

# Growth of Global Corporate Debt

## Main Facts and Policy Challenges

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## Abstract

This paper surveys the literature to document the main stylized facts, risks, and policy challenges related to the expansion of global nonfinancial corporate debt after the 2008–09 global financial crisis. Nonfinancial corporate debt steadily increased after the crisis, especially in emerging economies. Between 2008 and 2018, corporate debt increased from 56 to 96 percent of gross domestic product in emerging economies, whereas this ratio remained stable in developed economies. Nonfinancial corporate debt was

mainly issued through bond markets, and its growth can be largely attributed to accommodative monetary policies in developed economies. Whereas increased debt financing has some positive aspects, it has also amplified firms' solvency risks and exposure to changes in market conditions, such as the economic downturn triggered by the COVID-19 pandemic. Because capital markets have a larger role in firm financing, policy makers have limited tools to mitigate the risks of growing firm debt.

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# Growth of Global Corporate Debt: Main Facts and Policy Challenges

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## **1. Introduction**

The level of global debt substantially increased after the 2008-09 global financial crisis (GFC). Global debt, which includes corporate (nonfinancial), financial sector, government, and household debt, increased from 292 percent of world gross domestic product (GDP) in 2008 to 318 percent in 2018. Together with government debt, nonfinancial corporate debt was the main contributor to the rise in global debt after the GFC. The ratio of nonfinancial corporate and government debt to GDP increased from 78 to 92 percent and from 62 to 86 percent, respectively, between 2008 and 2018 (IIF, 2019). Whereas financial sector debt and household debt were important drivers of the buildup of global debt leading to the GFC, they did not contribute to the increase in global debt in the post-crisis period. Household debt remained stagnant at about 60 percent of GDP and financial sector debt actually declined from 91 to 81 percent of GDP between 2008 and 2018.

The increase in nonfinancial corporate debt can be a welcome development. It might signal that firms are subject to fewer financing constraints, allowing them to raise more funds to conduct profitable investment projects and grow. In addition, firms might be obtaining the new funding outside the traditional banking system, helping them to diversify their financing sources and improve their resilience to financial crises.

The rise of nonfinancial corporate debt, however, also raised concerns. As nonfinancial corporate debt reached historic high levels, policy makers, academics, and practitioners increasingly cautioned that significant firm indebtedness could become a threat to the global economy. In the post-GFC period, the International Monetary Fund (IMF) recurrently urged policy makers to address the issue of rising nonfinancial corporate debt, as it increased financial stability risks (IMF, 2017, 2019a). In 2019, the United Nations (UN) recognized high nonfinancial corporate debt levels as one of the factors that could impair economic growth (UN, 2019). Some analysts predicted that the nonfinancial corporate debt boom could trigger a financial crisis comparable to the GFC (Financial Times, 2017;

Bloomberg, 2019; The Guardian, 2019; WEF, 2019). Others were somewhat more optimistic and argued that risks were manageable or that, at least, a possible recession would not be as severe (Powell, 2017; S&P, 2019; The Economist, 2019).

The COVID-19 pandemic that broke out in 2020 raised new concerns about the high levels of nonfinancial corporate debt. As lockdowns and border closures caused a plunge in global economic activity, the question of how firms manage their debt burden has become a central topic in economic discussions. High nonfinancial corporate debt could be the Achilles heel in the global economy that exacerbates the downturn and hampers economic recovery (The Economist, 2020; Lustig and Mariscal, 2020). In fact, some analysts have argued that corporate debt relief should be a central feature of emergency aid packages (Becker et al., 2020).

The aim of this paper is twofold. First, it presents some of the main stylized facts about the boom in nonfinancial corporate debt after the GFC, while discussing its drivers. Second, it summarizes the main risks and policy challenges associated with higher nonfinancial corporate debt. Whereas the paper shows a few new statistics, it is primarily a survey of the arguments presented in the growing literature on this topic. The main messages are summarized as follows.

First, the rise of nonfinancial corporate debt was concentrated in emerging economies. Between 2008 and 2018, this type of debt grew almost twice as fast as GDP in emerging economies, rising from 56 to 96 percent of GDP. In contrast, nonfinancial corporate debt grew at the same pace as GDP since 2008 in developed economies. An expansion in bond issuances was a main driver of the growth in nonfinancial corporate debt in emerging economies. When excluding bond securities, the ratio of nonfinancial corporate debt to GDP remained fairly stagnant across emerging economies (aside from China). According to the literature, international financial conditions since the GFC, namely accommodative monetary policy in developed economies, played a major role in the boom in nonfinancial corporate debt.

Second, the rise in nonfinancial corporate debt increased the levels of financial risk among emerging market firms in the years following the GFC, although there are some mitigating factors. In particular, high debt accumulation in a period of low economic growth and declining corporate earnings was accompanied by an increase in solvency risks. That is, the ability of emerging market firms to pay back their debts deteriorated. Although some factors seemed to exacerbate the risks associated with foreign currency financing and rollover capacity, other forces might have helped to dampen these risks. As regards the factors increasing risk, the amount of foreign currency debt issuances increased after the GFC. Currency risks related to currency mismatches seemed to concentrate in specific regions (such as Latin America) and in the non-tradable sector. Moreover, rollover risks could have increased as the fastest growth in corporate debt occurred through bond financing, which is more difficult to restructure than bank debt. In addition, bond issuances experienced a decline in maturities during 2008-2018. Among the mitigating factors, despite the increase in foreign currency debt, the largest boom in corporate debt financing occurred in local bond markets through domestic currency issuances. As a result, the relative share of foreign currency denominated nonfinancial corporate bonds across emerging economies declined between 2008 and 2018. Furthermore, bond debt is typically longer term than bank debt, which might have helped to mitigate rollover risks.

Third, whereas the levels of risk did not seem excessively high per se at the end of 2019, shifts in market conditions could severely deteriorate emerging market firms' balance sheets and trigger corporate distress. In this context, the economic downturn triggered by the COVID-19 pandemic increased risks in many emerging market firms, which suddenly faced lower revenues and higher financing costs. Sensitivity analyses conclude that, if the shock is large enough, the share of nonfinancial corporate debt held by firms with high risk of financial distress could significantly

increase in emerging economies. In several emerging economies these shares could be similar or even surpass values recorded before the Asian financial crisis (AFC).

Fourth, policy makers in emerging economies face challenges to contain the risks associated with high nonfinancial corporate debt levels, as well as to limit the potential negative impact of corporate debt defaults. Because capital markets have gained importance in firm financing relative to banks, traditional prudential policies focused on the banking sector might not be as effective as in the past. New policies might be needed to create safe conditions for corporate borrowing in capital markets. Policy makers could also put in place policies to deal with corporate debt distress similar to those aimed at the sovereign and banking sectors.

The rest of the sections are organized as follows. Section 2 discusses the main stylized facts and drivers behind the boom in nonfinancial corporate debt. Section 3 examines the main risks associated with the rise in nonfinancial corporate debt. Section 4 analyzes how a weakening economy or a change in market conditions would impact highly indebted corporations. Section 5 concludes with a discussion on what policies governments could implement to mitigate risks and manage distress in the nonfinancial corporate sector. Section 6 discusses some questions open for future research.

## **2. Rising Nonfinancial Corporate Debt: Stylized Facts and Drivers**

### *2.1. Stylized Facts*

To obtain some basic stylized facts, we compute the levels and evolution of nonfinancial corporate debt by gathering data from the Bank for International Settlement (BIS). The BIS defines debt by the nonfinancial corporate sector as all liabilities (including loans, bonds, and other claims) issued domestically and abroad by firms that produce market goods and nonfinancial services.

These data show that nonfinancial corporate debt around the world multiplied by 1.6 times between 2008 and 2018, increasing from about \$45 trillion in 2008 to \$71 trillion in 2018, in constant

United States (U.S.) dollars.<sup>1</sup> As a result, the ratio of nonfinancial corporate debt to world GDP increased by 14 percentage points, from 78 percent in 2008 to 92 percent in 2018 (Figure 1).

The rise in nonfinancial debt occurred mainly within emerging economies. Nonfinancial corporate debt in emerging economies more than tripled, from about \$9 trillion in 2008 to \$28 trillion in 2018. As a percentage of GDP, nonfinancial corporate debt in these economies grew from 56 to 96 percent during that period.

In contrast to the trends in emerging economies, nonfinancial corporate debt in developed economies grew at a similar pace as GDP. In particular, the aggregate levels of nonfinancial corporate debt and GDP in developed economies grew by 17 and 15 percent, respectively, between 2008 and 2018. Thus, the ratio of nonfinancial corporate debt to GDP in developed economies remained fairly stable during 2008-18, increasing only marginally from 87 to 89 percent. Although the rise of nonfinancial corporate debt has received much attention in the United States after the GFC, the ratio of nonfinancial corporate debt to GDP in 2018 was the same as that in 2008. Nonfinancial corporate debt steadily increased after 2013, but this occurred after a sharp decline in the first years following the GFC (IIF, 2019).

Among emerging economies, those in East Asia deserve special attention, as they accounted for most of the corporate financing activity among emerging regions after the GFC.<sup>2</sup> Of particular relevance among East Asian economies is the case of China, which has emerged as a key player in nonfinancial corporate debt markets. Chinese nonfinancial corporate debt grew from 98 percent of GDP in 2008 to 152 percent in 2018. As a result, China's nonfinancial corporate debt in 2018 accounted for most of the debt accumulated by emerging economies and even surpassed levels in the United States. In 2018, China's nonfinancial corporate debt represented 28 percent of global debt and

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<sup>1</sup> All values are expressed in 2011 U.S. dollars.

