

Corporate Funding Structures and Incentives

Final report

Introduction

In the aftermath of the global financial crisis, a concerted effort has been made to reduce leverage in the financial sector. For instance, the aggregate leverage of large internationally active banks declined from 29 times Tier 1 capital in 2011 H1 to 22 times in 2014 H1.¹ Such reductions are helping to reduce the vulnerability of the financial system to shocks.

However, broader measures of debt and leverage, which cover both financial and nonfinancial sectors, have continued to grow in many countries.² Leverage in nonfinancial sectors in the economy can also represent a vulnerability, because it can act to amplify changes in fundamentals and make households, nonfinancial businesses and governments more sensitive to shocks. Some studies find that excessive debt can dampen economic growth. It has been shown to lead to financial crises and to hamper economic recovery from recessions.³

In the post-crisis period, there has been a noteworthy increase in nonfinancial corporate debt, particularly in some emerging economies. This has taken the form both of bond issuance and bank borrowing. In aggregate, this has led to higher levels of corporate leverage as measured by the ratio of nonfinancial corporate debt to GDP. Questions have been raised about the incentives that have led to this increase and whether the trend represents a risk to financial stability.

¹ See Basel Committee for Banking Supervision, [Basel III Monitoring Report 2015](#), Table A.16.

² According to one estimate, the global stock of debt (summing household, corporate, government and financial) rose from \$142 trillion (269% of GDP) at end-2007 to \$199 trillion (286% of GDP) in the second quarter of 2014. McKinsey Global Institute (2015), “Debt and (Not Much) De-leveraging,” http://www.mckinsey.com/insights/economic_studies/debt_and_not_much_deleveraging. The Report examines the evolution of debt in 47 countries around the world, including both developed and emerging economies. Similarly, Buttiglione et al estimate that the global ratio of gross nonfinancial debt to GDP has risen every year since 2000 from 160% to 215%. (For details, see Buttiglione, L., Lane, P.R., Reichlin, L., Reinhart, V., (2014), “Deleveraging? What Deleveraging?” Geneva Reports on the World Economy 16, International Center for Monetary and Banking Studies and CEPR.

³ For recent studies on the inverse relationship between debt and growth, see Kumar, M.S. and J. Woo (2010), “Public debt and growth”, IMF Working Paper, No. 10/174, Reinhart, C. M. & Rogoff, K. S., (2010) “Growth in a Time of Debt. American Economic Review Papers and Proceedings, 100(2), 573-78. Cecchetti, S., Mohanty, M., Zampolli F., (2011) “The Real Effects of Debt” BIS Working Papers, No:352. Reinhart, C., Reinhart, V., Rogoff K., (2012) “Public Debt Overhangs: Advanced Economy Episodes since 1800”, Journal of Economic Perspectives, Vol:26 (3), 69-86.

This report responds to the request of G20 Finance Ministers and Governors in their February 2015 communique for “the FSB, coordinating the inputs of the IMF, OECD, BIS, IOSCO and WBG to prepare a report by our meeting in September preceded by an interim report to the June Deputies meeting to examine the factors that shape the liability structure of corporates focusing on its implications for financial stability.”

The report has been prepared by the FSB Secretariat, based on the contributions by the staff of the six international organisations. It describes:

- the growth in nonfinancial corporate debt since the crisis, including differences across countries and regions (section 1);
- insights into the incentives, including structural and regulatory factors, influencing these trends (section 2);
- possible related financial stability concerns (section 3);
- the potential role of macroprudential policies (section 4);
- and possible next steps (section 5).

It focuses on developments and issues for publicly-traded nonfinancial companies. Data on debt at privately-owned small and medium-sized companies are not widely available; they may face many of the same incentives and issues as larger companies, but small companies may also be disincentivised from raising new equity finance by a stronger desire to avoid dilution of ownership (e.g. where they are family-owned or otherwise closely-controlled).

The way that corporate funding is structured and financed is of interest to authorities because it will affect the resilience and decision-making of individual corporates and at the aggregate level could possibly affect the stability of the wider financial system. Corporate funding markets and corporate liability structures may be relevant for financial stability in a number of ways.

