equity issuances by 50,131 firms), which we use in Figure 1 to show the relative sizes of primary debt and equity markets.
[8] We exclude from the analysis bond and syndicated loan issuers with a Standard Industry Classification (SIC) code between 6,000 and 6,800, which are classified as financial corporations.
[9] We exclude offshore financial centers as defined by the IMF at https://www.imf.org/external/NP/ofca/OFCA.aspx.

25,935 bond issuances in international markets. For syndicated loans, we compare the nationality of the lead banks that arrange the deal with the issuing firm's nationality to identify domestic and cross-border bank lending. Domestic loans are those in which only domestic banks lead the syndication, whereas international syndicated loans entail the participation of at least one foreign bank acting as a lead arranger.[10] The dataset includes 83,689 domestic syndicated loans and 75,509 international syndicated loans.

We focus on firm size to characterize which firms issue debt at each point in time. We proxy firm size by the average debt transaction size, measured over all debt issuances per firm during the entire sample period. For robustness, we explore two alternative measures of firm size with less coverage over the sample. First, we examine the total assets of the issuers at the time of issuance, which are available in the SDC dataset. However, these data on firm size cover only 42 percent of the corporate bond issuances and 38 percent of the syndicated loan issuances. Second, we restrict the analysis to listed firms and study the total assets reported in their end-of-year balance sheets (from Bureau van Dijk's Orbis database). Both sets of results are qualitatively similar to the ones reported in the paper.

We classify countries in the sample as either developed or developing following the World Bank classification as of 2012.[11] Developed countries are those with a gross national income (GNI) per capita in 2011 above $12,476. All other countries are classified as developing countries. The final dataset comprises 78 countries, 41 of them are developed countries and 37 developing countries. All reported statistics are in U.S. dollars at 2011 constant prices. Appendix Table 1 reports the list of

[10] For robustness, we consider two alternative definitions of international syndicated lending: (i) when only foreign banks participate in the deal; or (ii) when more than half of the banks that participate in the deal are foreign. The results are qualitatively similar to the ones reported here.

[11] Strictly speaking, as noted in Appendix Table 1, a couple of the "countries" analyzed are economies rather than sovereign states. For ease of exposition, we use throughout the paper the generic term countries.

countries as well as the number of bond and syndicated loan issuances and the number of issuers by country. The reported results are qualitatively robust to the exclusion of the largest developed and developing countries from the sample (the United States and China).

The paper also analyzes how firms react during market-specific crises. In particular, we examine changes in firm financing and borrowing maturity around the GFC and domestic banking crises. For domestic banking crises, we match our data on corporate debt issuances with data from the Reinhart and Rogoff's financial crises database (Reinhart and Rogoff, 2011).[12] Due to data limitations, we restrict the analysis on domestic banking crises to the period from 1991 through 2010. After matching the datasets, we obtain a sample that comprises 111,836 debt issuances conducted by 40,561 firms from 43 countries.

3. Debt Issuance and Maturity across Markets

The primary debt markets of corporate bonds and syndicated loans have rapidly expanded worldwide since the early 1990s (Figure 1). The total amount of debt issued using these instruments increased more than seven-fold in developed countries and almost twenty-seven-fold in developing countries between 1991 and 2014, reaching $4.7 trillion and $0.83 trillion in 2014, respectively. As a share of GDP, the total amount raised by developed and developing countries in 2014 equaled about 10 and 3.4 percent, respectively, up from 2 and 0.7 percent in 1991. Moreover, the growth in corporate bonds and syndicated loans was substantial when contrasted with that of primary equity markets. Although the growth in capital raising activity through new equity issues was significant, it was relatively subdued when contrasted with the growth in primary debt markets in both developed and developing countries over the sample period (from $171 billion in 1991 to $414 billion in 2014 in developed countries and

[12] For robustness, we also use the Leaven and Valencia (2012) banking crisis indicators. The results are qualitatively similar to the ones reported here.

from around $21 billion to $178 billion in developing countries). Therefore, the ratio of the total amount raised through debt over equity grew from 4 to 11 in developed countries and from 1.5 to 4.6 in developing countries during 1991-2014. Exploiting the rapid expansion in debt markets, the rest of this section describes the extent to which firms issue bonds and syndicated loans in domestic and international markets at different maturities, highlighting how different markets provide different types of financing.

3.1. Corporate Bonds versus Syndicated Loans

The (value) weighted average maturity of the debt issued over the entire sample period is 6.6 years. But there is significant heterogeneity across debt instruments and countries. Specifically, corporate bonds provide significantly longer maturities than syndicated loans in developed countries: the weighted average maturity is 10.1 years for corporate bonds and 4.9 years for syndicated loans (Table 1). A similar pattern emerges from the cumulative distribution functions (CDFs) of the issued debt. For every given maturity, the accumulated share of syndicated loans issued with shorter maturities is greater than the accumulated share of bonds issued (Figure 2, Panel A). For example, about 37 percent of the bonds issued have a maturity of 6 years or shorter, in sharp contrast to the 80 percent of the syndicated loans. In developing countries, the differences in the weighted average maturities between bonds and syndicated loans are not as marked as those in developed countries: 7.2 years for corporate bonds versus 7.6 years for syndicated loans. Thus, the CDFs of bonds and syndicated loans issued by firms in these countries are not as different from each other (Figure 2, Panel B).

To test whether the differences in the maturity at which firms issue bonds and syndicated loans are statistically significant, we regress the maturity of debt issuances (in years) on a dummy variable that equals one when the debt issuance is a bond and zero otherwise (a syndicated loan). All regressions include either year dummies to control for differences in maturities that reflect changing global market conditions or country-year dummies to control for time-varying country-specific

factors. Alternatively, we include firm fixed effects in some specifications to assess whether the maturity of debt issuances also varies consistently across markets when issued by the same firm. Moreover, there is significant variance in the use proceeds from debt issuances, especially in the case of syndicated loans. For example, firms in developing countries have a more intensive use of syndicated loans for project finance (longer-term debt typically funding infrastructure projects) than those in developed countries.[13] Hence, as controls, the regressions also include dummy variables for the different uses of proceeds.

The regression estimates confirm that corporate bonds have longer maturity than syndicated loans (Table 2). The differences are statistically significant not only for developed countries, but also for developing countries once country-year and/or firm fixed effects are included in the regressions. For example, the estimates indicate that bond issuances are, on average, 4 to 5 years longer than syndicated loans in developed countries and between 1 and 2 years longer in developing countries, depending on the regression specification.

3.2. Domestic versus International Markets

With increasingly integrated financial markets, the distinction between domestic and international debt markets is important. Because foreign capital raising activity is often located in the world's most developed financial centers, firms (especially those from developing countries) might be able to obtain financing in international markets at terms not available domestically. In fact, most of the international debt issuances take place in a few developed countries. International bonds are typically issued in the euro area (61 percent of all international issuances), the United States (16 percent), or the United Kingdom (8 percent). The largest volumes of loans are also originated in syndicates led by banks from

[13] Syndicated loans for project finance have an average maturity of 12 years and account for about 35 percent of all syndicated loans contracted by developing countries, but only 5 percent for developed countries.

a few developed countries, mainly the United States (31 percent of international issuances) and the economies of Western Europe (36 percent).

International markets account for a significant share of debt financing. Developed and developing countries issued internationally 38 percent and 30 percent of the total amount raised through bonds between 1991 and 2014 (Figure 2, Panel C). In syndicated loan markets, most of the financing entails a foreign bank as a lead arranger: over 66 (76) percent of the total amount raised by developed (developing) countries over the same period.

Substantial differences in maturity arise when distinguishing the market location where bonds and syndicated loans are issued. Firms from developing countries issue bonds in foreign markets at longer terms than in domestic markets (9.9 years versus 6.1 years on average) (Figure 2, Panel C). The opposite occurs in syndicated loan markets, where firms from developing countries borrow at longer maturities domestically than internationally (11.6 years versus 6.3 years on average). These patters reverse for developed countries, but the differences in maturity across markets are significantly smaller. Bonds issued by firms from developed countries are on average 1.8 years shorter in international than in domestic markets, whereas syndicated loan issuances are slightly longer (by almost 1 year) in international markets compared to domestic ones.

Overall, when contrasting the average maturity at issuance in the four markets (domestic and international bonds and syndicated loans), the following pattern emerges. In developed countries, domestic and international bonds have significantly longer maturities (about 4 years or more) than domestic and international syndicated loans. On the other hand, in developing countries, international bonds and domestic syndicated loans are longer-term instruments than domestic bonds and international syndicated loans (about 4 years or more). The CDFs of the debt issuances across the different maturities show a similar pecking order across the different markets (Figure 2, Panels A and B).

To assess more formally the statistical significance of the differences in debt maturity across the four different markets, we regress the maturity of debt issuances (in years) on: a dummy variable that equals one for international syndicated loans, a dummy variable that equals one for domestic bonds, and dummy variable that equals one for international bonds. The omitted market is domestic syndicated loans. Akin to the analysis in the previous subsection, we control for country-year and/or firm fixed effects, as well as for the use of proceeds. Because the type of rate (floating or fixed) and the currency denomination of the issuances could explain part of the observed differences in maturities between domestic and international issuances, we also include dummy variables for floating rate debt and for debt issuances denominated in foreign currency. By including these controls, we ensure (among other things) that the finding that developing country firms issue bonds abroad at relatively longer maturity than domestically does not simply reflect that issuances abroad are denominated in foreign currency. This is important because bonds denominated in hard currencies tend to have longer maturities as they do not embed the local currency risk.

The estimations confirm that debt issuances have different maturities depending on the market where they take place (Table 3). The regressions for developed countries show that domestic and international bonds have longer maturities (up to 4 years) than domestic and international syndicated loans. The regressions for developing countries consistently show that international bonds and domestic syndicated loans are longer term than domestic bonds and international syndicated loans. The exact pecking order of the different markets varies slightly across specifications. Once we control for the use of proceeds, the terms of the debt issued (rate and currency), and firm fixed effects, international syndicated loans appear as the shortest-term type of instrument, followed by domestic bonds (about 0.8 years longer), domestic syndicated loans (about 1.4 years longer), and international bonds (3 years longer). The specifications with firm fixed effects indicate that the differences in

maturity across different markets are not solely driven by the composition of firms, as the differences in maturities are significant within firms across markets.

4. Debt Financing and Maturity during Crises

To the extent that different markets provide financing at different maturities, the time-varying capital raising activity in each market and the ensuing changes in debt composition would be reflected in firm- and country-level maturities. In this section, we examine how the relative importance of each market in terms of financing varies around market-specific shocks, as well as its effects on the borrowing maturity at the country level (all firms and all markets), at the market level (domestic and international bonds and syndicated loans), and at the firm level. As shocks, we use the 2008-09 GFC and domestic banking crises. We focus on three sub-periods around the GFC: the "pre-crisis" (2003-07), the "crisis" (2008-09), and the "post-crisis" (2010-14). We use the 1991-2010 period to analyze domestic banking crises.

The assessment of the overall effects of the GFC on developed and developing countries provides a coarse, but conservative set of average effects across these two groups of countries as not all countries within these groups were necessarily hit across markets in the same manner. Domestic banking crises, on the other hand, consist of a more homogenous set of shocks, thus offering a more precise identification of where crises occurred and how firms reacted.

4.1. Composition of Debt Financing during the GFC

The GFC suddenly hit hard the banking sector of major developed countries and rapidly spread throughout the global financial system. Although international banks were at the core of the crisis, this unique shock was exogenous to most countries and firms. It affected the volume and composition of new debt financing. In particular, the expansion in debt issuance activity temporarily halted during 2008-09. Whereas the total amount of debt issued grew at an average annual rate of about 18 percent

in developed economies during 2003-07, it fell by 38 percent between 2007 and 2008-09. Developing country debt issuance, which grew at a rate of 41 percent per year during 2003-07, declined 20 percent between 2007 and 2008-09. This contraction in primary debt markets reflects two important changes in the composition of the issued debt.[14]

First, corporate debt shifted away from bank debt toward bonds. In fact, the standstill in capital raising activity during the GFC was a consequence of the collapse in the syndicated loan markets. The issuance of corporate bonds by non-financial firms increased during this period, partially compensating for the overall decline in syndicated loan financing (Figure 1). For example, total borrowing in syndicated loan markets declined by around 52 and 47 percent between 2007 and 2008-09 in developed and developing countries, respectively, whereas the issuance of corporate bonds expanded by 20 and 49 percent over the same period. Such a negative correlation between the growth rate in the number of issuances of corporate bonds versus those of syndicated loans is part of a more general pattern. The former typically increased when the latter declined during the 2003-2014 period (Figure 3).

Second, in developing countries the composition of corporate debt also shifted away from international toward domestic markets during the GFC. Cross-border syndicated loans to developing countries declined by 61 percent between 2007 and 2008-09, whereas the issuance of domestic syndicated loans increased by 80 percent over the same period. Domestic syndicated loans did not fully compensate for the decline in cross-border lending, partly because they constituted only a small fraction of the total financing volume. Analogous patterns occurred in corporate bond markets.