<sup>2</sup> East Asia captured about 70 percent of equity and bond financing to emerging market firms during 2008-16 (Abraham et al., 2019).



70 percent of total debt accumulated by emerging economies (loans, bonds, and other claims), up from 10 and 49 percent, respectively, in 2008 (Figure 2).

Bond markets were the fastest growing component of nonfinancial corporate debt in emerging economies. The literature distinguishes two phases of global liquidity, before and after the GFC (Shin, 2014; Turner, 2014; Aldasoro and Ehlers, 2018). Before the crisis, the banking sector was the fastest growing component of firm financing, particularly through international banks. After the crisis, capital markets took over as key liquidity providers for the nonfinancial corporate sector, and emerging market firms increased their reliance on bond financing. Between 2008 and 2018 the share of bonds over total nonfinancial corporate debt in emerging economies (excluding China) increased by 13 percentage points, from 19 to 32 percent (Figure 3, Panel A). In fact, the trend of nonfinancial corporate debt over GDP in emerging economies (excluding China) since the GFC becomes flat when excluding bond securities (Figure 3, Panel B). In China, the share of bonds over total nonfinancial corporate debt expanded 13 percentage points, from 2 to 15 percent. In contrast to the trend in other emerging economies, the ratio of nonfinancial corporate debt over GDP still grew in China when excluding bond securities (Appendix Figure 1).

As the main users of bond markets, large corporations were the typical borrowers behind the nonfinancial corporate debt boom. Firms issuing in capital markets have a median size of about \$320 million in assets (Didier et al., 2015). The fact that large firms drove this trend is not trivial. Large corporates are systemically very important, and their behavior and problems can rapidly transmit to the rest of the economy (Alfaro et al., 2019). For instance, idiosyncratic movements of the largest 100 firms in the United States explain about one-third of variations in output growth (Gabaix, 2011).

The rise in nonfinancial corporate debt levels coincided with a period of declining investment and economic growth in emerging economies (World Bank, 2018). In part, poor economic performance might be associated with the fact that, when it reaches high levels, debt can become a

drag on the economy. A vast literature studies the relation between sovereign debt and economic growth. Although reverse causality cannot be ruled out, some studies argue that sovereign debt levels start to have a negative effect on GDP growth when debt levels are above 90-95 percent of GDP (Reinhart and Rogoff, 2010; Baum et al., 2013; Woo and Kumar, 2015). Studies focusing on the impact of nonfinancial corporate debt are scarcer, but they also seem to find thresholds above which this debt has negative effects on GDP. One study finds that, similar to sovereign debt, nonfinancial corporate debt has a negative impact on economic growth once it surpasses 90 percent of GDP (Cecchetti et al., 2011). Other papers question whether there is a universally applicable threshold after which debt negatively affects economic growth, but they still acknowledge that there is a significant negative long-run relation between rising debt-to-GDP and economic growth (Eberhardt and Presbitero, 2015; Chudik et al., 2017).

The negative impact of high nonfinancial corporate debt on economic growth could be associated with a phenomenon known as “debt overhang.” When a firm’s leverage is large enough, the profits of new investments are mainly used to pay back debt. In this scenario, shareholders might not have incentives to undertake investments (even when these are profitable) because most of the benefits are not accrued by them, but by the debt holders. By reducing investment, debt overhang can negatively affect long-term economic growth (Goretti and Souto, 2013; World Bank, 2018; Kalemli-Özcan et al., 2019). Increasing corporate debt could also be detrimental for economic growth if the new capital raised is misallocated. In particular, if the new capital is flowing toward relatively less productive (large) firms, this trend may lead to declining productivity in the aggregate economy (Gopinath et al., 2017; Kalemli-Özcan, 2019).

## *2.2. Drivers of Nonfinancial Corporate Debt*

It seems important to understand what changed after the GFC that prompted emerging market firms to increase their debt, particularly through the issuance of new bonds. Part of the answer to this question can be found in tighter bank regulations coupled with accommodative monetary policy.

In the aftermath of the GFC, it became harder for firms to obtain bank financing. To reduce the risk of similar crises occurring in the future, policy makers responded to the GFC by introducing more stringent regulatory requirements for banks (such as higher capital requirements, limits to leverage, and new liquidity requirements). These regulations increased financial stability at the expense of requiring banks to reduce leverage and to become more conservative in their lending activity. Furthermore, they increased the costs of bank credit, which resulted in higher lending spreads and lower lending volumes (Slovik and Cournède, 2011; Noss and Toffano, 2016; Adrian et al., 2017; Roulet, 2018). All these changes reduced bank financing toward the corporate sector, especially from global banks to emerging market firms, which tend to be relatively riskier.

At the same time that global banks were less willing to lend to emerging market firms, investor demand for emerging market bonds increased. As central banks in developed economies tried to boost economic activity and fight disinflationary pressures, accommodative monetary policies following the GFC reduced corporate bond yields to historically low levels. For example, the share of investment-grade fixed income instruments providing returns above 4 percent was 80 percent in 2007, but only 5 percent in 2017 (IMF, 2017). This context of low interest rates encouraged investors to “search for yield.” In other words, investors were willing to take more risks and invest in assets with relatively higher yields in order to meet their required returns (Becker and Ivashina, 2015; Di Maggio and Kacperczyk, 2017; Choi and Kronlud, 2018).

In their search for yield, investors turned away from safe assets in developed economies, such as Treasury bonds, in favor of high-yield corporate and sovereign bonds issued by emerging

economies after the GFC (Mc Cauley et al., 2015). For example, in the period 2009-12 emerging market debt funds received flows of \$86 million, more than twice the \$39 million received in the period 2003-06. As flows into emerging market funds increased, emerging market corporate bond yields declined, and the number of corporate bond issuances increased. In particular, there was substantial growth in the issuance of large denomination bonds. Investors tended to favor large, index-eligible bonds because they are more liquid and limit the risk of underperforming market benchmarks (Calomiris et al., 2019).

The empirical research shows that as interest rates declined in developed economies (particularly in the United States) since 2009, bond issuance activity by emerging market nonfinancial corporates expanded (Burger et al., 2018). Some calculations conclude that, without the monetary expansion in the United States, nonfinancial corporate bond issuances by emerging economies would have been about half of the actual issuance volume (Lo Duca et al., 2016). Firms' balance sheet data unveil the same type of pattern. Overall, a 1 percentage point decline in the United States policy rate seems to increase leverage in emerging market firms by 9 basis points (Alter and Elekdag, 2020). Consistent with these patterns, other empirical evidence suggests that economy-specific factors (such as better macroeconomic fundamentals or institutional quality) became less relevant in explaining corporate leverage in the post-GFC period, whereas global financial conditions gained importance (Feyen et al., 2015; Ayala et al., 2017; Herwadkar, 2017).

Although there is some evidence that the low interest rates and abundant liquidity in bond markets might have relaxed corporate borrowing constraints (Alter and Elekdag, 2020), there is also evidence that speculative investment opportunities, such as carry trade, fueled bond issuance activity by nonfinancial corporates in emerging economies. Traditionally associated with the financial sector, carry trade is the activity of profiting from interest rate differentials in different markets by borrowing at low interest rates in one market and on-lending the proceeds in another market at relatively higher

interest rates. In the period following the GFC, incentives for carry trade were strong as declining interest rates in developed economies widened the gap between these interest rates and the ones in emerging economies. In this context, emerging market firms could profit by issuing international bonds at low interest rates and investing the proceeds in local bank deposits, shadow banking products, and commercial paper (or other instruments) at relatively higher rates (Bruno and Shin, 2016).

Consistent with the carry trade idea, there is evidence that emerging market firms held a substantial amount of the proceeds from international bond issuances in cash through bank deposits, which in turn could have encouraged banks to increase lending (Shin and Zhao, 2013; Chung et al., 2015; Acharya and Vij, 2016; Bruno and Shin, 2016). In fact, there is a positive correlation between emerging market firms' international bond issuances and domestic bank lending in emerging economies during the post-GFC period (Avdjiev et al., 2014; Powell, 2014; Caballero et al., 2016). A survey by the BIS suggests that firms' deposits contributed to about a third of the debt liability growth of banks in emerging economies during 2009-13 (BIS, 2015). Moreover, there is some evidence that emerging market firms directly acted as financial intermediaries themselves. For example, some firms issued debt abroad and then lent the proceeds by granting more trade credit in domestic currency to their suppliers (Hardy and Saffie, 2019).

Whereas foreign investors seem to have been a key driver behind emerging economies' bond issuance activity since 2008, the rise in nonfinancial corporate bond financing in China occurred amid low levels of foreign investor participation. The share of foreign participation in Chinese bond markets remained stable at about 1.6 percent of the total value of bonds outstanding during 2014-17 (Cerutti and Obstfeld, 2019). Continuing efforts to liberalize the Chinese bond market and the inclusion of Chinese bonds in benchmark indices (which institutional investors tend to follow to make investment decisions) are expected to encourage the entry of more foreign investors into China's bond markets.

### **3. Nonfinancial Corporate Debt and Risks in Emerging Market Firms**

The literature on the nonfinancial corporate debt boom after the GFC has extensively focused on whether, as a result of increased indebtedness, financial risks were augmented for emerging markets firms. In particular, higher levels of nonfinancial corporate debt can be associated with three main types of risks: solvency, currency, and rollover (Acharya et al., 2015; Chui et al., 2016). Although these risks are usually analyzed separately, they can be interrelated as higher exposure to one of the risks could increase exposure to others. This section describes the three different types of risks usually associated with debt financing and explains how they evolved after the GFC among emerging market firms. Whereas some developments might have exacerbated these risks, others could be acting as mitigating factors, as discussed in the remaining of this section.