Well-functioning debt and equity markets allow businesses to fund investment flexibly and at a relatively low cost to existing shareholders, thereby contributing to investment and growth. National authorities and international organisations have therefore worked extensively to encourage the development of such markets.

However, high debt levels relative to equity in corporate balance sheets create leverage which can accentuate losses to owners, and create elevated debt service requirements. This in turn can lead to exacerbated cash flow stress, deteriorating creditworthiness, debt-rollover risks and higher corporate default rates. Moreover, in particular if credit risk is under-priced, spikes in default rates may permeate through the financial system as investors and creditors, including the banking system, incur losses. To the extent that there are high and pro-cyclical levels of corporate leverage that affect a significant number of companies, this may add to pro-cyclicality of the financial system, and hence reduce financial stability.

The report contains a summary analysis of issues that could have a bearing on financial stability. It also proposes that there could be further work in 2016, including on: i) further analysis of data on nonfinancial corporate leverage to examine the extent to which particular economic factors drive the liability structure choices of different types of corporates and whether any financial stability concerns arise from these, ii) existing country experiences with the use of macroprudential tools used to address risks arising from corporate debt financing, iii) country-specific case studies on addressing the debt-equity tax bias.

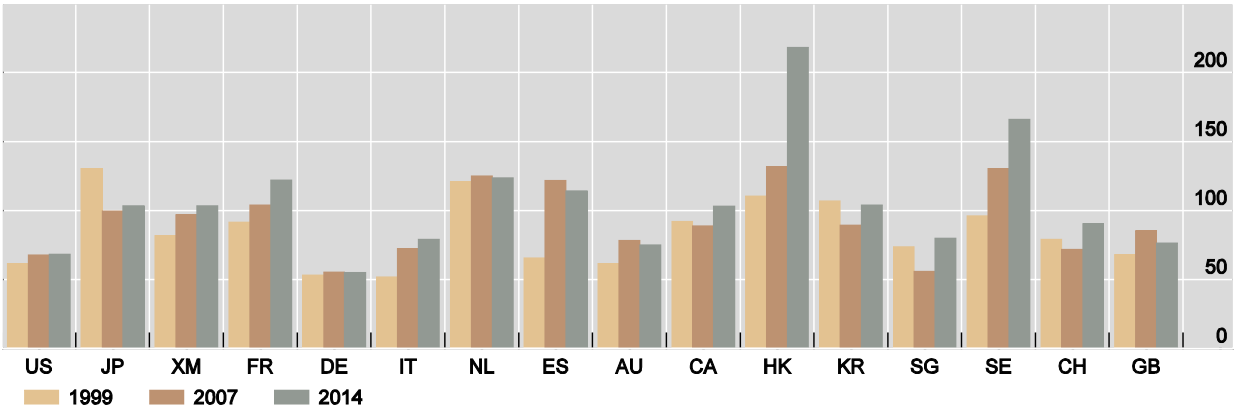
1. Trends in Corporate Funding Structures

Nonfinancial corporate debt levels have increased relative to GDP over the last 15 years, in both advanced economies and emerging markets. This increase has been much faster in emerging markets as their markets have deepened. Nonfinancial corporate debt-to-GDP for a selected group of advanced economies in 1999 was 77% and for a group of large emerging market and developing economies (EMDEs) was 38%, but the subsequent rapid growth of debt in these EMDEs meant that by 2014 the average levels for these EMDEs surpassed the advanced economies - 87% and 90% (see annexed Tables 1 and 2). This includes a rapid acceleration of debt growth in EMDEs since pre-financial crisis levels in 2007, as nonfinancial corporate debt-to-GDP has increased by 31 percentage points for EMDEs, but only by 2 percentage points for advanced economies during that time.