[14] For robustness, following Adrian et al. (2013), we alternatively restrict the sample of debt transactions to the financing of "real activities." That is, we exclude bonds and syndicated loans for "acquisition financing and LBO," "refinancing and capital structure management," and other issuances whose purposes cannot be categorized as real investment. Overall, of the 52,473 corporate bonds and 118,944 syndicated loans issued during 2003-14, about 83 percent of the bond issuances and 56 percent of the syndicated loan issuances were for real investment purposes. The results based on this restricted sample are qualitatively similar to the reported ones.

Domestic bond issuances increased by 105 percent between 2007 and 2008-09, compensating for a decline of 35 percent in foreign bond markets over the same period. That is, a more dynamic domestic bond market activity underpinned the overall increase of bond issuances by developing countries during the GFC. Overall, as international markets were hit by the shock to global banking, debt issuance activity for developing countries moved toward domestic bond and syndicated loan markets. In contrast, developed countries witnessed a decline in the issuance of both domestic and international syndicated loans, in parallel with an increase in both domestic and international bond issuances.

From these aggregate patterns, it is difficult to ascertain whether the changes in debt composition during the GFC were driven by within-firm market substitutions, compositional changes in the set of firms raising new debt, or both. It is also challenging to determine whether such market switches were caused by shifts in the supply- or demand-side of capital.[15] To address these issues, we analyze whether the reported shifts in capital raising activity across different debt markets also occurred at the firm level. Our methodology is similar to that in Adrian et al. (2013) and Becker and Ivashina (2014). Specifically, we focus on the set of firms with a revealed demand for debt during the GFC and study their choice of debt instrument. A move away from the crisis-hit market to demanding capital in a different market would be consistent with a negative credit supply shock in the former.

To conduct the analysis, we estimate discrete choice logit models focusing on the firms' decisions to issue bonds versus syndicated loans in domestic or international markets in the aftermath of the GFC vis-à-vis the pre-crisis period (2003-2007). The alternative dependent variables are: (i) a debt choice indicator that equals one if a firm issues a bond and zero if it issues a syndicated loan in a given quarter; or (ii) a debt choice indicator that equals one if a firm issues debt domestically and zero

[15] Several papers document the contraction in syndicated loans in developed countries during the GFC. The research points to a combination of demand- and supply-side shocks: firms scaled back expansion plans during the recession that followed the GFC, reducing the demand for syndicated loans, while banks dealt with deleveraging pressures and tightened regulations that pushed down the supply curve (Ivashina and Scharfstein, 2010; Chui et al., 2010).

if it issues debt abroad in a given quarter for a given debt instrument.[16] For quarters in which a firm has issuances of both bonds and syndicated loans, we set the debt choice indicator equal to one if the amount raised through bonds exceeds that raised through syndicated loans. A similar rule is applied for the domestic versus international issuances within bond and syndicated loan markets. Logit regressions with country fixed effects estimate changes in the value of debt transactions within each country, whereas those with firm fixed effects provide evidence on whether individual firms switched between bonds and syndicated loans (or between domestic and international markets) in the aftermath of the GFC. The use of firm fixed effects addresses the concern about compositional changes in the set of firms raising debt financing.

The regression results indicate that the issuance of corporate bonds relative to syndicated loans increased during the GFC in both developed and developing countries (Table 4, Panel A). For example, controlling for country fixed effects, the propensity to issue bonds relative to syndicated loans increased by around 3 percentage points (p.p.) in developed countries and by 5 p.p. in developing countries during 2008-09 relative to the pre-crisis average. The substitution away from syndicated loans toward bonds also took place within firms, indicating that the patterns observed are not solely driven by different firms issuing different types of debt at different points in time. For example, conditional on firms' actual debt issuance, the probability of issuing bonds to obtain new financing (relative to syndicated loans) increased by 5 p.p. for firms in developed countries and by 10 p.p. for firms in developing countries during the GFC period relative to the pre-crisis. These changes in the probabilities of issuance imply a 21 percent increase in the bond-syndicated loan debt ratio during the crisis vis-à-vis the pre-crisis average for firms in both developed and developing countries.

[16] For these estimations, we aggregate the transaction-level data to the firm-quarter level. Firm-quarter observations without capital raising activity are excluded from the sample by construction. For robustness, we also conduct the analysis by aggregating transaction-level data at the firm-monthly level and at the firm-daily level. The results are qualitatively similar to the ones reported here.

Furthermore, there is some persistence in these effects as the propensity to issue bonds with respect to syndicated loans in the post-crisis period (2010-2014) also increased compared to the pre-crisis period.[17]

The estimations also provide evidence of an increase in the use of domestic markets relative to international markets during the GFC, especially in developing countries (Table 4, Panels B and C). For these countries, the probability of issuance in domestic bond and syndicated loan markets relative to international ones increased by 9 p.p. and 31 p.p. during the GFC compared to the pre-crisis period. The within-firm estimations for developing country firms also show market movements away from international markets toward domestic ones, indicating that the estimations at the country level are not driven entirely by shifts in the composition of issuing firms. For example, conditional on firms' issuing corporate bonds during the GFC, the probability of issuing domestically (relative to internationally) increased by 25 p.p., a 35 percent increase over the pre-crisis probability. Similarly, the within-firm estimations show a 22 p.p. increase in the probability of firms issuing syndicated loans domestically rather than internationally during the GFC relative to the pre-crisis period. For developing countries, most of these changes in issuance probabilities persisted through the post-crisis period of 2010-14. For developed countries, the regression results also indicate an overall increase in the propensity to issue in domestic debt markets, but this movement did not take place within firms.

Overall, these results are consistent with a negative shock in the supply of credit from global banks active in international syndicated loan markets during the GFC, prompting firms with positive

[17] During 2011-13, the shock caused by the GFC could have intensified because of the financial stress experienced by European banks due to the sovereign debt crisis affecting several European countries (Feyen and Gonzalez del Mazo, 2013; Laeven and Tressel, 2014). Moreover, non-conventional monetary policies seem to have prompted the issuance of corporate bonds worldwide during the post-crisis period (Shin, 2013; Lo Duca et al., 2016). Both types of events might be behind the increasing propensity to issue bonds with respect to syndicated loans during the post-crisis period.

funding needs to move away from the affected banks toward alternative markets.[18] The ensuing new debt financing would thus move away from syndicated loans toward bonds in developed countries, and from international syndicated loans toward both bonds and domestic syndicated loans in developing countries. These movements across markets occurred both at the aggregate and firm level.

4.2. Debt Maturity during the GFC

Building on the finding that the relative importance of each market for firm financing changed during the GFC, we examine how these compositional changes in debt financing are reflected in firm- and country-level maturities. Starting with aggregate patterns, the weighted average debt maturity remained relatively stable (even increased in developing countries) during the GFC (Figure 4, Panel A). This aggregate debt maturity reflects over-time variations in both maturity within each individual debt market and debt composition across markets (within and across firms). Hence, underlying these trends are several distinct patterns in debt markets in developed and developing countries.

In developed countries, the average maturity of debt at issuance in both bond and syndicated loans markets (domestically and abroad) declined during the GFC (Figure 4, Panels B and C). However, the share of debt financing raised with bonds (which have significantly longer maturity than syndicated loans) increased. The two effects compensated for each other, yielding a fairly constant average debt maturity when comparing the pre-crisis and crisis periods. Moreover, these effects were short lived and reversed in the post-crisis period to their pre-crisis levels.

[18] Erel et al. (2012) propose an alternative explanation for the counter-cyclical pattern of bond issuance. They argue that, in times of credit tightening, bond financing becomes more attractive to some high-quality firms as investors display "flight to quality." However, Becker and Ivashina (2014) argue that the increasing bond financing during periods of credit tightening occurs without a decline in the price of bonds relative to syndicated loans, which would be necessary for this alternative explanation. Therefore, the increase in bond issuances relative to syndicated loans during the crisis seems more consistent with firms substituting one type of debt financing for another, rather than just taking advantage of cheaper bond markets. The new evidence of firms moving away from international markets toward domestic markets in developing countries can also be interpreted as a retrenchment by global banks.

In developing countries, the average maturity of the total debt issued increased in the aftermath of the GFC. Whereas the maturity of bonds declined (by about 2 years), the maturity of syndicated loans increased (by about 3 years) during the GFC. The decline in bond maturity occurred in both domestic and international markets (Figure 4, Panel B). For syndicated loans, however, the greater propensity to issue in the longer-term domestic markets explains the increase in maturity at issuance (Figure 4, Panel C). Again, the movement toward the markets with longer maturity during the GFC explains the increase in aggregate borrowing maturity.

To formally disentangle the effects on debt maturity at issuance driven by changes in market composition from within-market effects, we estimate panel regressions of debt maturity during 2003-14 on a dummy variable that equals one for the crisis period of 2007-08 (and zero otherwise) and another dummy variable that equals one for the post-crisis period of 2009-14 (and zero otherwise). We estimate these regressions both across and within debt markets, including either country fixed effects (to study within-country patterns) or firm fixed effects (to study within-firm variations).

The estimations for developed countries are consistent with the aggregate patterns displayed in the figures. The results show that, even though the maturity of issuances of bonds and syndicated loans shortened during the GFC relative to the pre-crisis period, the overall debt maturity did not significantly change (Table 5, Panel A).[19] For example, the estimates with country fixed effects show that corporate bond and syndicated loan maturities declined by around 15 and 10 months during the GFC, respectively. However, the composition of debt shifted toward the longer-term bond financing away from syndicated loans. The share of bonds in total debt increased from 22 percent in the pre-crisis period to 37 percent during the GFC period (Table 5, Panel B). Consequently, the overall debt

[19] For simplicity, the results reported in Table 5 show the estimations for total debt, bonds, and syndicated loans. Appendix Table 2 shows the estimations when distinguishing between domestic and international markets. The results show that the maturity of bond and syndicated loan issuances shortened in both domestic and international markets during the GFC relative to the pre-crisis period.

maturity did not significantly shorten over this period. The regressions with firm fixed effects show similar patterns. Debt maturity remained stable within firms in developed countries, even though the maturity of bond and syndicated loan issuances declined 10 and 8 months between 2003-07 and 2008-09.

The regression estimates for developing countries also show that borrowing maturities remained stable during the GFC vis-à-vis the pre-crisis period (Table 5). The stability in the overall debt maturity is explained by changes in the issuance composition between bonds and syndicated loans and between domestic and international markets. As firms moved away from syndicated loans toward bonds, which have higher average maturity, overall debt maturity (based on the total amount of debt issued) remained stable during the GFC, even though the maturity within bond markets declined by an average of 13 months. Furthermore, the estimates with country fixed effects show that syndicated loan maturities increased during the GFC. This effect is the result of a higher propensity to use domestic (rather than international) markets, which are of longer maturity.[20] Indeed, the share of domestic syndicated loans in total debt issued increased from 6 percent during the pre-crisis years to 17 percent during the GFC, whereas the share of international syndicated loans declined from 63 to 32 percent over the same period. The within-firm estimations also show a stable overall average debt maturity amid significant declines in corporate bond maturities.

4.3. Domestic Banking Crises

Expanding the previous analysis, we examine the time-varying capital raising activity in each debt market and the ensuing changes in both debt composition and maturity during domestic banking crises. To study the firms' decisions to issue bonds versus syndicated loans in domestic and international markets following domestic banking crises, we estimate discrete choice logit models for

[20] Appendix Table 3 reports estimations distinguishing between domestic and international issuances.

the 1991-2010 period using a methodology analogous to that employed for the analysis of the GFC.[21] The dependent variables are: (i) a debt choice indicator that equals one if a firm issues a bond and zero if it issues a syndicated loan in a given quarter; or (ii) a debt choice indicator that equals one if a firm issues debt domestically and zero if it issues debt abroad in a given quarter for a given debt instrument.[22] We estimate these logit regressions with year dummies and either country fixed effects or firm fixed effects. Most of the domestic banking crises in developing countries occurred during the 1990s, when the capital raising activity by this group of countries was much scarcer. Hence, we pool together developed and developing countries in the estimations.[23]

The regression results show that the issuance of corporate bonds relative to syndicated loans increased during domestic banking crises vis-à-vis non-crisis periods (Table 6, Panel A). For example, controlling for country fixed effects, the propensity to issue bonds relative to syndicated loans during domestic banking crises increased by 14 p.p. relative to non-crisis periods, implying a 34 percent increase in the bond-loan debt ratio. This substitution also takes place within firms, indicating that these patterns are not entirely driven by changes in the composition of issuing firms. For example, the within-firm probability of issuing bonds (relative to syndicated loans) to obtain new debt financing increased by 15 p.p. during domestic banking crises (a 37 percent increase in the bond-syndicated loan debt ratio).

The estimations also show an increase in the propensity to raise capital through bonds and syndicated loans in international markets rather than domestically during domestic banking crises. For example, the probability of issuing syndicated loans in domestic markets relative to international

[21] In this case, non-crisis periods comprise all country-years without domestic banking crises.
[22] Following the same methodology of the previous estimations, for quarters in which a firm has issuances of both bonds and syndicated loans, we set the debt choice indicator equal to one if the amount raised through bonds exceeds that raised through syndicated loans. A similar rule is applied for the domestic versus international issuances within bond and syndicated loan markets.
[23] The sample for the two sets of countries together entails 111,836 debt issuances by 40,561 firms from 43 countries.

markets declined 18 p.p. during domestic banking crisis periods relative to non-crisis periods. Once more, the within-firm estimations show market movements away from domestic bonds and syndicated loans toward international ones.