#### *3.1. Solvency Risk*

Solvency risk refers to the ability of firms to pay back their debts using their existing assets. After the GFC, emerging market firms not only increased the nominal amount outstanding of their debts, but they also became more leveraged. Different measures of corporate leverage, such as the ratio of debt to equity, increased among emerging market firms. In 2016, firms in emerging economies had, on average, a ratio of debt to equity that was 13 percentage points higher than that in 2008. In Latin America and the Caribbean this ratio was 31 percentage points higher, in Emerging Europe, Middle East, and Africa it was 13 percentage points higher, and in Asia it was 7 percentage points higher (IMF, 2016).

Rising leverage is not dangerous per se. Increasing leverage associated with more bond financing might improve emerging market resilience to financial shocks as firms gain access to more complete markets (Abraham et al., 2019). Moreover, increasing leverage could be a sign of lower financing constraints and that firms can undertake profitable investments to grow. Thus, even when

leverage is increasing, firms might still be able to repay their debts if their earnings are large and/or interest rates are low.

Assessing whether higher leverage is associated with higher solvency risk requires information about the capacity of firms to generate sufficient funds to pay back their debts. A widely used indicator of firms' solvency risk is the interest coverage ratio (ICR), which measures the ratio of earnings before interest and depreciation (EBITDA) to interest payments. This indicator measures how many times a firm can cover its interest payments with its earnings. Typically, a firm with an ICR below two is considered to be weak or in risk of financial distress.<sup>3</sup> After calculating the ICR for individual firms, one can then obtain an aggregate measure of the risk of financial distress in the nonfinancial corporate sector, known as the share of debt-at-risk. This indicator is the proportion of total nonfinancial corporate debt issued by firms with an ICR lower than two.

The increase in leverage in emerging economies was accompanied by a deterioration of firms' debt servicing capacity. In 2016 several emerging economies (including large ones) presented an average ICR in the nonfinancial corporate sector lower than the level in 2010 (Figure 4). For example, in China, the average ICR across firms fell by about half, from 11 to 6. Lower debt repayment capacity could be associated with higher interest payments, as emerging market firms accumulated substantial new debt over time. But this is not the only explanation. At the same time that the gross amount of interest payments increased as a consequence of increasing debt levels, emerging market firms generated lower earnings. Data show that between 2010 and 2016 nonfinancial corporate earnings in emerging economies steadily declined (Beltrán et al., 2017). Declining earnings could be related to the debt overhang problem explained in Section 2. Due to debt overhang, emerging market firms could have passed or underinvested on profitable investment projects, which could have negatively affected

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<sup>3</sup> An ICR lower than one indicates that a firm is not generating enough earnings to service its debt. However, the threshold for the ICR is usually set at two to account for potential funding risks that could arise in a high stress scenario (IMF, 2014).

their capacity to generate earnings. Lower earnings could also be related to a deceleration in the high growth rates that emerging economies used to experience, as they became more mature and reached higher GDP per capita levels.

The aggregate counterpart of a deterioration in the debt servicing capacity of firms was an increase in the share of debt-at-risk. In 2016, the share of nonfinancial corporate debt-at-risk in emerging economies stood at 24 percent up from 15 percent in 2008. China, where the share of debt-at-risk increased from about 15 to 32 percent, was largely responsible for this increase. Nevertheless, nonfinancial corporate debt-at-risk also increased in other emerging economies. In 2016, debt-at-risk amounted to more than a fifth of total nonfinancial corporate debt in several large emerging economies, including Argentina (22 percent), Brazil (30 percent), India (23 percent), and Turkey (20 percent) (Beltrán et al., 2017).

In addition to debt-at-risk, the Corporate Vulnerability Index (CVI) constructed by Feyen et al. (2017) can provide a comprehensive measure of firms' debt repayment capacity. Whereas debt-at-risk measures the share of debt held by firms with an ICR below a threshold, the CVI calculates the share of debt held by firms which present vulnerabilities in multiple indicators at the same time. These indicators include the leverage ratio, return on assets, the market-to-book ratio, and the ICR itself, among others. According to the CVI, the overall vulnerability of emerging market firms steadily increased after 2008, particularly accelerating after 2013, and then stabilized in 2016. Trends were not homogenous across emerging regions. In some regions, such as Eastern Europe and Central Asia as well as South Asia, vulnerability increased around 2008 and 2009 and remained stagnant since then. In contrast, in Latin America and the Caribbean and Sub-Saharan Africa the risk of financial distress did not become elevated until around 2012.

Whereas indicators such as debt-at-risk and the CVI can provide useful insights on how corporate vulnerability increased over time, their levels do not provide information on whether



corporate vulnerability in emerging economies has become dangerously high or not. This type of assessment might require analyzing how financial indicators among emerging market firms compare relative to other crisis periods. The AFC serves as a good benchmark. Financial distress in the nonfinancial corporate sector was a key factor leading to the AFC. In fact, some conditions in Asian nonfinancial corporate sectors in the run-up to the Asian crisis were very similar to the ones since the GFC, including a rapid increase in leverage coupled with deteriorating profitability and debt repayment capacity (Pomerleano, 1998; Claessens et al., 1999).

A comparison of leverage and debt repayment capacity of emerging market firms post-GFC relative to East Asian firms before the AFC suggests that solvency risk after the GFC remained below that on the eve of the AFC (Alfaro et al., 2017). The average leverage ratio (measured as debt to equity) and debt repayment capacity (measured as earnings to liabilities) among East Asian economies in the period 1996-98 were 146 and 24 percent, respectively. In contrast, during the period 2009-14, these values stood at 87 and 36 percent, respectively, among emerging economies. Furthermore, in no emerging economy was the average value of the Altman Z Score across firms in the so-called distressed zone (below 3.75) during the period 2009-14.<sup>4</sup> This pattern contrasts with the situation before the AFC, when the average Altman Z Score of firms in the Republic of Korea fell in the distressed zone.

### *3.2. Currency Risk*

Currency risk is another type of risk that is not well captured by the solvency risk measures. Currency risk could have increased if emerging market firms issued debt in foreign currency, but then used the proceeds to invest and generate earnings in domestic currency. Having foreign currency liabilities and

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<sup>4</sup>The Altman Z Score calculates the probability of a firm going bankrupt based on different balance sheet indicators. Based on the score, a firm can be categorized as safe (safe zone), with a mild probability of going bankrupt (grey zone), or with a high probability of going bankrupt (distressed zone).

domestic currency assets could impair the ability of firms to pay back their debts if the domestic currency depreciates.

A substantial part of the nonfinancial corporate debt boom took place in international bond markets. The amount outstanding of international nonfinancial corporate bonds expanded from \$203 billion in 2008 to \$614 billion in 2018. Most of these international issuances (93 percent) were conducted in foreign currency (BIS, 2019). Firms in the tradable sector, which are expected to receive income in foreign currency, have a natural hedge against currency shocks. But those firms were not the only ones conducting international issuances. In several emerging economies, firms in the non-tradable sector issued large amounts of international bonds after the GFC (Chui et al., 2016). These patterns led some observers to argue that emerging market firms became more exposed to currency risks (Shin, 2014; Turner, 2014; Chui et al., 2018).

Although foreign currency denominated debt increased, most of the corporate debt boom after the GFC occurred in local markets and domestic currencies, which might have helped to mitigate currency risks. In particular, emerging market firms increased the share of bonds issued in domestic bond markets since the GFC. The increased importance of domestic bond issuances was particularly significant in East Asia. In this region, most of the corporate bond expansion since the GFC occurred within their local bond markets. In other emerging regions, the relative share of domestic corporate bond issuances also increased after the GFC, but most of the issuances still took place in foreign markets (Figure 5). Because of the high correlation between issuance market and currency denomination, this trend implies a rise in the share of domestic currency bond financing among emerging economies (Abraham et al., 2019). Moreover, the share of domestic currency bonds increased even within international (cross-border) issuances. Whereas most international bond issuances by emerging market firms after the GFC were denominated in foreign currency, the share of international issuances denominated in local currency increased vis-à-vis the pre-crisis period (BIS,

2013; Hale et al., 2016). The average share of international nonfinancial corporate bonds issued per year in domestic currency increased from 3 percent during 2000-07 to 7 percent during 2008-18 (BIS, 2019).

As a result of these developments, the relative share of foreign currency denominated nonfinancial corporate bonds across emerging economies declined after 2008. In the period 2000-07, the share of nonfinancial corporate bonds issued per year in foreign currency was 53 percent. In 2008-18, this share dropped to 23 percent. Even when China is excluded from the sample, there was a decline in the annual share of foreign currency bond issuances by emerging market firms from 55 to 47 percent when comparing the periods 2000-07 and 2008-18 (Çelik et al., 2019).

Although the aggregate trends do not seem to suggest a higher exposure to currency risk across emerging economies worldwide, this type of risk cannot be overlooked. Some studies point out that the relative importance of foreign currency bonds increased for nonfinancial firms in some Latin American economies after the GFC, including Argentina, Brazil, Chile, and Mexico (Acharya et al., 2015; Rodrigues Bastos et al., 2015). Furthermore, particular sectors within emerging economies could have become more exposed to currency mismatches. For example, compared to firms from tradable sectors, firms in non-tradable sectors and net importers, such as construction and retail firms, are more prone to currency risks. Currency risks could have concentrated among these firms because they increased their debt issuances in foreign currency while their revenues are typically denominated in domestic currency (Chui et al., 2016).