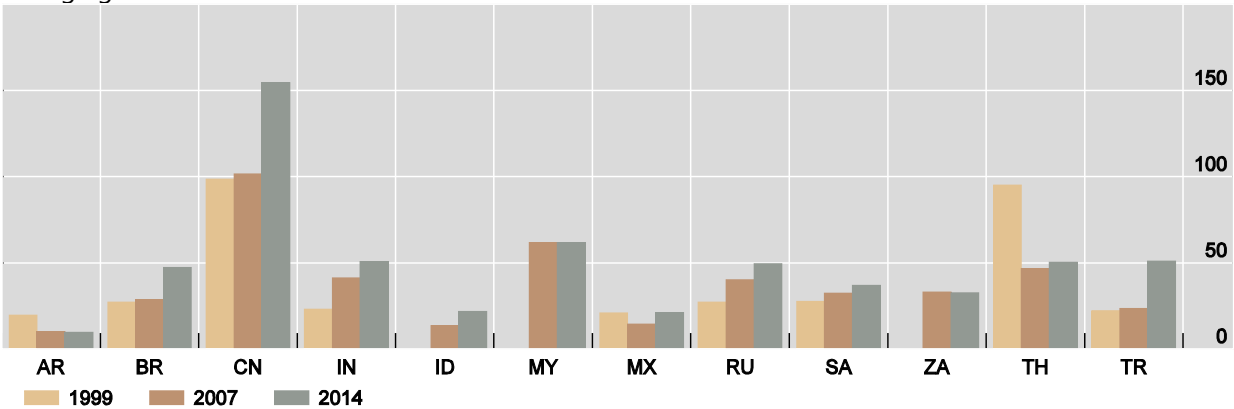
Within the overall figures, there are major differences between countries, both in levels and in growth rates of nonfinancial corporate debt (see Figure 1). For instance, amongst major advanced economies, the level of such debt varies from a rapidly-growing 166% of GDP for Sweden to a flat 55% for Germany, and in some countries corporate debt decreased slightly. In emerging markets, China's nonfinancial corporate debt has risen to over 150% of GDP, above the levels of most advanced economies, while Mexico's is only 21%. For EMDEs, growth rates of corporate debt vary considerably across countries. The graphs below illustrate these developments.

Figure 1 - Total non-financial corporate debt (as a percentage of GDP)

Advanced economies¹



Emerging market economies²



¹ Australia, Canada, France, Germany, Hong Kong SAR, Italy, Japan, Korea, the Netherlands, Singapore, Spain, Sweden, Switzerland, the United Kingdom and the United States. ² Argentina, Brazil, China, India, Indonesia, Malaysia, Mexico, Russia, Saudi Arabia, South Africa, Thailand and Turkey.

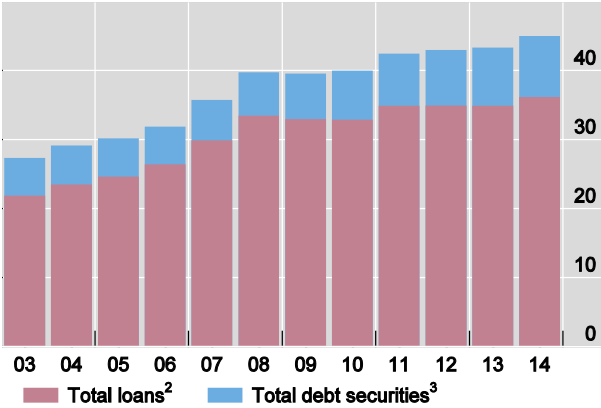
Sources: IMF, *World Economic Outlook*; OECD; national sources.