Some countries experienced domestic banking crises during the GFC period (2008-09).[24] For robustness, we conduct two alternative estimations: (i) we restrict the sample to the 1991-2007 period, thus excluding the GFC and post-GFC periods; and (ii) we exclude from the analysis countries that experienced a domestic banking crisis during the GFC. Both analyses provide qualitatively similar estimates on the switches from syndicated loans to bonds and from domestic to international syndicated loans (Table 6, Panels B and C).

Overall, these results are consistent with a negative shock in the supply of domestic credit, causing firms to change the composition of their new debt financing away from the affected domestic banking system. The ensuing new debt financing composition thus reflects movements away from domestic syndicated loans toward international ones and toward bond markets. Importantly, these switches during domestic banking crises went in the opposite direction than the ones shown for the GFC. During domestic banking crises, firms moved away from the domestic banks, whereas during the GFC, firms moved away from international banks in crisis.

As in the case of the GFC, the compositional effects we observe in debt financing around domestic banking crises are reflected in firm- and country-level debt maturities. To disentangle the effects on debt maturity at issuance driven by changes in the debt market composition from the within-market effects, we conduct an analysis analogous to that in Section 4.2. We estimate panel regressions of debt maturity during 1991-2010 on a dummy variable for periods of domestic banking crises (equal

[24] According to Reinhart and Rogoff (2009), nine countries experienced domestic banking crises during the GFC: Iceland, the Netherlands, Portugal, the Republic of Ireland, the Russian Federation, Spain, Switzerland, the United Kingdom, and the United States.

to zero during tranquil times), year dummies, and either country or firm fixed effects. The results show that overall debt maturity increased slightly (about 4-5 months) during domestic banking crises relative to non-crisis periods, even though the maturity of syndicated loans declined over the same period (Table 7).[25]

5. Differences across Firms

The previous section shows that some firms actively change their debt financing composition when crises hit specific markets, mitigating the negative shock. In this section, we examine these "switchers" versus "non-switchers" (the rest of the firms).[26] In particular, we study their size and the evolution of their market share. We then compare differences in their borrowing behavior and financing conditions. Lastly, we analyze the extent to which firm movements across markets have implications for the composition of firms obtaining financing during crises.

Switching issuers are large corporations capturing a substantial fraction of the capital raising activity. These firms issued about 66 percent of the total debt raised in developed countries and 46 percent in developing countries before the GFC (during 2003-07). But they were relatively few as they accounted for only 26 percent and 19 percent of the number of issuing firms in developed and developing countries over the same period (Table 8, Panels A and B). Similarly, switching issuers in

[25] Appendix Table 4 reports estimations distinguishing across the four debt markets. The results show that the maturity of domestic syndicated loans declined during banking crises, while domestic and international bond maturities remained stable.

[26] For the GFC, we define switching issuers as the firms that changed their debt issuance composition in 2008-2014 relative to 2003-2007 (as identified by the logit regressions with firm fixed effects in Table 4). Non-switching issuers are the rest of the firms in the sample, comprising firms that only issued debt up to 2008 and firms that issued the same type of debt before and after the GFC. For domestic banking crises, we adopt an analogous definition. Switching issuers are the firms that changed their debt issuance composition during crisis years relative to non-crisis years (as identified by the logit regressions with firm fixed effects in Table 6). Non-switching issuers are the rest of the firms in the sample and encompass two types of firms: those that issued the same kind of debt before and during domestic banking crises and those that only issued debt in non-crisis periods. By construction, switching issuers issued in more than one debt market over the sample period, whereas the vast majority of non-switchers (86 and 96 percent of the non-switching firms for the GFC and domestic banking crises) issued in only one debt market over the full sample period.

domestic banking crises captured 75 percent of the total debt issued, but accounted for 24 percent of total issuers during non-crisis periods (Table 8, Panel C). The firm size distribution (FSD) of switching issuers during the GFC is to the right of the FSD of non-switchers (Figure 5, Panel A).[27] The same pattern applies to the FSD of switching and non-switching firms during domestic banking crises. In fact, the median size of switching issuers ($287 million) is more than three times larger than that of non-switchers (Figure 5, Panel D). Overall, the largest firms were the ones that switched markets, tapping different sources during the GFC and domestic banking crises.

The differences in size between switching and non-switching issuers seem to come, to a large extent, from the fact that firms with access to international markets are substantially larger than those accessing domestic markets. Non-switching firms accessing domestic syndicated loan or domestic bond markets have a median size of $55 and $59 million, whereas the size of the median international syndicated loan and bond issuer is $190 and $160 million, respectively. Indeed, most switching firms have access to international markets: 88 percent of these firms issued debt internationally at least once over the sample period. Thus, it is not surprising that the FSD of switching firms is similar to the FSD of non-switching issuers in international markets (Figure 5, Panel B). In contrast, switching issuers comprise substantially larger firms than non-switching domestic issuers. The FSD of switching firms during crises is to the right of the size distribution of non-switchers in domestic bond markets and domestic syndicated loan markets, both of which have fatter left tails (Figure 5, Panel C).

Differences between switching and non-switching issuers are also observed in their borrowing behavior and financing conditions. Switching issuers were capable of partly compensating for the decline in financing during crises by moving across markets, which also affected their borrowing

[27] Similar patterns are observed when splitting the sample between developed and developing countries.

maturity. Non-switching issuers often experienced significant declines in financing and, if able to obtain credit, shorter maturities.

Regarding the dynamics of borrowing maturities, the patterns for switching issuers are in line with the overall results previously presented. That is, the debt maturity at issuance for switching issuers remained relatively stable during crises. In contrast, the borrowing maturity declined on average for non-switchers (Figure 6). Panel regressions with year and firm fixed effects confirm these patterns.[28] The estimations for developed countries show that the average maturity of total debt issued by switching firms remained stable during the GFC vis-à-vis the pre-crisis period, despite declines in borrowing maturities in both bond and syndicated loan markets (Table 9, Panel A). Similarly, the overall debt maturity for switching firms remained stable during the GFC in developing countries relative to the pre-crisis period, even though corporate bond maturities largely shortened (Table 9, Panel B). Non-switching issuers, on the other hand, tended to experience declining debt maturities during the GFC period, akin to the patterns for each individual debt market. During domestic banking crises, the overall debt maturity at issuance increased for switching firms, while it declined for non-switching issuers of syndicated loans (Table 9, Panel C).

Regarding the use of debt markets for new financing, non-switching issuers were hit harder than switching issuers by the overall credit decline during crises. For example, the average number of debt issuances per year by non-switching firms declined by 57 percent and 49 percent in developed and developing countries during the GFC (Figure 6, Panels A and B). In contrast, the number of debt issuances by switchers (which moved away from shock-hit markets toward alternative markets) declined only by 12 percent in developed countries and increased by 7 percent in developing countries during the GFC. A similar, though less marked, pattern takes place during domestic banking crises.

[28] Regressions with country fixed effects yield results that are qualitatively similar to the ones reported here.

Debt issuances by switchers and non-switchers declined by 15 percent and 22 percent during domestic banking crises relative to non-crisis periods (Figure 6, Panel C).

The reason why new financing for non-switching firms was relatively less affected during domestic banking crises than during the GFC is that, during the former, only non-switchers in domestic markets experienced declining financing (Table 10). Namely, non-switching international issuers increased their issuance activity abroad, possibly avoiding the traditional banking system (Table 10, Panel C). During the GFC, in contrast, non-switching firms experienced lower debt financing not only in the international markets hit by the crisis, but also in the domestic markets where the total amount of credit went up (domestic bond markets in developed countries and domestic bond and syndicated loan markets in developing countries, Table 10, Panels A and B). In fact, the largest decline in financing for non-switchers in developing countries occurred within domestic syndicated loan markets. Meanwhile, the total volume of domestic syndicated loans increased, driven by new financing directed toward the switching issuers moving into that market (Table 10, Panel B).[29]

The patterns of declining financing for non-switching issuers during the GFC are consistent with crowding out effects caused by the move of switching issuers toward domestic markets. Increasing funding for the relatively larger switching firms was accompanied by less funding for the relatively smaller non-switching firms borrowing in domestic debt markets. In fact, the financing share of non-switching firms had its largest decline precisely in those domestic markets that expanded during the crisis (Figure 7). The financing share of non-switching issuers in domestic syndicated loan (bond) markets in developing countries fell from 58 (63) percent during 2003-07 to 9 (45) percent during the GFC. For developed countries, the financing share of non-switching firms in domestic bond markets fell from 21 to 4 percent over the same period. We do not observe analogous effects during domestic

[29] This is the case even when focusing only on the firms that showed an actual demand for credit by issuing domestic syndicated loans before and during the GFC.

banking crises, when switching firms moved toward international markets, dominated in general by large firms. Although the evidence does not rule out the possibility of reduced demand for credit by non-switching domestic firms during the GFC, this had to occur precisely when domestic banking systems in developing countries expanded and directed their funds toward large international firms demanding domestic debt. Namely, non-switchers in domestic markets with a positive demand for credit during the GFC had to compete with larger switching issuers coming back home.

6. Conclusions

This paper provides an assessment of how the use of different debt markets impacts corporate debt financing and maturity. We analyze corporate debt dynamics across four different debt markets (domestic and international bonds and syndicated loans), during both tranquil and financial crisis periods at home and abroad. We focus on (i) the differences in financing and maturity across markets over time, (ii) how firms switch markets when faced with negative shocks, and (iii) the effects of those switches on firm financing and debt maturity.

We find that different markets provide financing at distinct maturities, even for the same firms. Corporate bonds have longer average maturity than syndicated loans, and for developing countries international bonds and domestic syndicated loans are longer term than other debt markets. Differences in the type of instruments issued and market location partly explain differences in debt maturity at the firm and country level. The relative importance of each market over time also has significant effects on debt composition and maturity. During the GFC and domestic banking crises, some firms switched away from the most affected markets (those with shorter maturity in our analysis), compensating for the decline in financing and for the shortening maturity within markets. Thus, debt maturity remained stable during crises at the country level and for those switching firms. But firms that did not switch markets during crises (the non-switchers) typically experienced declining

debt financing and maturity. In fact, non-switchers during the GFC obtained declining debt financing in domestic markets, even when total domestic financing increased. These patterns are consistent with crowding out effects caused by the larger switching firms returning home. Overall, the movements across markets of firms with demand for credit are consistent with credit contractions during crises due to supply-side shocks, with significant effects on debt composition, borrowing maturity, and credit redistribution across firms of different sizes.

The findings in this paper have implications for different discussions related to long- and short-term borrowing and debt markets more generally. First, our paper shows that firms often obtain financing from different sources, highlighting the importance of analyzing the different types of financing jointly. Whereas the study of domestic and foreign bond and syndicated loan markets is by no means complete (firms have other financing options), this paper shows that firms could use these markets as complements to the extent that they provide financing at different terms. Moreover, having access to different markets might allow firms to compensate for fluctuations in particular markets by raising funds elsewhere, as observed during banking crises when bond markets provide some of the "spare tire" function advocated for capital markets (Greenspan, 1999; Levine, et al., 2016). This paper is the first to provide evidence of firm-level debt substitution during crises at the global level across four different debt markets, showing its impact on the financing and maturity of firms and countries. These effects are difficult to gauge when studying debt dynamics within a single market or when analyzing balance sheet information.

Second, understanding the degree of long-term financing is also relevant for the discussions on the possible risks related to the recent expansion in debt markets. The findings in this paper suggest that long-term issuances might have mitigated the increasing leverage and exposure to foreign currency risks discussed in the literature post GFC, at least for the firms that could issue at those longer maturities. But the trade-offs of different types of debt deserve more work going forward.

Third, the policy options on access to finance and crisis management might also need some reconsideration. By analyzing a wider set of debt markets, we find some compensation in the volume of financing across markets and stable borrowing maturities at the firm and country level during crises, even though the maturity of new financing in individual markets typically declines. But the aggregate results must be treated with caution because there is substantial heterogeneity across firms. On the one hand, relatively larger firms seem more capable of cushioning the consequences of crises as they seem able to move abroad when there is a domestic shock or move back home when the crisis is abroad. On the other hand, firms issuing in domestic markets only (typically smaller firms) face declining financing and maturities, and can be crowded out by larger firms returning to domestic markets during shocks in foreign markets. In fact, these crowding out effects could be larger than the ones suggested by the evidence in this paper if we considered a wider set of markets and firms. Hence, policy makers might want to focus on the constrained firms when implementing policies aimed at mitigating the effects of shocks. These policies might be focused not only on promoting more complete markets, but also on providing liquidity to the specific markets and firms under stress.

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

This figure shows the total amount raised per year in equity, corporate bond, and syndicated loan markets by developed countries (Panel A) and developing countries (Panel B). Total debt is the sum of the amount raised through corporate bonds and syndicated loans.