### *3.3. Rollover Risk*

Even if emerging market firms are generating enough earnings to cover interest payments and do not have currency mismatches, high levels of debt could still expose them to rollover risk. On several occasions, firms have long-term investment projects, but the financing obtained to fund them is short

term. When this occurs, debt maturity expires before the investment project breaks even and firms have yet to recoup the initial investment, imperiling their capacity to repay even when they are solvent. Firms usually go around this issue by rolling over their debt at maturity. In other words, when debt expires, they repay lenders the old debt by issuing new debt. In this way, firms can rollover their debt until they have the funds to return the initial investment to lenders. However, rollover entails risks because it depends on the willingness of lenders to renew the debt at a cost that makes the debt sustainable.

Emerging market firms can be particularly vulnerable to rollover risk. Many times, borrowers in these economies choose to borrow short term even if it increases rollover risks because short-term borrowing is significantly cheaper than long-term borrowing. The “term premium” that investors charge to lend in emerging economies is higher than the one charged in developed economies and, also, tends to substantially increase during crisis periods. This higher term premium can be associated with higher default risk (Broner et al., 2013).

Trends within nonfinancial corporate bond markets after the GFC show that bond maturities in emerging market firms were relatively shorter term than in developed economies and shortened over time (Cortina et al., 2018; Çelik et al., 2019). Between 2008 and 2018, the average maturity of nonfinancial corporate bonds in emerging economies fell from 6 to 3 years. China, where the average maturity dropped from 6 to 3 years, was the main economy driving this decline. Nevertheless, the average maturity also fell in other emerging economies outside China (from 7 to 6 years). In contrast, the average maturity of nonfinancial corporate bonds in developed economies remained fairly stable, at around 8 years during this period (Çelik et al., 2019).

Relatively short maturities mean that emerging market firms will have to rollover a substantial share of their debts between 2020 and 2023 (Çelik et al., 2020). At the end of 2019, a total value of \$1.4 trillion from nonfinancial corporate bonds was set to mature during 2020-23. This amount

represented almost 50 percent of the outstanding amount of nonfinancial corporate bonds in emerging economies at the end of 2019. Most likely, a substantial share of this maturing debt will have to be rolled over, but it is unclear whether investors will still be interested in buying emerging market nonfinancial corporate bonds when the time to refinance comes. Willingness to rollover the debt will depend, among other factors, on whether global interest rates are low enough to maintain investors' appetite for riskier assets in emerging economies as well as investors' assessment on the overall vulnerability of firms.<sup>5</sup>

In addition to the declining bond maturities, the increasing reliance on bond financing might have exposed emerging economy firms to higher rollover risks per se because bonds are more difficult to restructure than bank loans. The idea is that the dispersion of bond investors reduces their incentives to renegotiate debt payments relative to banks, which can monitor firms more closely and offer greater flexibility for firms than bondholders in times of distress (Bolton and Scharfstein, 1996; Hackbarth et al., 2007; Crouzet, 2018). Another factor influencing the greater financial flexibility of bank loans with respect to bonds is that loan creditors are senior in the event of default (whereas bond holders usually are not), so lenders can recover the principal more easily (Schwert, 2019).

While some developments increased rollover risk, other forces might have helped to reduce it. Even if bond maturities declined, the compositional change from loan to bond financing could have a positive effect on aggregate (loan plus bond) debt maturities because bond debt is usually longer term than bank debt (Cortina et al., 2019). As a result, the overall effect on debt maturities is unclear. Analyzing whether overall debt maturities increased or decreased for emerging market firms since the GFC would require data on bank loan maturities, which are not typically available across economies.

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<sup>5</sup> The COVID-19 pandemic could have exacerbated problems with debt rollovers. Aggregate estimates for all emerging economies (excluding China) show that, assuming these economies lost market access in 2020, they might not be able to rollover as much as \$1.6 trillion of their external public and private debt maturing in 2020. This value represents 28 percent of the stock of external debt in emerging economies (excluding China) in 2018 (Bolton et al., 2020).

#### **4. Nonfinancial Corporate Debt and Vulnerability to External Shocks**

Even though some risks associated with the rise of nonfinancial debt seemed to have increased among emerging market firms after 2008, the overall risk levels were not excessively high at the end of 2019. Still, emerging market firms could have increased their vulnerability to changes in market conditions, such as a monetary policy tightening in developed economies, a U.S. dollar appreciation, or shifts in both global liquidity and risk aversion (Asis et al., 2020). Among these factors, solvency has been a particular concern.

The COVID-19 pandemic that started in early 2020 greatly heightened risks for emerging market firms. COVID-19 disrupted financial markets and caused a slump in economic activity, directly hitting many firms that were forced to halt production. This adverse shock came at a time when geopolitical tensions (such as trade disputes between the United States and China that started in 2018 as well as uncertainty over Brexit) had already caused volatility and subdued economic growth in some countries. In 2019, the IMF anticipated that in 2020 the world economy would experience a modest growth of about 3.4 percent (IMF, 2019b). As of June 2020, the IMF estimated that global economic activity would fall by at least 5 percent by the end of that year (IMF, 2020). Economic contraction could depress corporate earnings, increase debt-at-risk ratios, and reduce investors' incentives to rollover debt. In fact, financial markets witnessed a sharp decline in March and April 2020, recovering only after massive interventions by governments to guarantee funding to the corporate sectors and income to households (Singh, 2020).

The rest of this section explores how worsening market conditions could impact emerging market firms.

#### *4.1. Effects of Changes in Market Conditions*

Amid concerns about increased indebtedness since the GFC, several studies analyze how different shocks could impact the balance sheet of emerging market firms. One of the first studies on this issue was performed by the IMF in 2014 (IMF, 2014). The IMF conducted a scenario analysis to test the resilience of emerging market firms to shocks to earnings, borrowing costs, and exchange rate depreciations. Debt-at-risk is used as the outcome variable. Using data for 2012, the analysis concludes that under an adverse scenario debt-at-risk in emerging economies would almost double, from 19 to 35 percent. This scenario analysis was re-run in 2015 and in 2016 with similar results (Chow, 2015; IMF, 2016).

In 2017, the United States Board of Governors of the Federal Reserve (henceforth, Federal Reserve) conducted a similar analysis with two improvements (Beltrán et al., 2017). First, the study qualifies the levels of risk by comparing resulting values of debt-at-risk with those during the AFC. Second, the study assesses the relative importance of different shocks. This study models the effect of shocks to earnings, interest rates, and the exchange rate on debt-at-risk of nonfinancial corporates assuming large but plausible shocks, based on previous crisis episodes. In particular, the authors assume a fall in earnings of 20 percent, a rise of 100 basis points in the interest rate paid by firms, and a 20 percent depreciation of the exchange rate. This study finds that if the three shocks would occur simultaneously, the debt-at-risk in emerging economies in 2016 would rise from 25 to 41 percent. Excluding China, debt-at-risk would increase from 15 to 34 percent. Although high, these values would still be below those on the eve of the AFC when debt-at-risk stood at 48 percent. Nevertheless, in several large emerging economies the share of debt-at-risk would get near or, even, surpass 48 percent. This would be the case of Indonesia (62 percent), Mexico (53 percent), China (48 percent), and Brazil (45 percent). In other words, in major emerging economies about half of nonfinancial corporate debt would correspond to firms with weak debt servicing capacity.

According to this Federal Reserve study, shocks to earnings and interest rates would be the most harmful. However, if only one of these shocks occurred, the debt-at-risk would still be below those before the AFC. A shock to earnings or interest rates alone could increase debt-at-risk in emerging economies from 24 to 31 percent with no individual economy having debt-at-risk higher than 40 percent. In turn, the impact of a currency shock could be almost negligible, slightly increasing debt-at-risk to 26 percent. This minimal impact of currency shocks might be associated with the overall lower reliance of firms on foreign currency debt, as discussed in the analysis of currency risk in Section 3.

## **5. Margin for Policy Action**

Amid greater risk of corporate distress, a central question is whether there is a motivation and room for policy makers to step in and try to mitigate risks in the nonfinancial corporate sector, even if the COVID-19 crisis gets resolved successfully. Another question is which instruments policy makers could use to reduce debt burdens as well as to mitigate the impact of nonfinancial corporate distress, and what the trade-offs are in the case that intervention is warranted. The fact that emerging market firms have an increased reliance on bond markets (rather than banks) is an important factor to consider when examining these questions.

There are two main reasons why policy makers might want to curb indebtedness in the nonfinancial corporate sector and intervene in the event of nonfinancial corporate debt distress: investor protection and crisis prevention.

First, because debt default implies that individual investors would not get their money back, policy makers might be inclined to take steps to mitigate the risks of defaults and reduce losses whenever defaults occur. When firms issue debt overwhelmingly through banks (as it was the case before the GFC), there are strong reasons for government intervention to protect investors. Banks



provide financing using money from their depositors, which are mostly ordinary, not financially savvy individuals. Most people are unaware of how banks operate and, even when they are, they do not have much information or power to control how much risk they take. Therefore, limiting excessive bank lending and risk exposure of bank assets can be justified as a means to safeguard depositors' savings in the economy. Furthermore, when a bank is in distress it might have negative consequences not only for its own depositors, but also for depositors at other banks. Distress in one bank can cause panic, leading depositors at other banks to withdraw their funds. As a result, other banks could suffer liquidity problems as well as solvency problems (if banks have to sell assets at a discount to obtain cash to return deposits) (Freixas et al., 2000).