Figure 2- Composition of non-financial corporate outstanding debt

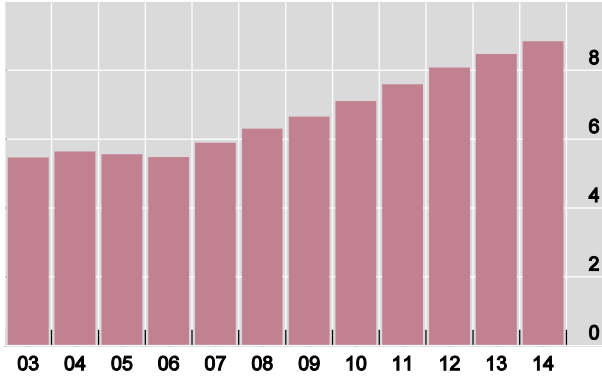
(In trillions of US dollars)

Advanced economies¹

Loans and debt securities

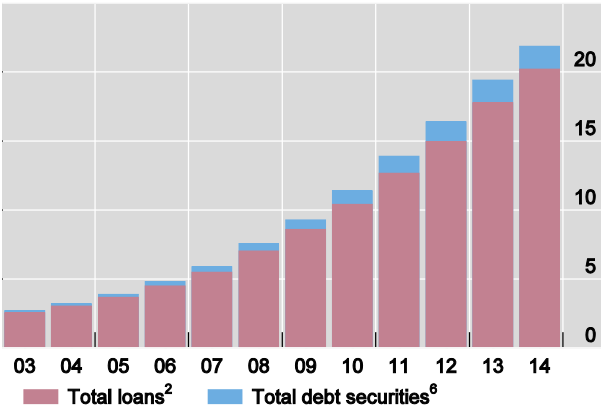


Debt securities

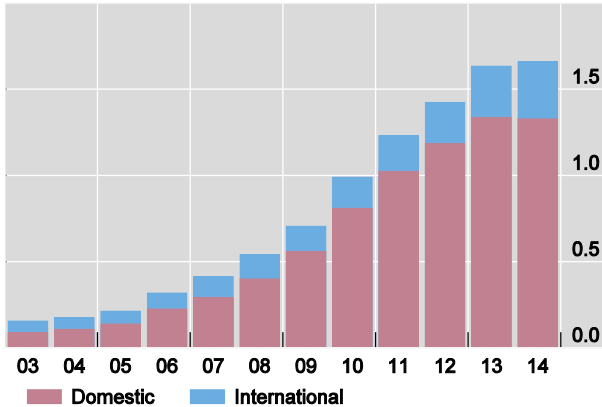


Emerging markets⁴

Loans and debt securities



Debt securities, by market⁵



¹ Countries included are: Australia, Canada, France, Germany, Hong Kong SAR, Italy, Japan, Korea, the Netherlands, Singapore, Spain, Sweden, Switzerland, the United Kingdom and the United States. ² Total loans to non-financial corporations. ³ Aggregate outstanding, by residence of issuer. ⁴ Countries included are: Argentina, Brazil, China, India, Indonesia, Malaysia, Mexico, Russia, Saudi Arabia, South Africa, Thailand and Turkey. ⁵ By residence of issuer. ⁶ Sum of domestic and international debt securities (see the right-hand panel).

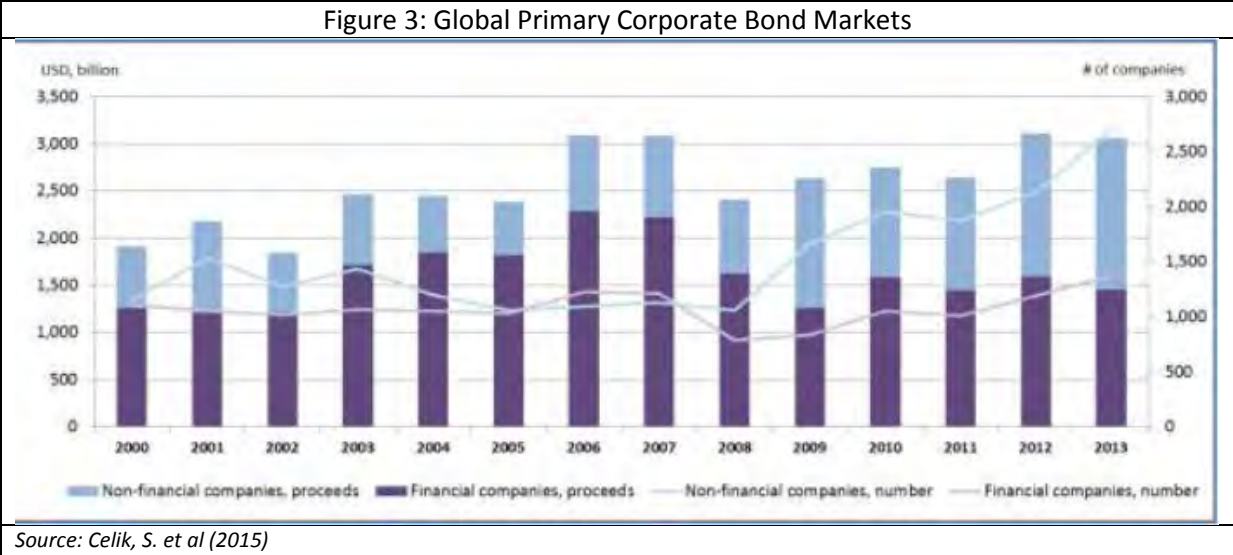
Source: national data, BIS domestic and international debt securities statistics.