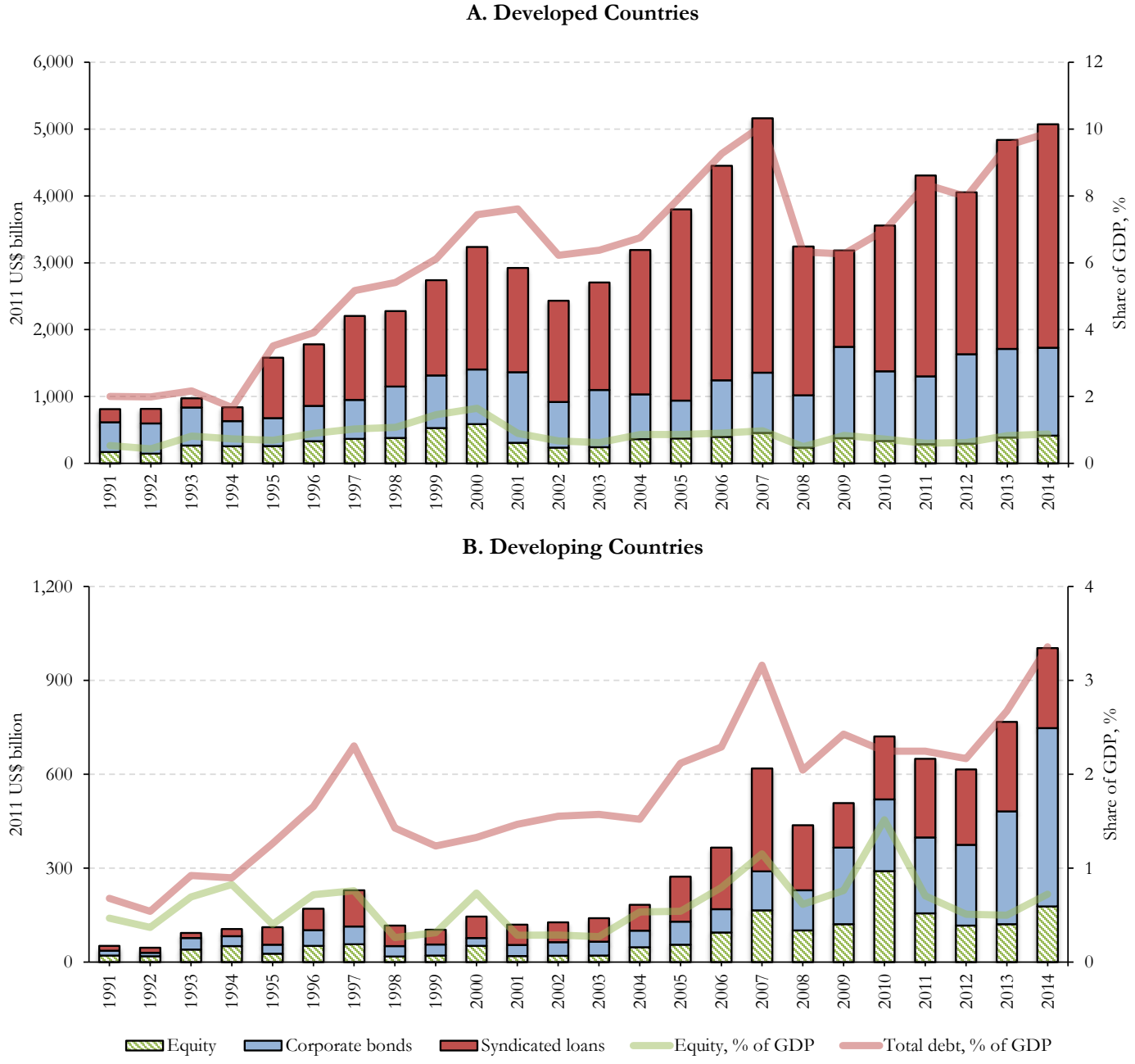
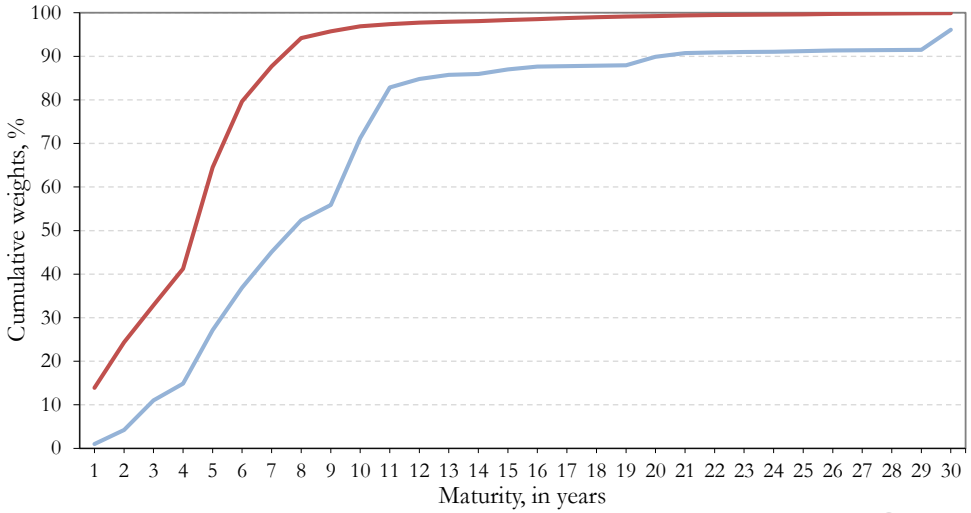
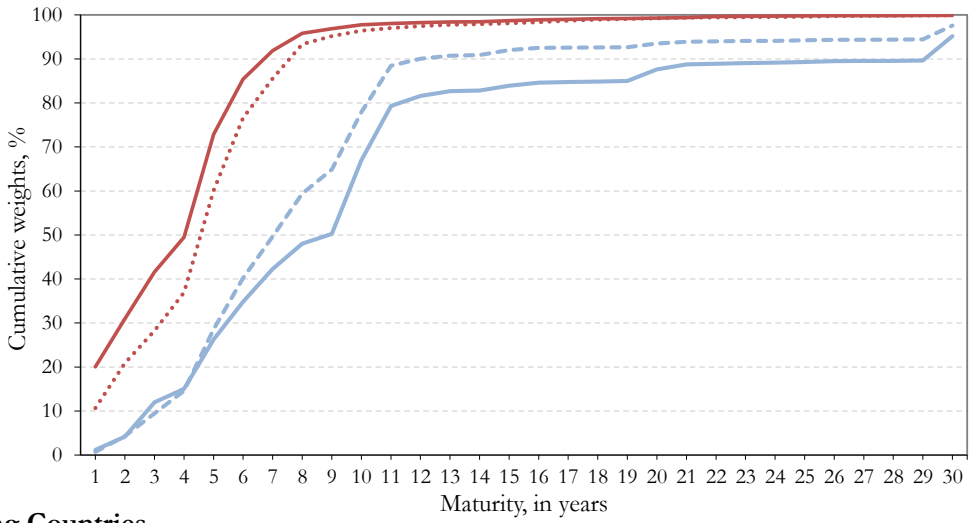


Figure 2. Cumulative Distribution Functions

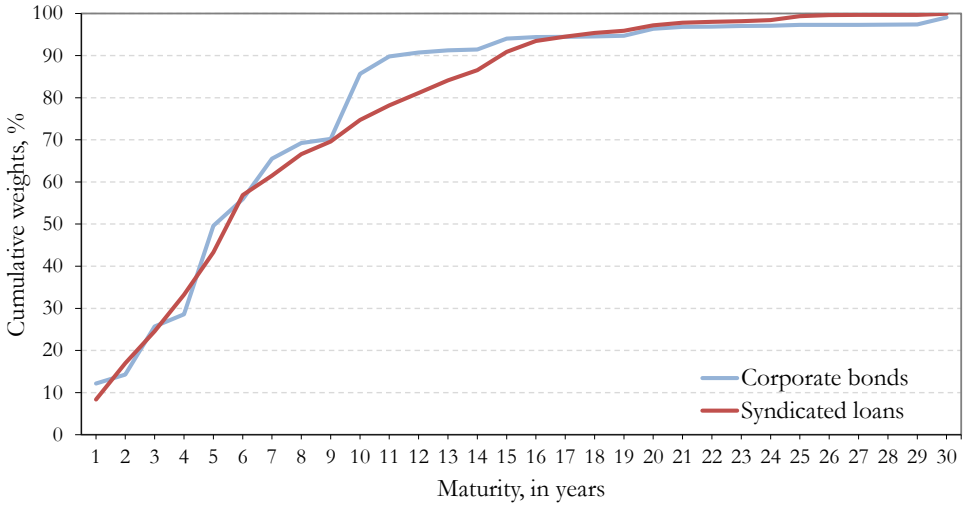
This figure shows the cumulative distribution functions (CDF) of the maturity of newly issued debt during 1991-2014 for developed countries (Panel A) and developing countries (Panel B). The figure shows separately the CDF for domestic syndicated loans, international syndicated loans, domestic bonds, and international bonds. Panel C shows the (value) weighted average maturity (in years) of debt issued in different markets.

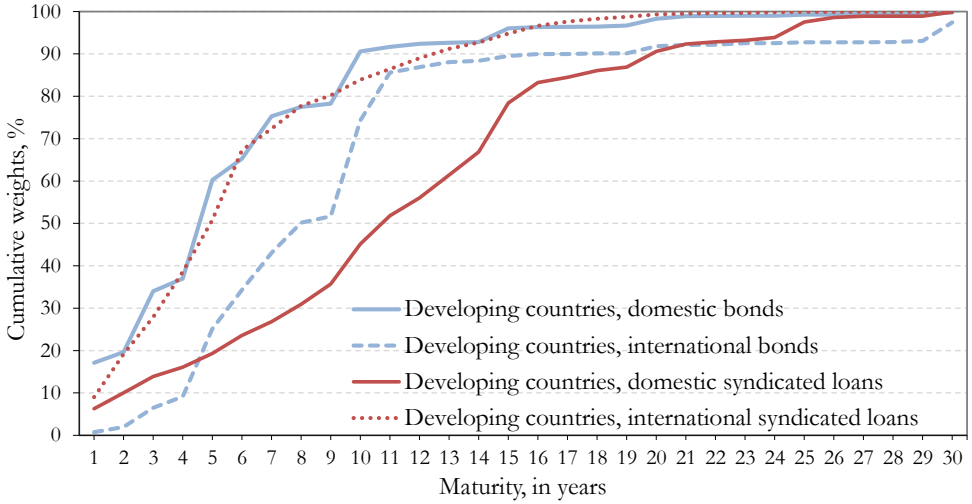
A. Developed Countries





B. Developing Countries





C. Average Maturity

	Total debt			Corporate bonds			Syndicated loans		
Country type	Corporate bonds	Syndicated loans	Share raised with syndicated loans	Domestic	International	Share raised internationally	Domestic	International	Share raised internationally
Developed countries	10.1	4.9	69%	10.8	9.0	38%	4.4	5.2	66%
Developing countries	7.2	7.6	52%	6.1	9.9	30%	11.6	6.3	76%

Figure 3. Changes in Debt Issuance over Time

This figure shows the percent change of the number of issuances per year in corporate bond and syndicated loan markets for developed countries (Panel A) and developing countries (Panel B).

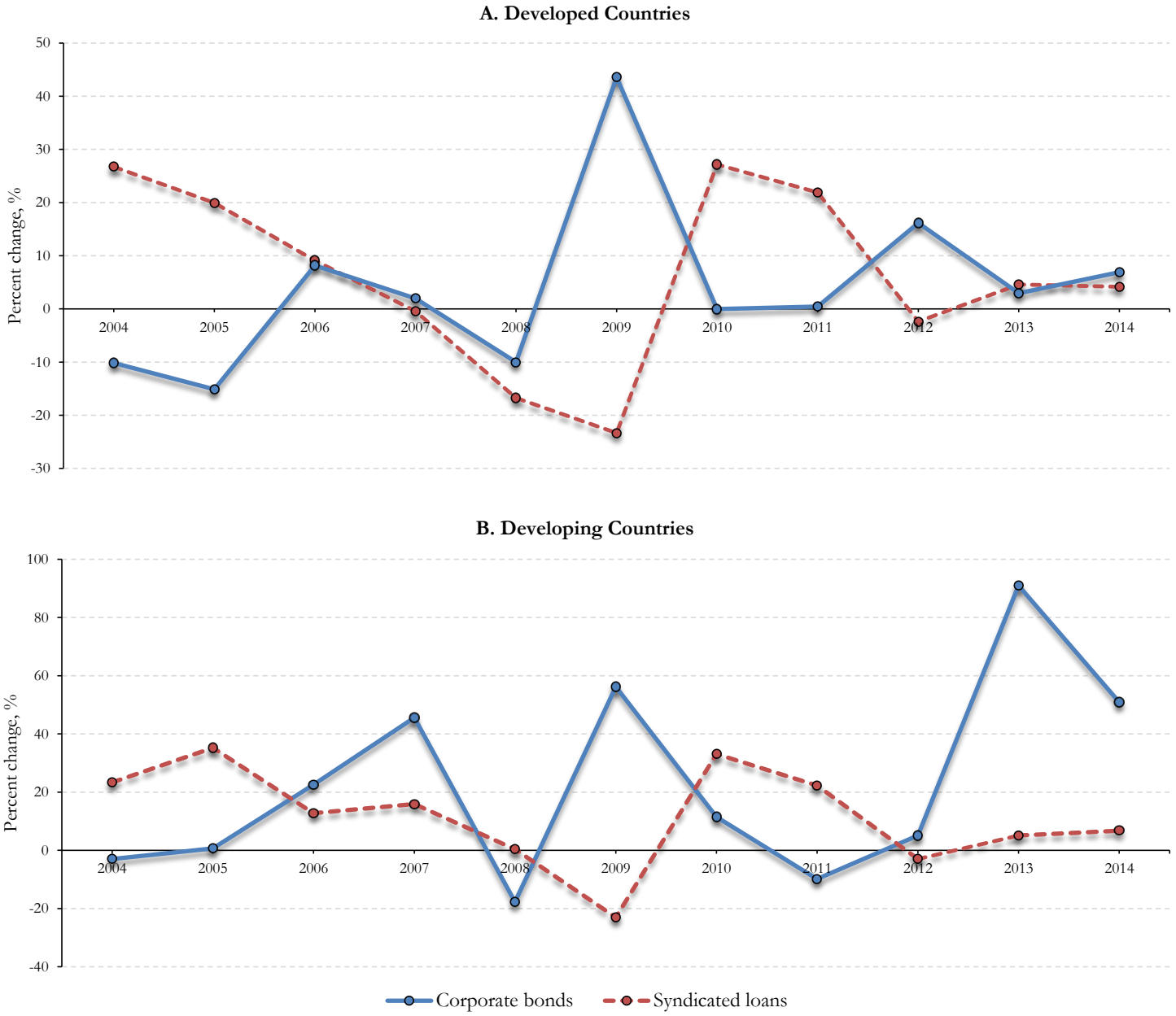


Figure 4. Debt Maturity and Issuance Composition over Time

This figure shows the weighted average debt maturity at issuance per year (left axis) and the share of the total amount raised in different debt markets (right axis) for developed countries and developing countries.