The rising importance of capital markets for firm financing, however, makes the rationale for investor protection less clear cut. In contrast to banks, capital markets feature multiple investors from different backgrounds. On the one hand, capital market investors can include pension funds or other investors that, similar to banks, invest money from ordinary people (albeit through professional managers). On the other hand, capital markets can also feature sophisticated investors, such as those that invest through hedge funds and private equity funds. More informed investors are expected to have a good understanding of capital markets, the risks of different securities, and the risks of their investment decisions. Hence, it is not clear why policy makers would need to limit their risk taking. Furthermore, capital markets can include foreign investors. Similar to the treatment of foreign investors that hold sovereign debt, policy makers might not be interested in protecting foreign investors that hold nonfinancial corporate bonds because they are not part of their constituency (Broner et al., 2014).

Second, beyond the issue of investor protection, policy makers might have strong incentives to mitigate the risks of nonfinancial corporate debt in order to reduce the real effects associated with high debt accumulation. As the AFC shows, increasing levels of risky corporate debt can lead to

corporate distress and crises with large effects on the real economy. In particular, this crisis led to significant drops in GDP, as large as 16 percent, in the affected economies (Barro, 2002). Furthermore, high firm debt can make crises originated in other sectors even more severe. For example, during economic downturns highly leveraged firms threatened by bankruptcy might decide to reduce investment, contributing to even further output contractions (Kim and Stone, 1999). Even if it does not trigger crises, high levels of nonfinancial corporate debt can become a drag on economic growth by causing debt overhang.

### *5.1. Policies to Reduce Corporate Indebtedness*

Policy makers have few tools in place to curb nonfinancial corporate debt through non-bank intermediaries (IMF, 2019a). In part, this lack of tools is related to the fact that, in most countries, firms overwhelmingly contracted debt through banks before the GFC. Thus, policy makers mostly focused on implementing policies to limit banks' exposure to various risks related to their lending activity. Moreover, the particular characteristics of the banking sector make regulation of lending much easier than when debt is provided through capital markets. Because banks are such a major source of risk to the economy, they are heavily regulated and supervised. Some public institutions, such as central banks and banking supervisors, have the authority and tools to limit the risk exposure of banks. These institutions can use several legal instruments (such as capital requirements, counter-cyclical buffers, and large exposure restrictions) to directly limit the amount of debt banks grant to firms.

Compared to banks, capital markets are places where investors directly interact with borrowers and voluntarily decide how to allocate their funds. Thus, governments do not typically have powers to regulate these markets beyond guaranteeing their transparency and preventing fraud. Limited regulation and intervention imply that policy makers do not have much leeway to introduce prudential policies that constrain the amount of debt issued by firms.

Although limited, policy makers can introduce prudential policies to mitigate the risk levels in the nonfinancial corporate sector. Whereas policy makers cannot control how private investors at large use their funds, they can impose restrictions on institutional investors, such as pension and mutual funds, that invest savings of ordinary people. For instance, it is common for governments to limit the share of funds that pensions funds can invest in corporate securities (OECD, 2018). In this way, the savings of ordinary people can be protected while allowing more sophisticated investors to take the level of risk they desire. However, restrictions on pension fund investments can reduce their returns and, thus, the amount of funds to disburse to pensioners. In addition, this policy would not prevent firms from taking on excessive debt from other investors.

Policy makers could also control the entry of foreign investors by imposing capital controls. In contrast to the view that emerged in the 1990s that favored unrestricted financial liberalization, a new view proposes that capital controls could be desirable and an effective tool for financial risk management (IMF, 2012). In particular, policy makers could use capital controls to limit international investors' purchases of nonfinancial corporate bonds. By restricting exposure to foreign investors, policy makers can increase stability of the sources of finance (as international flows can be volatile and pro-cyclical) and mitigate currency risks among firms (Ostry et al., 2012). However, capital controls come at a cost. For example, by limiting access to foreign funds, capital controls can reduce firms' access to finance, negatively impacting productivity and growth (Levchenko et al., 2009; Larrain and Stumpner, 2017).

As a result of the negative experience with the AFC, East Asia is a region where capital controls have been typically used to curb foreign investors in capital markets. In China, the Qualified Foreign Institutional Investors programs (QFII) and Renminbi Qualified Foreign Institutional Investor (RQFII), established in 2002 and 2011 respectively, limit the amounts and type of securities foreign investors can acquire in capital markets. In 2011, Korea increased taxes on foreign investor purchases

of foreign currency denominated bonds in an effort to dampen foreign flows after the GFC. Similarly, the Philippines reacted to a spike in capital inflows during the early 2000s by restricting outflows from non-residents in order to discourage further inflows (Jongwanich, 2019).

Although not specific to capital markets, policy makers could limit nonfinancial corporate indebtedness by reducing tax incentives toward debt finance. In most economies, tax codes allow firms to deduct interest paid on debt, creating incentives to favor debt over equity and leading to higher corporate leverage. Therefore, several researchers have proposed that a tax reform that reduces tax incentives for debt could be an instrument to reduce nonfinancial corporate leverage and increase financial stability (Feld et al., 2013; Dallari et al., 2018). The downside of reducing the debt bias would be an increase in financing costs for firms that could impact investment and growth. This negative effect would be particularly pernicious in the context of the COVID-19 economic crisis, so this policy might be put on hold until economies have recovered from the pandemic.

### *5.2. Policies to Mitigate the Impact of Corporate Distress*

Besides interventions to curb debt levels, policy makers could establish instruments to deal with and minimize the impact of corporate distress after firms face repayment difficulties, including default. Instruments to deal with government and financial sector debt problems are well-established and widely used. Governments can raise extraordinary resources (increasing taxes or printing money), resort to lenders of last resort (through central bank financing), and even borrow from international financial institutions (such as the IMF) to repay their debts. Financial institutions can access different central bank facilities and programs when they are experiencing financial difficulties. Even at a cost, governments can have bank resolution mechanisms in place to bail out financial institutions in distress.

In contrast, the debate regarding instruments to deal with nonfinancial corporate distress became more prominent only after the GFC. When this crisis distressed the nonfinancial sector in

several economies and showed that firms can have a systemic impact, policy makers started to consider the value of having proper corporate restructuring measures in place. There has been emphasis on specific mechanisms to provide direct financial assistance to troubled firms or creating asset management companies (AMCs). These are companies that buy very risky (or even defaulted) debt in exchange for part of the firms' equity. The debt can be later converted into equity and/or sold to the public (Grigorian and Raei, 2010). Another important instrument to effectively deal with corporate distress is insolvency laws. Effective insolvency laws need to allocate risks in a predictable, transparent, and equitable way as well as protect assets for the economy. To achieve these goals, insolvency laws need to include, among other provisions, clear triggers of insolvency, facilities to promote the rehabilitation of viable firms, and steps to speedy liquidation of non-viable firms (Liu and Rosenberg, 2013).

Whenever the government is involved in nonfinancial corporate debt restructuring, interventions can spur negative effects and spillovers that would need to be addressed. For example, when an intervention requires providing financial assistance, it could negatively impact public finances. Moreover, in an attempt to protect employment, the government might be tempted to intervene to preserve non-viable firms that are inefficient and costly to operate. Prospective government intervention could also incite moral hazard and reckless risk taking by firms (Laryea, 2010). For example, some observers argue that in the run-up to the AFC implicit government guarantees to banks led to moral-hazard lending to firms. These guarantees acted as an implicit subsidy to investment, which promoted lending to unprofitable projects that produced losses and, in the end, required governments to step in and bailout banks (Corsetti et al., 1999).

Who is holding the nonfinancial corporate debt can have implications on how the government intervenes. In some cases, the government might decide to bailout all investors to minimize investors' losses and disruptions in the economy. But in many cases, a comprehensive bailout can be too costly,

and the government might opt to give preference to some investors. The sovereign debt literature, which analyzes the decision of governments to default, can provide some insights on how policy makers choose which investors to bailout. The government might care more about domestic residents than foreign residents and, thus, might have more incentives to repay debts when the share of domestic debtholders is high. However, defaulting on foreign investors can result in lower access to international financial markets in the future (Erce and Díaz-Cassou, 2010; Broner and Ventura, 2016). This argument about the trade-offs of bailing out different investors could be extended to cases when the government tries to rescue the corporate sector from financial distress.

Despite increasing challenges for policy makers, the wider use of bond financing by emerging market firms might also be a positive development. Increased bond financing can lower financial constraints for emerging market firms and their historic dependence on traditional bank lending, resulting in more complete and competitive financial markets. Increased access to bond markets can also improve firms' resilience to shocks. For instance, access to bond markets can allow firms to switch from loans to bonds to withstand bank credit supply contractions (Adrian et al., 2013; Becker and Ivashina, 2014). The fact that bond issuances in domestic markets particularly increased after the GFC can provide an additional channel to mitigate negative shocks. When adverse shocks hit international bond markets, emerging market firms can move to compensate the drop in international bonds by raising more bonds domestically (Cortina et al., 2019). Furthermore, even if large emerging market firms are the main players behind the boom in bond issuances, their actions can have positive spillovers on relatively smaller firms. As large emerging market firms increasingly turn toward bond markets for funds, banks can have excess funds that they can lend to smaller firms in the economy (Carabarin et al., 2015). However, in the same way that higher bond financing can "crowd in" smaller firms into the financial sector during boom periods, large firms might go back to banks, "crowding out" smaller firms during capital market crises.

## 6. Open Questions for Future Research

While providing several benefits, increased firm financing, especially in bond markets, has introduced a potential source of financial instability in emerging economies. To deal with it, new approaches are needed that differ from those used to address more traditional sources of financial instability in emerging economies, such as banks and sovereign debt. Measuring and understanding firms' risks would be an important first step toward the development of effective policies that mitigate risks in the nonfinancial corporate sector, while taking advantage of the new financing opportunities that deeper debt markets can offer. This issue can be crucial in light of the higher risk of corporate financial distress caused by the COVID-19 economic crisis. Several avenues of research can help in this regard and deserve further work going forward.