Some of this growth in debt in EMDEs is benign and even desirable. In EMDEs with low starting levels of corporate debt, rising debt may reflect a healthy deepening in the financial system, as more companies gain access to financial services and as their own financial condition improves. However, in many EMDEs, corporate debt grew faster than earnings in 2014, with debt-to-earnings now higher than its 5-year average, and according to some measures risks related to corporate debt have increased. Furthermore, the increased amount of outstanding debt, declining underwriting standards, and declining secondary market liquidity conditions, taken together, have increased concerns that a sharp sell-off in corporate debt markets could produce disorderly conditions in financial markets. Any resulting increase in financing costs would have negative implications for the real economy.

Since the crisis, market sources of credit have become increasingly important (see Figure 2). In a number of advanced economies, corporate bonds and lending by non-bank institutions have accounted for nearly all new credit for corporates since 2007, while bank lending to corporates has shrunk.⁴ However in contrast to advanced economies, bank lending in EMDEs has also risen along with bond issuance.⁵

Corporate bonds have assumed a greater role in international fixed-income markets. Issuers have wide flexibility in how they structure and issue debt securities and the market on which the debt securities are issued and traded (domestic versus international) and the currency denomination of the securities (local versus “hard currency”) are two important factors for financial stability.

Globally, nonfinancial corporates have replaced sovereigns and financial issuers as the largest bond issuers with US\$6.9 trn of issuance since 2008.⁶ Not only has the amount of issuance increased, but between 2008 and 2013 the number of nonfinancial corporates issuing bonds has doubled, suggesting a deepening of capital markets and an important diversification in the sources of corporate financing for many corporates (Figure 3).



Against the backdrop of ample global liquidity and prolonged low global interest rates, nonfinancial corporate bond issuance in major EMDEs has risen sharply. New corporate bond issuance in a selection of major EMDEs rose 10% in 2014, with Asia leading other regions (Figure 4).

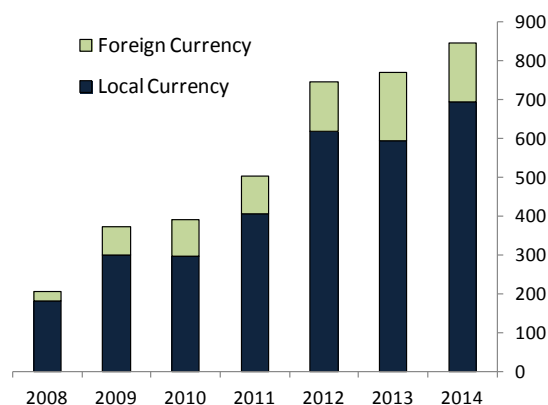
⁴ The countries mentioned in this context are Australia, Canada, France, Germany, Japan, Netherlands, South Korea, United Kingdom and United States .For details, see McKinsey Global Institute (2015),

⁵ For details, see Annex A.