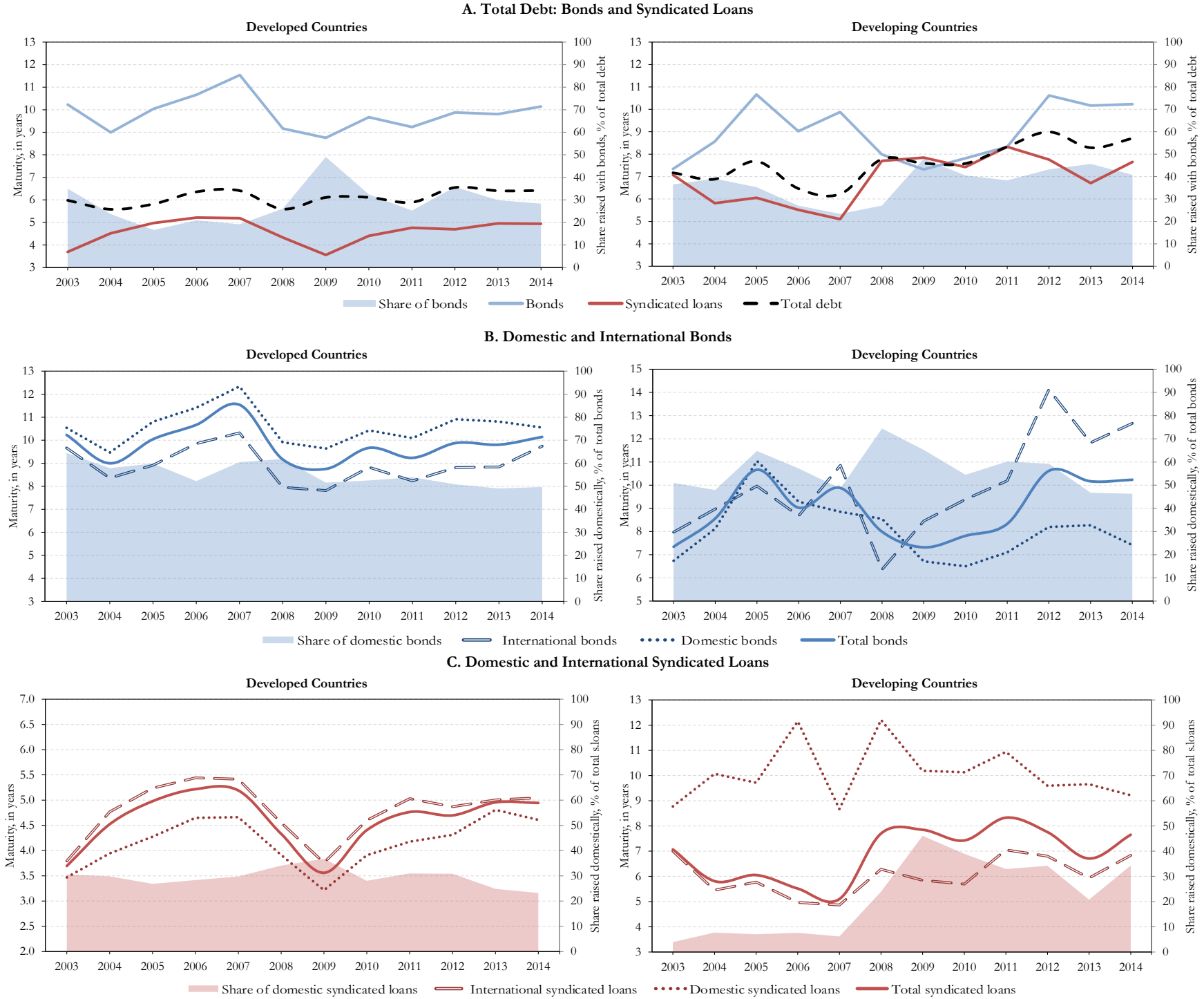
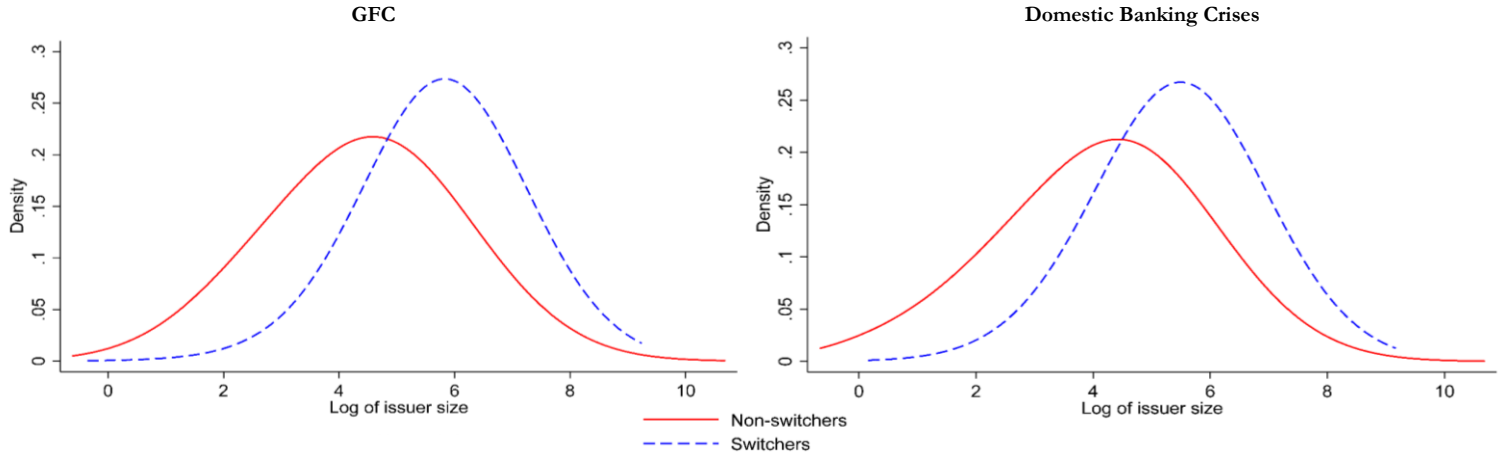


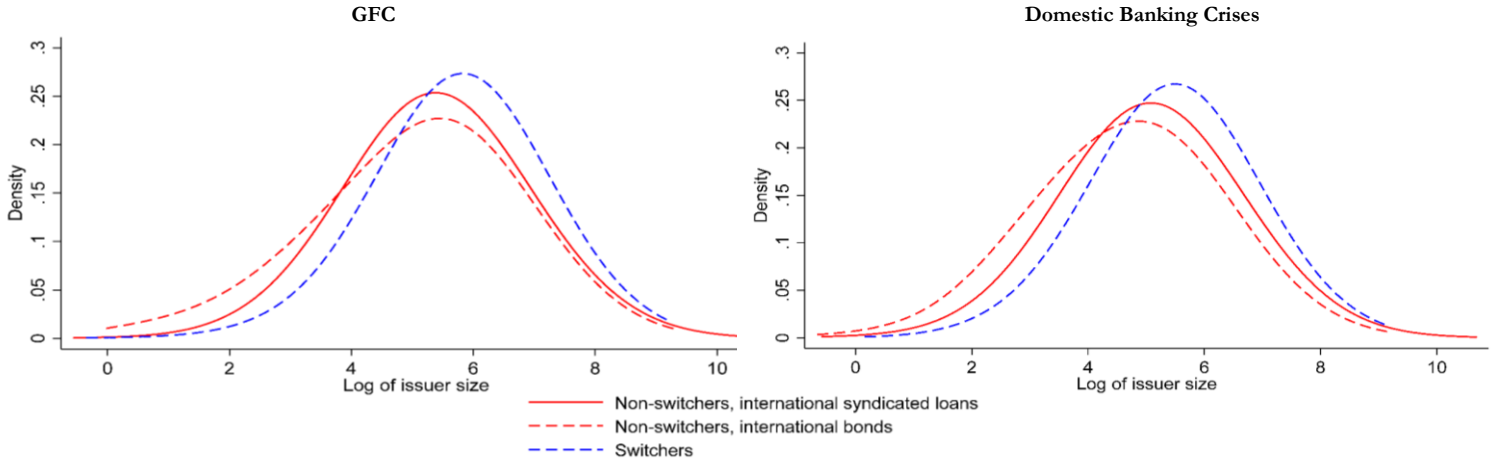
Figure 5. Firm Size Distributions

This figure shows the firm size distributions for switching and non-switching debt issuers. The left-side (righ-side) graphs show the firm size distributions for switchers and non-switchers during the GFC (domestic banking crises). Firm size is measured during non-crisis periods. Panel A shows the distributions for switchers against non-switchers in all markets. Panel B compares switchers with non-switchers in international markets. Panel C compares switchers with non-switchers in domestic markets. Panel D shows the median size of switchers and non-switchers. Densities are estimated using the Epanechnikov kernel function. Firm size is proxied by the average debt transaction measured over all debt issuances during the entire sample period (in 2011 US$ million).

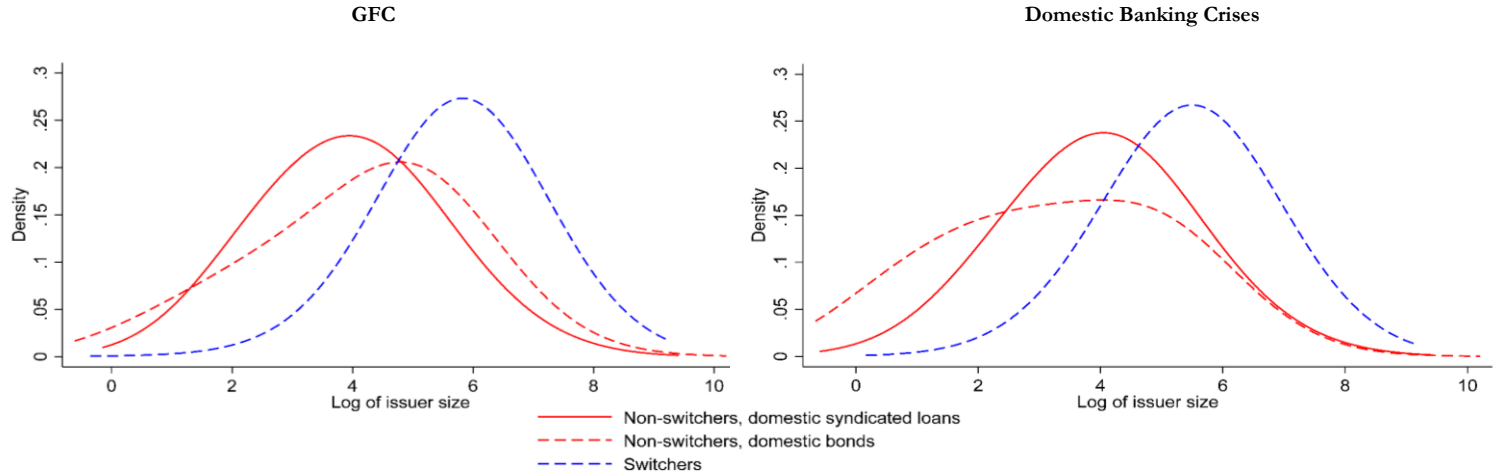
A. Non-switchers versus Switchers



B. Non-switchers in International Markets versus Switchers



C. Non-switchers in Domestic Markets versus Switchers



D. Median Firm Size (2011 US$ Million)

Switchers	Non-switchers	Non-switchers in different markets			
		Domestic bonds	International bonds	Domestic syndicated loans	International syndicated loans
$287	$81	$59	$160	$55	$190

Figure 6. Debt Financing and Maturity Dynamics for Different Types of Issuers

This figure shows the average number of debt issuances per year (left axis) and the weighted average debt maturity (in years) at issuance per year (right axis) for switching and non-switching firms around the GFC (Panels A and B) and domestic banking crises (Panel C). Averages across countries are reported.