First, it seems essential to develop more complete and comprehensive analyses on the levels and composition of nonfinancial corporate debt across economies. The existing research tends to offer only a partial view of corporate debt as it usually focuses on specific markets and borrowers. For instance, many empirical papers document the fast growth in bond financing after the GFC, but they tend to focus on the international bond markets, not showing how other (even larger) components of debt corporate financing evolved. This issue can be relevant to the extent that different markets might feature different investors, offering different types of financing to different firms. More information on when the debt matures, whether interest rates are flexible or fixed, and its currency denomination, among other characteristics, can help to understand what types of risks are the most pressing for firms. For example, a large share of short-term debt can indicate high rollover risks, particularly as creditors are reluctant to renew debt during crisis periods (Acharya et al., 2011). In the same way, a large proportion of foreign-denominated debt could signal increased vulnerability to currency depreciations (Cowan et al., 2011).

Adding to the partial analysis of corporate debt, the different debt statistics available, with very different methodologies and coverages, fail to provide a comprehensive picture of the various components of aggregate debt levels and their evolution across countries. Overall, understanding the determinants of the financial architecture of corporations is key because the costs associated with economic crises depend on the type of debt instruments used (Hale, 2007). More analyses on the changes in the composition of corporate debt can be relevant to identify how financial distress can be transmitted throughout the economy and help to design policies to prevent and mitigate its impacts.

Second, further understanding the characteristics of firms issuing debt is also key to accurately analyze debt exposures across borrowers. For instance, larger firms have better capacity to repay their debt obligations than smaller corporations. In addition, larger firms can raise financing from different instruments and markets, allowing them to better mitigate negative shocks. Another important distinction is between privately-owned and state-owned firms. For the latter, implicit government guarantees can be relevant when assessing their credit risk.

Third, the type of creditors holding nonfinancial corporate debt can also impact firms' risk profile. For instance, investors with long-term horizons that can hold illiquid instruments up to maturity, such as defined benefit pension and insurance funds, might be more inclined to rollover debt relative to short-term investors looking to obtain rapid gains and following market-to-market practices that are monitored frequently (Opazo et al., 2015). Similarly, a large share of debt held by highly speculative investors (the so-called "vulture funds") could hinder efforts to renegotiate the outstanding debt in case of default.



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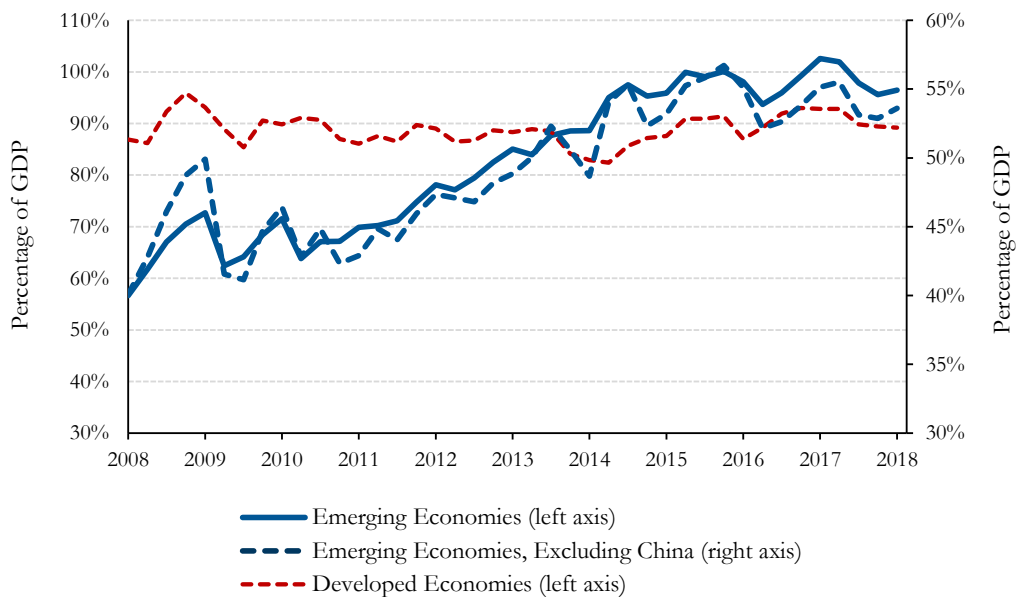
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**Figure 1**  
**Corporate Debt Outstanding**

**Panel A. World**



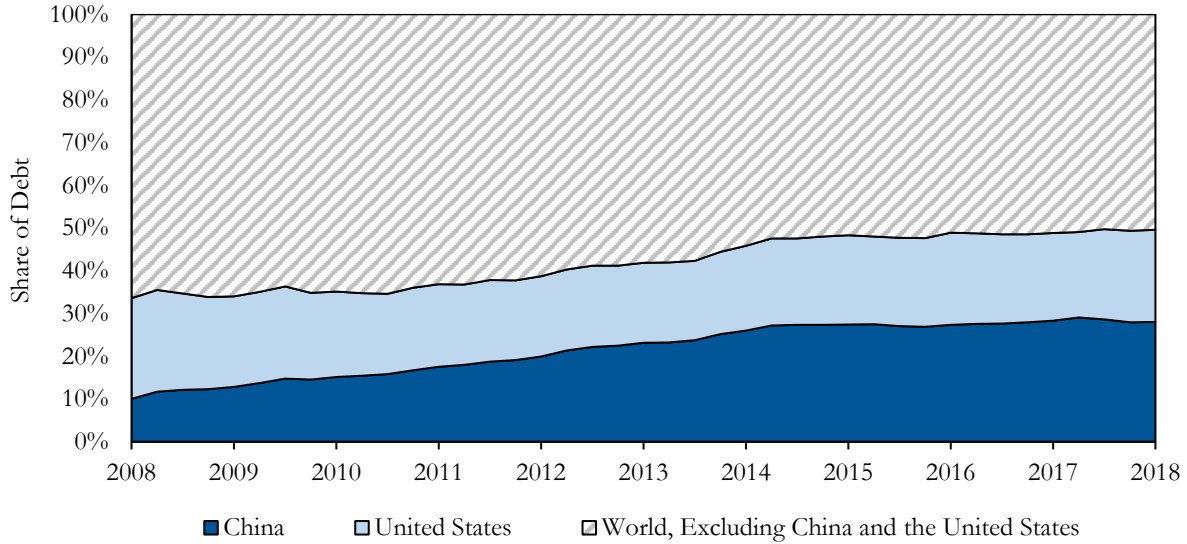
**Panel B. Emerging and Developed Economies**



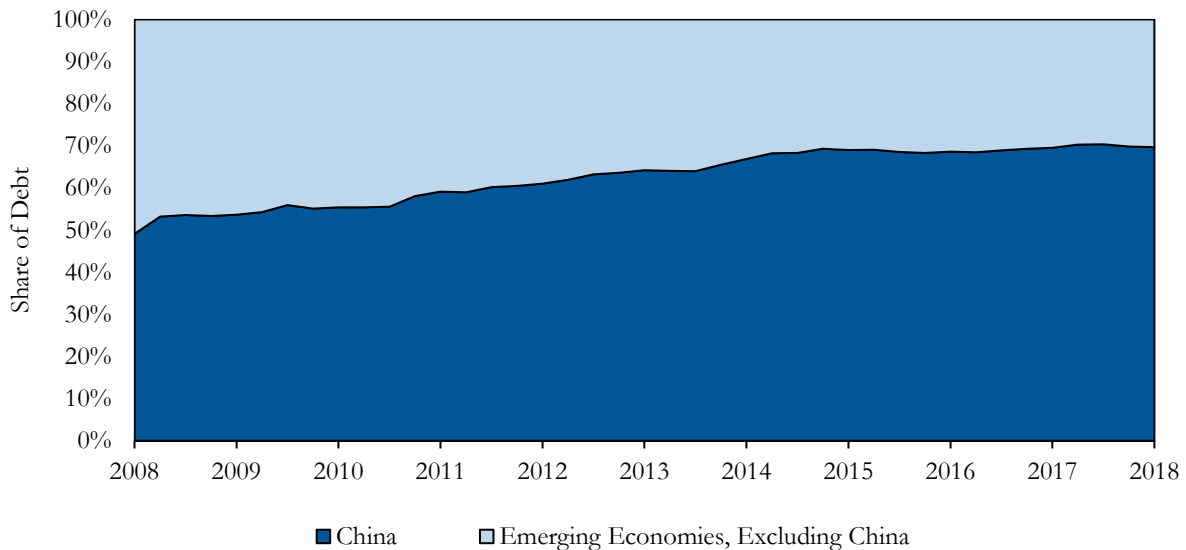
This figure shows the aggregate levels of nonfinancial corporate debt as a percentage of GDP during 2008-18. Nonfinancial corporate debt refers to all liabilities (loans, bonds, and other claims) issued domestically and abroad by firms that produce market goods and nonfinancial services, as defined by the BIS. Emerging economies are: Argentina, Brazil, Chile, China, Colombia, the Czech Republic, Hong Kong SAR, Hungary, India, Indonesia, Israel, Malaysia, Mexico, Poland, Republic of Korea, Russian Federation, Saudi Arabia, Singapore, South Africa, Thailand, and Turkey. Developed economies are: Australia, Canada, Denmark, economies in the euro area, Japan, New Zealand, Norway, Sweden, Switzerland, the United Kingdom, and the United States. Data are at the quarterly level. The graph labels correspond to the last quarter of each year. The source of the data is the BIS Credit to the Nonfinancial Sector Database.