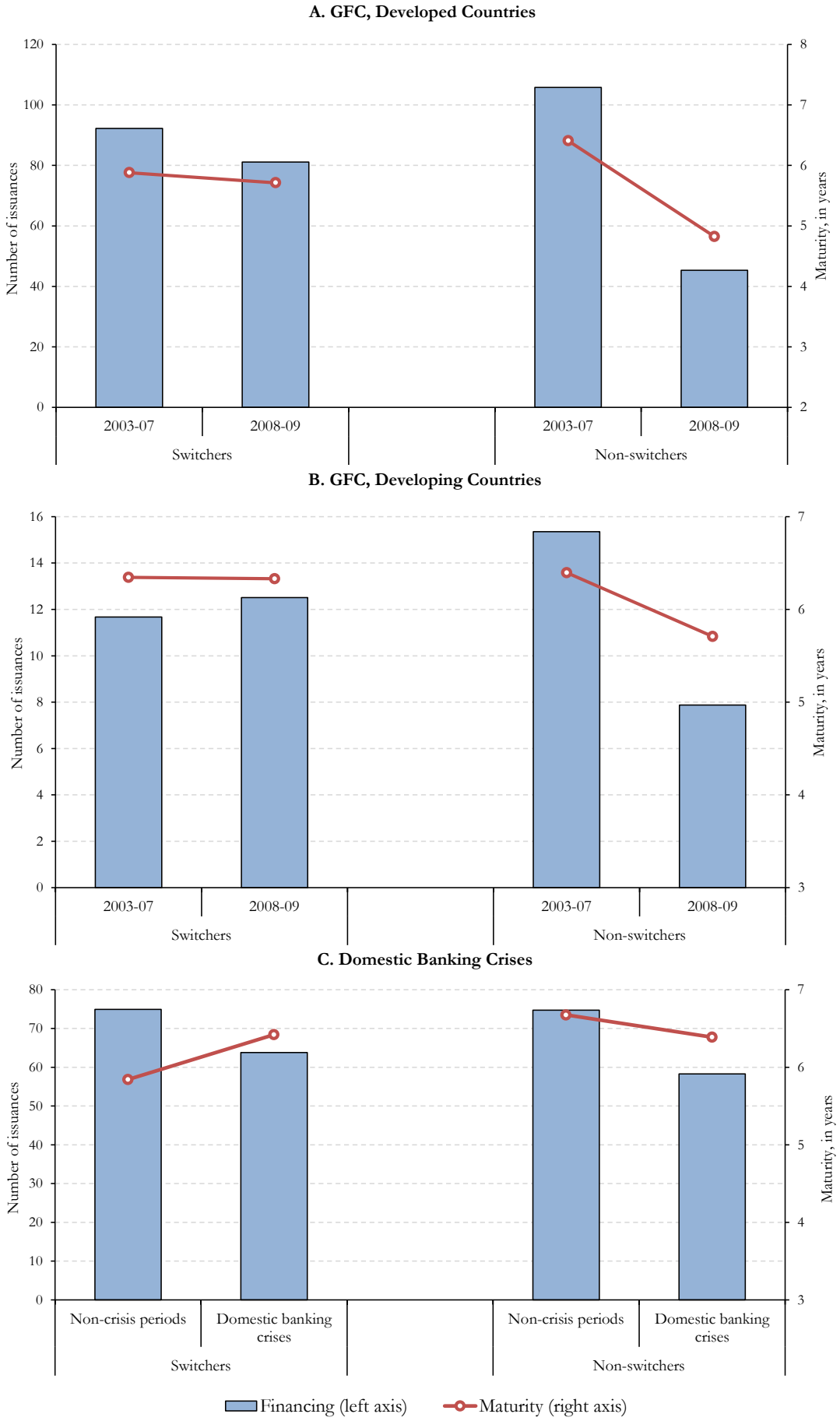


Figure 7. Total Debt Financing by Market

This figure shows, on the left axis, the average yearly amount raised in each market and, on the right axis, the amount raised by non-switching issuers as a share of the total amount raised in each market. The gray areas show the markets hit by the GFC.

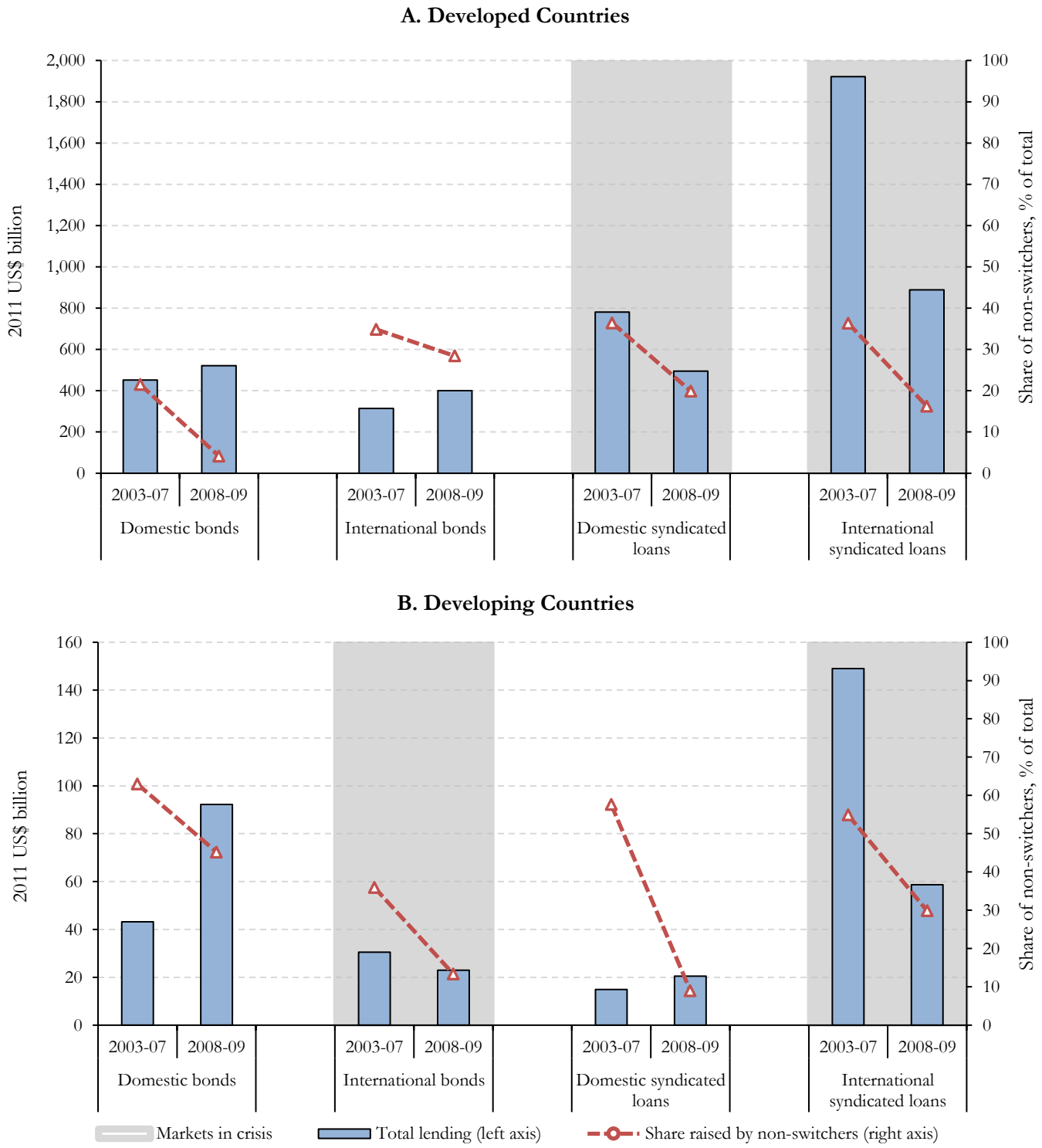


Table 1. Summary Statistics

This table shows the total number of firms issuing debt, the number of debt issuances, the total amount raised, and the (value) weighted average maturity of debt at issuance (in years) for the 1991-2014 period. Data on the total amount raised are in 2011 US$ billion.

A. All Countries				
Type of debt	No. of firms	No. of issuances	Amount raised	Average maturity
Total debt	57,950	267,382	$68,037	6.6
Corporate bonds	25,213	108,184	$22,311	9.8
Syndicated loans	41,746	159,198	$45,727	5.1
B. Developed Countries				
Type of debt	No. of firms	No. of issuances	Amount raised	Average maturity
Corporate bonds	19,993	91,166	$19,503	10.1
Syndicated loans	36,172	145,940	$42,694	4.9
C. Developing Countries				
Type of debt	No. of firms	No. of issuances	Amount raised	Average maturity
Corporate bonds	5,220	17,018	$2,807	7.2
Syndicated loans	5,574	13,258	$3,033	7.6

Table 2. Debt Maturity of Corporate Bonds and Syndicated Loans

This table shows regression estimates characterizing the differences in maturity between corporate bonds and syndicated loans during 1991-2014. The maturity of debt issuances (in years) is regressed on a dummy that equals one for bond issuances and zero otherwise (syndicated loan issuances), and dummies for the different uses of proceeds raised ("acquisition financing/leveraged buyout operations" is the omitted category). The regressions also include different combinations of year dummies, country-year dummies, and/or firm fixed effects. The regressions are estimated using ordinary least squares with standard errors (reported in brackets) clustered at the firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

Dependent variable: maturity of debt issuances

A. Developed Countries

Omitted category: syndicated loans	Year dummies	Country-year dummies	Firm fixed effects and year dummies	Firm fixed effects and country-year dummies
Corporate bonds	2.88 ***	4.48 ***	5.16 ***	5.26 ***
	[0.09]	[0.11]	[0.08]	[0.08]
Debt financing for: general corporate purposes		-0.85 ***	-0.50 ***	-0.44 ***
		[0.04]	[0.04]	[0.04]
Debt financing for: project finance and long-term investments		4.29 ***	1.10 ***	1.15 ***
		[0.11]	[0.15]	[0.15]
Debt financing for: refinancing and capital structure management		-0.25 ***	-0.28 ***	-0.23 ***
		[0.04]	[0.04]	[0.04]
Debt financing for: other expenses		-0.80 ***	-1.09 ***	-1.08 ***
		[0.11]	[0.09]	[0.09]
No. of observations	237,106	237,106	237,106	237,106
No. of clusters	48,183	48,183	48,183	48,183
R-squared	0.077	0.223	0.146	0.157

B. Developing Countries

Omitted category: syndicated loans	Year dummies	Country-year dummies	Firm fixed effects and year dummies	Firm fixed effects and country-year dummies
Corporate bonds	-0.80 ***	1.19 ***	1.84 ***	1.97 ***
	[0.13]	[0.12]	[0.19]	[0.20]
Debt financing for: general corporate purposes		0.93 ***	0.94 ***	0.81 ***
		[0.18]	[0.24]	[0.23]
Debt financing for: project finance and long-term investments		5.55 ***	3.12 ***	3.07 ***
		[0.22]	[0.33]	[0.33]
Debt financing for: refinancing and capital structure management		0.66 ***	0.93 ***	0.77 ***
		[0.20]	[0.26]	[0.25]
Debt financing for: other expenses		2.15 ***	1.48 ***	1.62 ***
		[0.26]	[0.32]	[0.31]
No. of observations	30,276	30,276	30,276	30,276
No. of clusters	9,767	9,767	9,767	9,767
R-squared	0.036	0.300	0.041	0.120

Table 3. Debt Maturity across Different Debt Markets

This table shows regression estimates characterizing differences in maturity between corporate bonds and syndicated loans issued domestically and internationally during 1991-2014. The maturity of debt issuances (in years) is regressed on a dummy that equals one for international syndicated loans, a dummy that equals one for domestic bonds, and a dummy that equals one for international bonds. The omitted category is domestic syndicated loan issuances. The regressions also include different combinations of dummies for the uses of proceeds, a foreign-currency dummy, a floating rate dummy, year dummies, country-year dummies, and/or firm fixed effects. Each panel in the table also reports Wald tests for differences in coefficients. The regressions are estimated using ordinary least squares with standard errors (reported in brackets) clustered at the firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

Dependent variable: maturity of debt issuances

A. Developed Countries

Omitted category: domestic syndicated loans	Year dummies	Country-year dummies	Firm fixed effects and year dummies	Firm fixed effects and country-year dummies
International syndicated loans	1.16 ***	0.28 ***	-0.07	0.03
	[0.04]	[0.03]	[0.05]	[0.05]
Domestic bonds	2.23 ***	3.32 ***	4.13 ***	4.08 ***
	[0.19]	[0.25]	[0.16]	[0.18]
International bonds	2.07 ***	1.81 ***	2.87 ***	2.93 ***
	[0.18]	[0.20]	[0.16]	[0.18]
Use of proceeds dummies	No	Yes	Yes	Yes
Foreign currency dummy	Yes	Yes	Yes	Yes
Floating rate dummy	Yes	Yes	Yes	Yes
No. of observations	234,389	234,389	234,389	234,389
No. of clusters	47,347	47,347	47,347	47,347
R-squared	0.088	0.240	0.148	0.160
Differences in coefficients				
International bonds vs. domestic bonds	-0.16	-1.51 ***	-1.26 ***	-1.15 ***
International bonds vs. international syndicated loans	0.91 ***	1.53 ***	2.95 ***	2.90 ***
Domestic bonds vs. international syndicated loans	1.07 ***	3.04 ***	4.21 ***	4.05 ***