**Figure 2**  
**The Role of China in Global Corporate Debt**

**Panel A. China versus the Rest of the World**



**Panel B. China versus Emerging Economies**

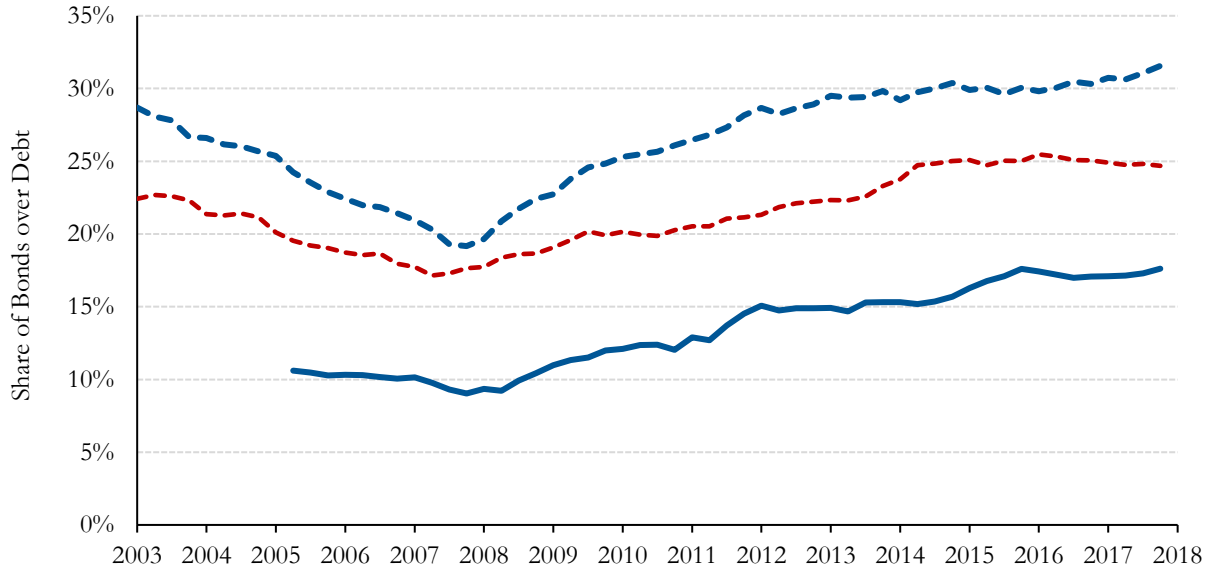


This figure shows the aggregate share of China's nonfinancial corporate debt with respect to the world and emerging economies during 2008-18. Panel A shows the shares of global nonfinancial corporate debt captured by China, the United States, and the rest of the world (Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, Colombia, the Czech Republic, Denmark, Finland, France, Germany, Greece, Hong Kong SAR, Hungary, India, Indonesia, Israel, Italy, Japan, Malaysia, Mexico, Netherlands, Norway, Poland, Portugal, Republic of Korea, Russian Federation, Saudi Arabia, Singapore, South Africa, Spain, Sweden, Switzerland, Thailand, Turkey, and the United Kingdom). Panel B shows the share of emerging market nonfinancial corporate debt captured by China and other emerging economies (Argentina, Brazil, Chile, Colombia, the Czech Republic, Hong Kong SAR, Hungary, India, Indonesia, Israel, Malaysia, Mexico, Poland, Republic of Korea, Russian Federation, Saudi Arabia, Singapore, South Africa, Thailand, and Turkey). Data are at the quarterly level. The graph labels correspond to the last quarter of each year. The source of the data is the BIS Credit to the Nonfinancial Sector Database.