B. Developing Countries

Omitted category: domestic syndicated loans	Year dummies	Country-year dummies	Firm fixed effects and year dummies	Firm fixed effects and country-year dummies
International syndicated loans	-2.35 ***	-2.11 ***	-1.40 ***	-1.38 ***
	[0.19]	[0.19]	[0.29]	[0.30]
Domestic bonds	-3.80 ***	-1.41 ***	-0.76 **	-0.62 *
	[0.19]	[0.22]	[0.33]	[0.33]
International bonds	-1.31 ***	0.39	1.54 ***	1.57 ***
	[0.32]	[0.28]	[0.39]	[0.38]
Use of proceeds dummies	No	Yes	Yes	Yes
Foreign currency dummy	Yes	Yes	Yes	Yes
Floating rate dummy	Yes	Yes	Yes	Yes
No. of observations	30,214	30,214	30,214	30,214
No. of clusters	9,736	9,736	9,736	9,736
R-squared	0.080	0.322	0.060	0.137
Differences in coefficients				
International bonds vs. domestic bonds	2.49 ***	1.80 ***	2.30 ***	2.19 ***
International bonds vs. international syndicated loans	1.04 ***	2.50 ***	2.95 ***	2.95 ***
Domestic bonds vs. international syndicated loans	-1.45 ***	0.70 ***	0.64 ***	0.77 ***

Table 4. Debt Market Choice during the Global Financial Crisis

This table shows logit regressions analyzing firms' debt market choice in the aftermath of the GFC vis-à-vis the pre-crisis period (2003-2007). Panel A estimates the choice between bonds and syndicated loans. The dependent variable is a dummy that equals one (zero) if a firm issues a bond (syndicated loan) in a given quarter. Panel B estimates the choice between domestic and international bond financing. The dependent variable is a dummy that equals one (zero) if a firm issues a domestic (international) bond in a given quarter. Panel C estimates the choice between domestic and international syndicated loan financing. The dependent variable is a dummy that equals one (zero) if a firm issues a domestic (international) syndicated loan in a given quarter. The independent variables are dummy variables for the GFC period (2008-09) and the post-crisis period (2010-14). For quarters in which a firm has issuances of both bonds and syndicated loans, we set the debt choice indicator equal to one if the amount raised through bonds exceeds that raised through syndicated loans. A similar rule is applied for the domestic versus international issuances within bond and syndicated loan markets. The reported statistics are the marginal effects implied by the logit estimations. Standard errors (reported in brackets) are clustered at the firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

A. Corporate Bonds versus Syndicated Loans

	Dependent variable: dummy d*it* =1 if the firm issues a bond in quarter *t*, d*it* =0 if the firm issues a syndicated loan in quarter *t*			
	Developed countries		Developing countries	
	Pre-crisis mean d*it*: 0.24		Pre-crisis mean d*it*: 0.48	
	Country fixed effects	Firm fixed effects	Country fixed effects	Firm fixed effects
GFC (2008-09)	0.03 ***	0.05 ***	0.05 ***	0.10 ***
	[0.01]	[0.01]	[0.02]	[0.03]
Post crisis (2010-14)	0.02 ***	0.04 ***	0.08 ***	0.17 ***
	[0.00]	[0.01]	[0.01]	[0.02]
No. of observations	91,913	33,012	14,460	3,373
No. of clusters	34,716	4,554	7,486	623

B. Domestic versus International Corporate Bonds

	Dependent variable: dummy d*it* =1 if the firm issues a domestic bond in quarter *t*, d*it* =0 if the firm issues an international bond in quarter *t*			
	Developed countries		Developing countries	
	Pre-crisis mean d*it*: 0.70		Pre-crisis mean d*it*: 0.71	
	Country fixed effects	Firm fixed effects	Country fixed effects	Firm fixed effects
GFC (2008-09)	0.05 ***	-0.011	0.09 ***	0.25 ***
	[0.01]	[0.02]	[0.01]	[0.03]
Post crisis (2010-14)	-0.11 ***	-0.14 ***	0.08 ***	0.07 **
	[0.01]	[0.01]	[0.01]	[0.04]
No. of observations	27,003	8,706	8,400	1,359
No. of clusters	10,655	1,490	3,941	250

C. Domestic versus International Syndicated Loans

	Dependent variable: dummy d*it* =1 if the firm issues a domestic syndicated loan in quarter *t*, d*it* =0 if the firm issues an international syndicated loan in quarter *t*			
	Developed countries		Developing countries	
	Pre-crisis mean d*it*: 0.60		Pre-crisis mean d*it*: 0.12	
	Country fixed effects	Firm fixed effects	Country fixed effects	Firm fixed effects
GFC (2008-09)	0.04 ***	0.02	0.31 ***	0.22 ***
	[0.01]	[0.01]	[0.03]	[0.02]
Post crisis (2010-14)	-0.05 ***	-0.13 ***	0.34 ***	0.30 ***
	[0.01]	[0.01]	[0.02]	[0.02]
No. of observations	67,924	17,658	5,449	488
No. of clusters	28,841	488	3,649	107

Table 5. Debt Maturity during the Global Financial Crisis

This table shows in Panel A regression estimates of the debt maturity at issuance (in years) for developed and developing countries around the GFC, and in Panel B, the share of each debt market in the total amount raised. In Panel A, the debt maturity is regressed on dummies for the GFC (2008-09) and the post-crisis period (2010-2014). The regressions are estimated using ordinary least squares on quarterly data during 2003-14. Debt maturity is aggregated from the daily transaction-level data to a quarterly frequency, weighted by the amount raised. Standard errors are clustered at the firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

A. Maturity of Debt Issuances

	Country fixed effects					
	Developed countries			Developing countries		
	Total debt	Corporate bonds	Syndicated loans	Total debt	Corporate bonds	Syndicated loans
GFC (2008-09)	-0.16	-1.26 ***	-0.80 ***	0.43	-1.08 ***	1.27 ***
	[0.12]	[0.25]	[0.11]	[0.31]	[0.40]	[0.38]
Post crisis (2010-14)	0.25 ***	-0.62 ***	0.07	0.80 **	-0.56	1.29 *
	[0.08]	[0.21]	[0.07]	[0.33]	[0.54]	[0.33]
No. of observations	91,512	26,864	68,050	14,466	8,503	6,157
No. of clusters	34,639	10,627	29,011	7,500	4,017	4,142

	Firm fixed effects					
	Developed countries			Developing countries		
	Total debt	Corporate bonds	Syndicated loans	Total debt	Corporate bonds	Syndicated loans
GFC (2008-09)	-0.15	-0.81 ***	-0.69 ***	-0.26	-1.25 **	0.17
	[0.19]	[0.29]	[0.07]	[0.27]	[0.59]	[0.28]
Post crisis (2010-14)	0.71 ***	0.44	0.55 ***	1.48 **	0.68	0.79 ***
	[0.17]	[0.29]	[0.07]	[0.67]	[1.11]	[0.27]
No. of observations	91,512	26,864	68,050	14,466	8,503	6,157
No. of clusters	34,639	10,627	29,011	7,500	4,017	4,142

B. Debt Market Shares

	Developed countries			Developing countries		
	Total debt	Corporate bonds	Syndicated loans	Total debt	Corporate bonds	Syndicated loans
Pre crisis (2003-07)	100%	22%	78%	100%	31%	69%
GFC (2008-09)	100%	37%	63%	100%	52%	48%
Post crisis (2010-14)	100%	30%	70%	100%	57%	43%

Table 6. Debt Market Choice during Domestic Banking Crises

This table shows logit regressions analyzing the firms' debt market choice around domestic banking crises. The first two columns estimate the choice between bonds and syndicated loans. The dependent variable is a dummy that equals one (zero) if a firm issues a bond (syndicated loan) in a given quarter. The two middle columns focus on the choice between domestic and international bond financing. The dependent variable is a dummy that equals one (zero) if a firm issues a domestic (international) bond in a given quarter. The last two columns estimate the choice between the domestic and international syndicated loan financing. The dependent variable is a dummy that equals one (zero) if a firm issues a domestic (international) syndicated loan in a given quarter. The independent variable is a dummy for the periods of domestic banking crises. For quarters in which a firm has issuances of both bonds and syndicated loans, the debt choice indicator equals one if the amount raised through bonds exceeds that raised through syndicated loans. A similar rule is applied for the domestic versus international issuances within bond and syndicated loan markets. Panel A shows the results for the 1991-2010 period. Panel B shows the results for the 1991-2007 period, excluding the GFC period and its aftermath. Panel C shows the results for the 1991-2010 period, excluding countries that experienced domestic banking crises during the GFC (2008-09). The reported statistics are the marginal effects implied by the logit estimations. Standard errors (reported in brackets) are clustered at the firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

A. Sample Period: 1991 - 2010

	Corporate bonds versus syndicated loans		Domestic versus international bonds		Domestic versus international syndicated loans	
	Dependent variable: dummy dit=1 if the firm issues a bond in quarter t, dit =0 if the firm issues a syndicated loan in quarter t		Dependent variable: dummy dit=1 if the firm issues a domestic bond in quarter t, dit=0 if the firm issues an international bond in quarter t		Dependent variable: dummy dit=1 if the firm issues a domestic syndicated loan in quarter t dit=0 if the firm issues an international syndicated loan in quarter t	
	Non-crisis mean dit: 0.41		Non-crisis mean dit: 0.81		Non-crisis mean dit: 0.62	
	Country and year dummies	Firm fixed effects and year dummies	Country and year dummies	Firm fixed effects and year dummies	Country and year dummies	Firm fixed effects and year dummies
Domestic banking crises	0.14 ***	0.15 ***	-0.07 ***	-0.11 ***	-0.18 ***	-0.19 ***
	[0.01]	[0.01]	[0.00]	[0.01]	[0.01]	[0.02]
No. of observations	111,235	47,414	50,605	14,394	63,887	19,153
No. of clusters	40,295	6,263	17,696	1,924	29,100	3,714

B. Sample Period: 1991 - 2007

	Corporate bonds versus syndicated loans		Domestic versus international bonds		Domestic versus international syndicated loans	
	Non-crisis mean dit: 0.42		Non-crisis mean dit: 0.81		Non-crisis mean dit: 0.60	
	Country and year dummies	Firm fixed effects and year dummies	Country and year dummies	Firm fixed effects and year dummies	Country and year dummies	Firm fixed effects and year dummies
Domestic banking crises	0.14 ***	0.10 ***	-0.01 *	0.02	-0.17 ***	-0.16 ***
	[0.01]	[0.01]	[0.00]	[0.02]	[0.01]	[0.03]
No. of observations	90,594	37,978	43,654	11,012	49,385	14,605
No. of clusters	33,993	5,471	15,939	1,528	23,619	3,000

C. Sample Period: 1991-2010, excluding Countries with Domestic Banking Crises during 2008-09

	Corporate bonds versus syndicated loans		Domestic versus international bonds		Domestic versus international syndicated loans	
	Non-crisis mean dit: 0.46		Non-crisis mean dit: 0.82		Non-crisis mean dit: 0.70	
	Country and year dummies	Firm fixed effects and year dummies	Country and year dummies	Firm fixed effects and year dummies	Country and year dummies	Firm fixed effects and year dummies
Domestic banking crises	0.24 ***	0.22 ***	0.01	0.07 **	-0.12 ***	-0.11 **
	[0.02]	[0.02]	[0.01]	[0.03]	[0.02]	[0.05]
No. of observations	46,191	15,527	25,021	7,462	21,432	2,198
No. of clusters	16,575	2,003	8,174	989	10,192	477

Table 7. Debt Maturity during Domestic Banking Crises

This table shows regression estimates of the debt maturity at issuance (in years) around domestic banking crises. The maturity of debt issuances is regressed on a dummy for domestic banking crises. The regressions are estimated using ordinary least squares on quarterly data during 1991-2010. Debt maturity is aggregated from the daily transaction-level data to a quarterly frequency, weighted by the amount raised. Standard errors are clustered at the firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

Dependent variable: maturity of debt issuances			
	Country and year dummies		
	Total debt	Corporate bonds	Syndicated loans
Domestic banking crises	0.38 ***	0.03	-0.14 ***
	[0.05]	[0.08]	[0.04]
No. of observations	111,257	50,638	64,365
No. of clusters	40,306	17,725	29,369
	Firm fixed effects and year dummies		
	Total debt	Corporate bonds	Syndicated loans
Domestic banking crises	0.36 **	0.32	-0.35 ***
	[0.16]	[0.21]	[0.10]
No. of observations	111,257	50,638	64,365
No. of clusters	40,306	17,725	29,369

Table 8. Switchers and Non-switchers: Number of Firms and Amount Raised

This table shows the number of switching and non-switching firms and their share in the total amount raised.

A. GFC, Developed Countries			
		Share of total debt raised	
	Number of firms	Pre crisis (2003-07)	GFC (2008-09)
Switching issuers	4,721	66%	87%
Non-switching issuers	13,628	34%	13%
B. GFC, Developing Countries			
		Share of total debt raised	
	Number of firms	Pre crisis (2003-07)	GFC (2008-09)
Switching issuers	452	46%	70%
Non-switching issuers	1,916	54%	30%
C. Domestic Banking Crises			
		Share of total debt raised	
	Number of firms	Non-crisis periods	Domestic banking crises
Switching issuers	8,172	75%	76%
Non-switching issuers	25,501	25%	24%

Table 9. Debt Maturity during Crises for Different Types of Issuers

This table shows regression estimates of the debt maturity at issuance (in years) for switching and non-switching issuers around crises. In Panels A and B, focusing on the 2003-14 period, debt maturity is regressed on dummies for the GFC period (2008-09) and the post-crisis period (2010-2014). In Panel C, debt maturity is regressed on a dummy for domestic banking crises, covering the 1991-2010 period. All the regressions include firm fixed effects. The regressions are estimated using ordinary least squares on quarterly data. Debt maturity is aggregated from the daily transaction-level data to a quarterly frequency, weighted by the amount raised. Standard errors are clustered at the firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

Dependent variable: maturity of debt issuances

A. GFC, Developed Countries

	Switching issuers			Non-switching issuers			
	Total debt	Corporate bonds	Syndicated loans	Domestic bonds	International bonds	Domestic syndicated loans	International syndicated loans
GFC (2008-09)	-0.12	-0.87 ***	-0.73 ***	-1.32 **	-0.21	-0.18 *	-1.17 ***
	[0.20]	[0.30]	[0.08]	[0.51]	[1.29]	[0.10]	[0.23]
Post crisis (2010-14)	0.76 ***	0.46	0.62 ***	-0.71	0.63	0.19	-0.24
	[0.18]	[0.30]	[0.08]	[0.69]	[1.21]	[0.15]	[0.19]
No. of observations	35,343	14,881	23,199	3,537	1,791	17,506	7,118
No. of clusters	4,722	3,561	4,572	1,844	911	7,677	4,309

B. GFC, Developing Countries

	Switching issuers			Non-switching issuers			
	Total debt	Corporate bonds	Syndicated loans	Domestic bonds	International bonds	Domestic syndicated loans	International syndicated loans
GFC (2008-09)	-0.46	-1.71 **	0.22	-1.15 ***	-1.19 *	0.27	-0.49 *
	[0.29]	[0.67]	[0.34]	[0.27]	[0.71]	[1.21]	[0.30]
Post crisis (2010-14)	2.06 ***	1.76	0.91 ***	-0.54 *	0.80	-0.93	0.18
	[0.70]	[1.17]	[0.32]	[0.31]	[1.33]	[0.65]	[0.27]
No. of observations	2,949	1,829	1,254	1,648	323	237	1,427
No. of clusters	452	431	393	618	250	184	943

C. Domestic Banking Crises

	Switching issuers			Non-switching issuers			
	Total debt	Corporate bonds	Syndicated loans	Domestic bonds	International bonds	Domestic syndicated loans	International syndicated loans
Domestic banking crises	0.75 ***	0.35	-0.13 *	0.26	0.92	-0.20 **	-0.79 **
	[0.18]	[0.22]	[0.08]	[0.38]	[1.40]	[0.09]	[0.37]
No. of observations	56,814	28,453	31,754	18,501	3,870	21,301	11,624
No. of clusters	8,518	6,939	8,036	8,631	2,253	12,995	8,522

Table 10. Changes in Debt Issuance Composition during Crises

This table shows the changes in debt issuance during crises. Panels A and B show the changes in debt issuance during the GFC (2008-2009) relative to 2007 (the peak in capital raising activity before the GFC for most countries). Column C shows the average change in debt issuance during domestic banking crises relative to non-crisis periods. Each column shows changes in the total amount raised within each market by switching and non-switching isuers.

A. GFC, Developed Countries

	Corporate bonds		Syndicated loans	
Type of issuer	Δ% Domestic bonds	Δ% International bonds	Δ% Domestic syndicated loans	Δ% International syndicated loans
Switching issuers	8.1%	17.0%	-48.1%	-55.0%
Non-switching issuers	-72.5%	5.0%	-72.4%	-85.5%

B. GFC, Developing Countries

	Corporate bonds		Syndicated loans	
Type of issuer	Δ% Domestic bonds	Δ% International bonds	Δ% Domestic syndicated loans	Δ% International syndicated loans
Switching issuers	100.4%	-36.5%	25.4%	-70.1%
Non-switching issuers	-15.1%	-83.5%	-90.4%	-88.5%

C. Domestic Banking Crises

	Corporate bonds		Syndicated loans	
Type of issuer	Δ% Domestic bonds	Δ% International bonds	Δ% Domestic syndicated loans	Δ% International syndicated loans
Switching issuers	-13.7%	44.6%	-49.7%	6.3%
Non-switching issuers	-26.6%	18.5%	-43.0%	27.0%

Appendix Table 1. Total Number of Issuances and Firms per Country

This table shows, for each country in the sample, the total number of issuances in corporate bond and syndicated loan markets and the number of issuing firms per country during 1991-2014.

Developed countries				Developing countries			
Country	No. of bond issuances	syndicated loan issuances	No. of firms	Country	No. of bond issuances	syndicated loan issuances	No. of firms
Australia	2,024	3,744	1,452	Argentina	497	291	253
Austria	252	193	147	Azerbaijan	3	30	14
Bahrain	3	62	20	Bangladesh	4	46	23
Belgium	416	611	222	Bolivia	137	17	40
Canada	3,577	4,638	2,066	Brazil	2,247	790	1020
Croatia	12	117	42	Bulgaria	3	86	30
Cyprus	11	70	31	Chile	626	381	232
Czech Republic	46	243	104	China	4,366	1,878	2674
Denmark	182	225	98	Colombia	365	126	169
Finland	397	503	206	Costa Rica	197	21	30
France	2,297	5,533	1,509	Ecuador	118	14	74
Germany	1,093	4,244	1,167	Egypt, Arab Rep.	12	174	49
Greece	97	388	155	El Salvador	122	25	20
Hong Kong SAR, China	981	1,368	825	Ghana	2	78	24
Hungary	12	205	74	India	1,837	2,486	1336
Iceland	7	71	24	Indonesia	401	1,133	566
Ireland, Rep.	221	459	182	Jamaica	22	45	15
Israel	79	100	54	Jordan	3	34	20
Italy	486	2,399	897	Kazakhstan	28	82	57
Japan	10,789	21,122	6,328	Malaysia	1,774	641	484
Korea, Rep.	17,426	972	3,184	Mexico	1,147	802	500
Kuwait	2	87	32	Morocco	4	50	17
Luxembourg	466	347	196	Nigeria	5	108	48
Netherlands	2,455	2,212	798	Pakistan	29	164	78
New Zealand	306	953	203	Panama	78	159	132
Norway	431	902	371	Peru	536	138	145
Oman	7	131	50	Philippines	270	348	153
Poland	66	351	150	Romania	9	153	65
Portugal	636	530	552	Russian Federation	598	855	446
Qatar	7	148	49	South Africa	146	314	167
Saudi Arabia	20	335	112	Sri Lanka	3	21	12
Singapore	735	903	515	Thailand	1,182	918	456
Slovak Republic	10	92	35	Tunisia	0	37	11
Slovenia	2	52	20	Turkey	37	476	184
Spain	463	3,887	1,297	Ukraine	27	78	39
Sweden	571	874	260	Venezuela, R.B.	155	77	87
Switzerland	794	866	393	Vietnam	28	182	97
Taiwan, China	5,004	4,100	1,250				
United Arab Emirates	56	464	151				
United Kingdom	3,633	8,402	2,587				
United States	35,094	73,037	20,444				
Total	**91,166**	**145,940**	**48,252**	**Total**	**17,018**	**13,258**	**9,767**

Appendix Table 2. Debt Maturity during the GFC for Developed Countries

This table considers separately all four debt markets, domestic and international bonds and syndicated loans. It shows in Panel A regression estimates of the debt maturity at issuance (in years) for developed countries around the GFC, and in Panel B, the share of each debt market in the total amount raised. In Panel A, debt maturity is regressed on dummies for the GFC (2008-09) and the post-crisis period (2010-2014). The regressions are estimated using ordinary least squares on quarterly data during 2003-14. Debt maturity is aggregated from the daily transaction-level data to a quarterly frequency, weighted by the amount raised. Standard errors are clustered at the firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

A. Maturity of Debt Issuances

	Country fixed effects			
	Domestic bonds	International bonds	Domestic syndicated loans	International syndicated loans
GFC (2008-09)	-0.95 ***	-1.62 ***	-0.63 ***	-0.86 ***
	[0.31]	[0.33]	[0.11]	[0.15]
Post crisis (2010-14)	0.02	-0.88 ***	0.18 *	-0.01
	[0.26]	[0.32]	[0.10]	[0.08]
No. of observations	17,817	9,446	40,786	27,950
No. of clusters	7,404	4,761	18,837	14,140
	Firm fixed effects			
	Domestic bonds	International bonds	Domestic syndicated loans	International syndicated loans
GFC (2008-09)	-0.79 *	-0.33	-0.02	-0.88 ***
	[0.41]	[0.55]	[0.09]	[0.09]
Post crisis (2010-14)	0.10	1.28 **	1.17 ***	0.39 ***
	[0.31]	[0.54]	[0.23]	[0.07]
No. of observations	17,817	9,446	40,784	27,950
No. of clusters	7,404	4,761	18,837	14,140

B. Debt Market Shares

	Domestic bonds	International bonds	Domestic syndicated loans	International syndicated loans
Pre crisis (2003-07)	13%	9%	22%	56%
GFC (2008-09)	20%	16%	22%	41%
Post crisis (2010-14)	15%	15%	19%	51%

Appendix Table 3. Debt Maturity during the GFC for Developing Countries

This table considers separately all four debt markets, domestic and international bonds and syndicated loans. It shows in Panel A regression estimates of the debt maturity at issuance (in years) for developing countries around the GFC, and in Panel B, the share of each debt market in the total amount raised. In Panel A, the debt maturity is regressed on dummies for the GFC (2008-09) and the post-crisis period (2010-2014). The regressions are estimated using ordinary least squares on quarterly data during 2003-14. Debt maturity is aggregated from the daily transaction-level data to a quarterly frequency, weighted by the amount raised. Standard errors are clustered at the firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

A. Maturity of Debt Issuances

	Country fixed effects			
	Domestic bonds	International bonds	Domestic syndicated loans	International syndicated loans
GFC (2008-09)	-1.53 ***	-2.43 ***	0.64	0.45
	[0.44]	[0.85]	[1.19]	[0.32]
Post crisis (2010-14)	-1.76 ***	0.64	-0.11	0.76 **
	[0.59]	[0.81]	[1.12]	[0.30]
No. of observations	7,175	1,407	2,000	4,208
No. of clusters	3,391	899	1,596	2,689
	Firm fixed effects			
	Domestic bonds	International bonds	Domestic syndicated loans	International syndicated loans
GFC (2008-09)	-1.84 ***	-4.25 ***	0.54	-0.17
	[0.66]	[1.04]	[1.03]	[0.26]
Post crisis (2010-14)	-1.20 *	0.50	-0.08	0.85 ***
	[0.69]	[1.57]	[1.19]	[0.28]
No. of observations	7,175	1,407	2,000	4,208
No. of clusters	3,391	899	1,596	2,689

B. Debt Market Shares

	Domestic bonds	International bonds	Domestic syndicated loans	International syndicated loans
Pre crisis (2003-07)	18%	13%	6%	63%
GFC (2008-09)	43%	9%	17%	32%
Post crisis (2010-14)	44%	14%	16%	26%

Appendix Table 4. Debt Maturity during Domestic Banking Crises

This table considers separately all four debt markets, domestic and international bonds and syndicated loans. It shows regression estimates of the debt maturity at issuance (in years) around domestic banking crises. The debt maturity is regressed on a dummy for domestic banking crises. The regressions are estimated using ordinary least squares on quarterly data during 1991-2010. Debt maturity is aggregated from the daily transaction-level data to a quarterly frequency, weighted by the amount raised. Standard errors are clustered at the firm level. *, **, and *** denote statistical significance at 10%, 5%, and 1%, respectively.

Dependent variable: maturity of debt issuances				
	Country and year dummies			
	Domestic bonds	International bonds	Domestic syndicated loans	International syndicated loans
Domestic banking crises	0.24	0.19	-0.22 ***	0.06
	[0.18]	[0.16]	[0.14]	[0.07]
No. of observations	40,452	10,903	38,823	26,135
No. of clusters	14,403	5,351	19,188	14,068
	Firm fixed effects and year dummies			
	Domestic bonds	International bonds	Domestic syndicated loans	International syndicated loans
Domestic banking crises	0.25	0.01	-0.38 *	-0.42 ***
	[0.28]	[0.37]	[0.19]	[0.14]
No. of observations	40,452	10,903	38,823	26,135
No. of clusters	14,403	5,351	19,188	14,068