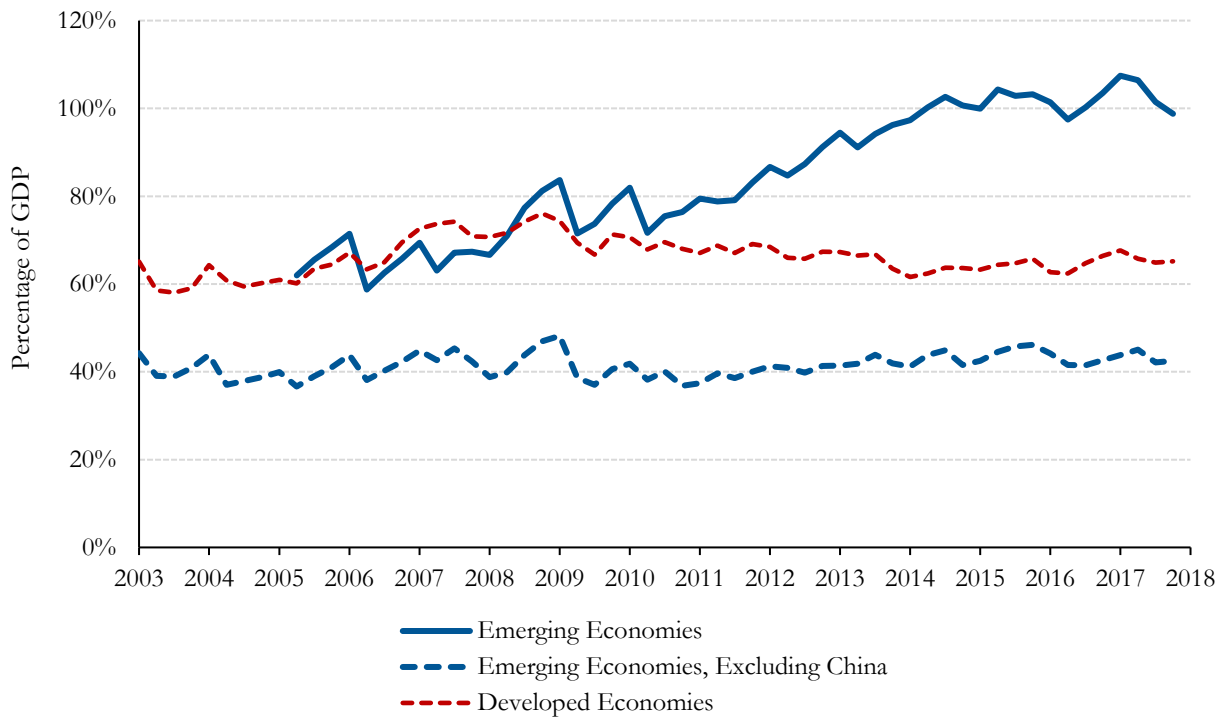


**Figure 3**  
**Components of Corporate Debt**

**Panel A. Share of Bonds over Corporate Debt**

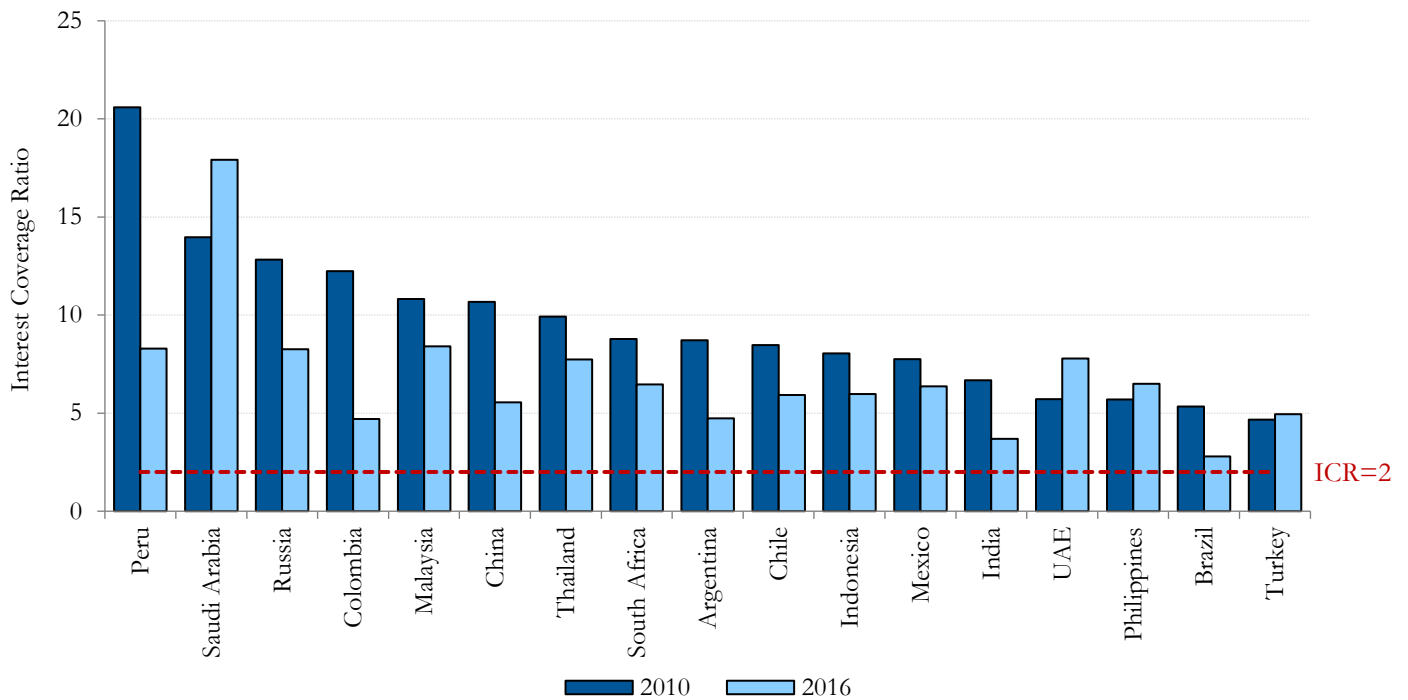


**Panel B. Corporate Debt Outstanding, Excluding Bonds**



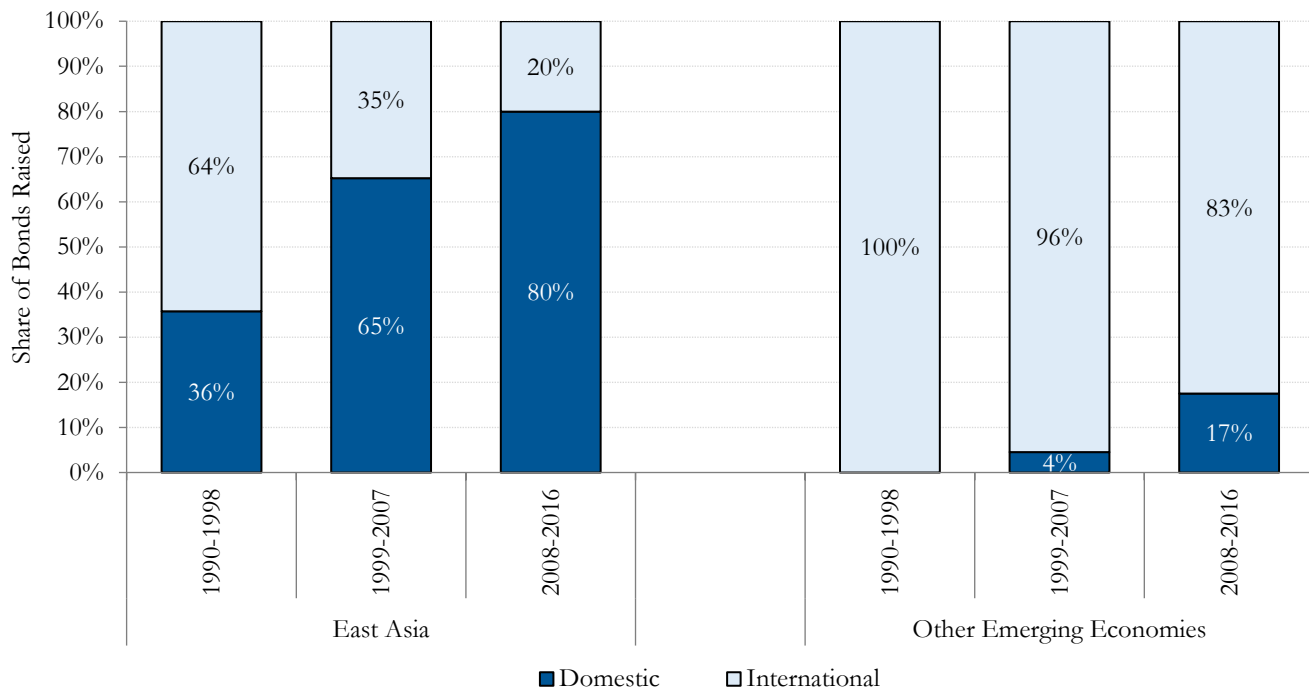
This figure shows the evolution of the components of nonfinancial corporate debt during 2003-18. Panel A shows the aggregate share of bonds over total nonfinancial corporate debt. Panel B shows the share of nonfinancial corporate debt over GDP after excluding bonds. Emerging economies are: Argentina, Brazil, Chile, China, Hong Kong SAR, Hungary, Israel, Poland, Republic of Korea, Singapore, and Thailand. Developed economies are: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Italy, Japan, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom, and the United States. Data are at the quarterly level. The graph labels correspond to the last quarter of each year. The sources of the data are the BIS Debt Securities Statistics and the BIS Credit to the Nonfinancial Sector Databases.

**Figure 4**  
**Interest Coverage Ratio in Emerging Economies**



This figure shows the average interest coverage ratio (ICR) of firms in selected emerging economies in 2010 and 2016. The ICR is the ratio of earnings before interest and depreciation (EBITDA) to interest payments. A firm with an ICR below 2 is considered to be weak or in risk of financial distress. The source of the data is IMF (2016).

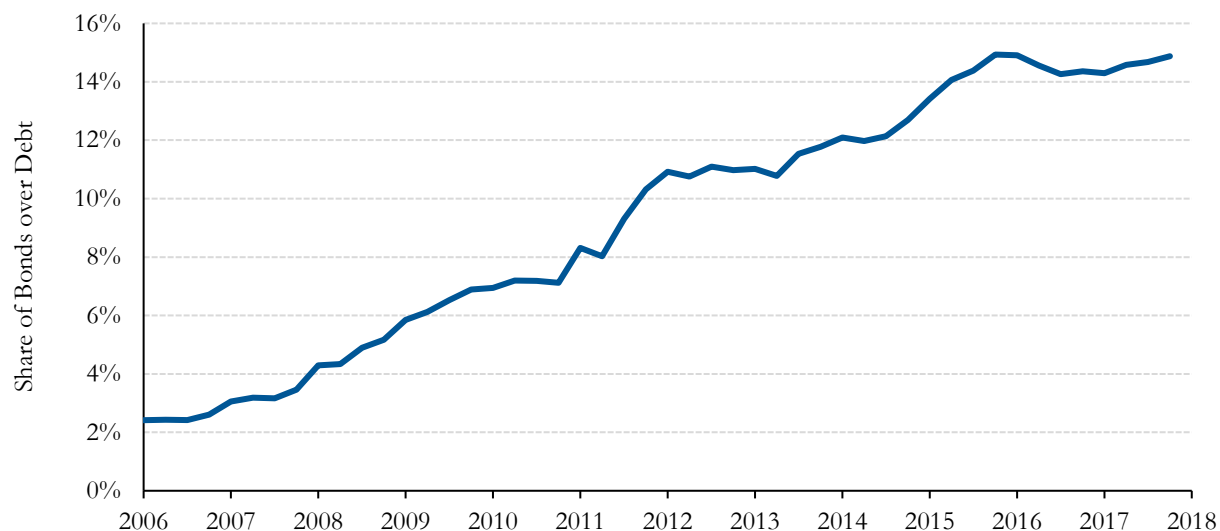
**Figure 5**  
**Domestic and International Corporate Bond Issuances in Emerging Economies**



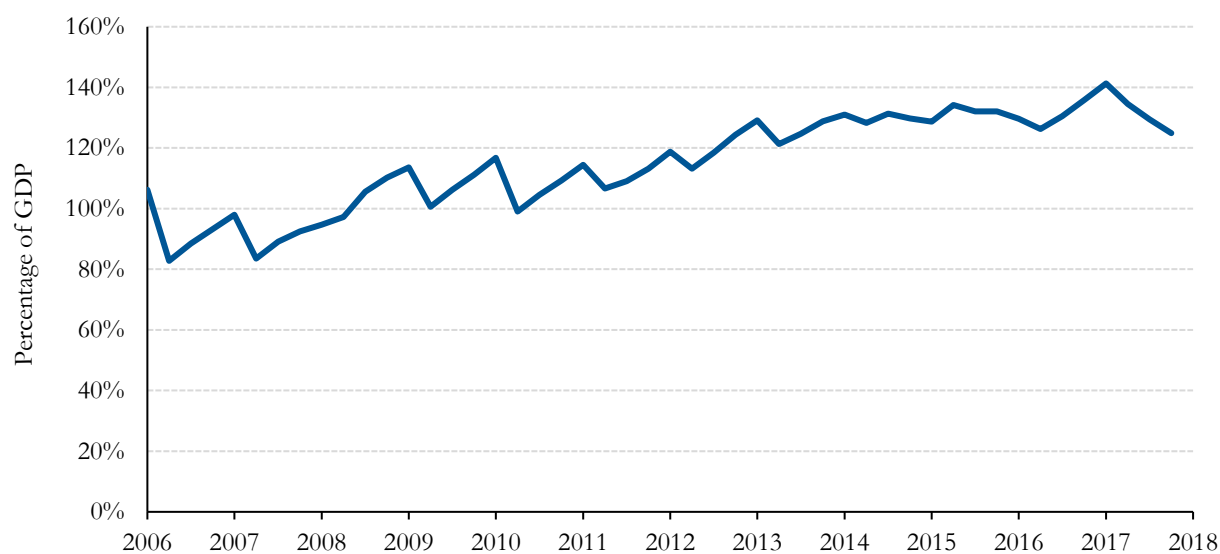
This figure shows the share of the total amount raised per year in domestic and international bond markets. The figure shows the median economy in each region and period. Corporate bonds include both financial and nonfinancial sector bonds. Domestic issuances are those conducted by firms in their home economy. International issuances are those conducted by firms outside their home economy. The source of the data is Abraham et al. (2019).

## Appendix Figure 1 Components of Corporate Debt in China

### Panel A. Share of Bonds over Corporate Debt



### Panel B. Corporate Debt Outstanding, Excluding Bonds



This figure shows the evolution of the components of nonfinancial corporate debt in China during 2006-18. Panel A shows the share of bonds over total nonfinancial corporate debt in China. Panel B shows the share of nonfinancial corporate debt over GDP after excluding bonds. Data are at the quarterly level. The graph labels correspond to the last quarter of each year. The sources of the data are the BIS Debt Securities Statistics and the BIS Credit to the Nonfinancial Sector Databases.