⁶ Celik, S., G. Demirtas, and M. Isaksson (2015), ‘Corporate Bonds, Bondholders and Corporate Governance’, OECD Corporate Governance Working Papers, No. 16, http://www.oecd-ilibrary.org/governance/oecd-corporate-governance-working-papers_22230939.

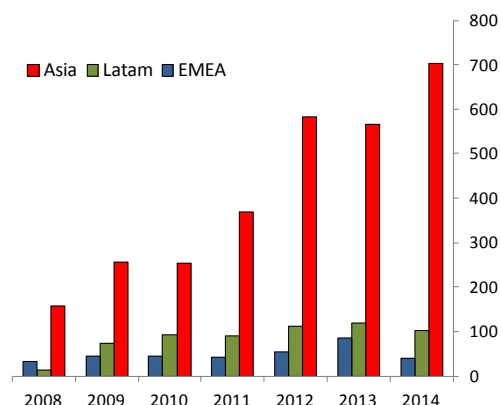
Figure 4. Nonfinancial Corporate Bond Issuance by Selected Emerging Economies

1. Bond Issuance by Currency (in US\$ billion)



Source: IMF: Annex A. (The countries in the sample: Argentina, Brazil, Bulgaria, Chile, China, Hungary, India, Indonesia, Malaysia, Mexico, Peru, Philippines, Poland, Russia, South Africa, Thailand, Turkey)

2. Bond Issuance by Regions (in US\$ billion)



Source: IMF: Annex A. (Same countries)

Focusing more narrowly on the growth of international bond issuance by EMDEs, the World Bank paper *Global Liquidity and External Bond Issuance in Emerging Markets and Developing Economies* (see Annex B) analyses the global factors that have contributed to this growth. It notes that bond issuance in international markets by EMDEs (comprising both corporate and sovereign issuance) increased steadily before the global financial crisis, and accelerated afterwards. Total annual issuance of international bonds by EMDEs rose from around \$64 bn in 2000 to \$400 bn in 2014. In line with the trends outlined above, issuance of international bonds has been driven in recent years by corporate issuance (\$300 bn corporate vs \$99 bn sovereign in 2014, compared to \$14 bn corporate and \$50 bn sovereign in 2000). In March 2015, higher-income EMDEs had \$1.4 trn of outstanding bonds while lower-income EMDEs had about \$280 bn, both representing all-time highs.

There has also been a shift in EU advanced economies away from a bank-based approach to corporate funding towards a more diversified corporate funding model, especially for larger companies. For instance, prior to the crisis nonfinancial corporates accounted for only 17% of total European financial and nonfinancial corporate bond issuance, but this share had grown to 40% in 2013.⁷ Furthermore, non-investment-grade bonds, which were virtually non-existent in Europe prior to the crisis, now comprise about 12% of the total amount of European financial and nonfinancial corporate issuance. Nevertheless, the great majority of the outstanding stock of European corporate debt remains in the form of bank lending rather than bonds. At end-March 2014, euro-area nonfinancial corporates still had only EUR 1.1 trn of outstanding debt securities, compared with EUR 8.6 trn of bank loans.

⁷ Ibid., p. 14

There are a number of factors explaining these trends. To a certain extent country-specific factors play a role, such as the continuation of the upward trend in issuance that was already in place in many fast-growing EMDEs prior to the crisis. However the acceleration of corporate issuance since the crisis is largely explained by global push factors.⁸ Yields on the sovereign debt of many advanced economies have been low, reflecting the widespread impact of extraordinary monetary policies conducted by a number of central banks. These actions have lowered risk premiums and compressed global market volatility, leading to increased supply from issuers of corporate debt because of the significant reduction in issuance costs and increased demand from investors for higher-yielding products. This shift has been reinforced in some cases by the deleveraging taking place in certain banking systems that have encouraged a substitution towards market-based finance.

However, in the current environment slowing economic growth in EMDEs is putting pressure on some firms' profitability and debt service capacity. As noted above, corporate profitability has declined relative to its five-year averages across most EMDE countries, with broad-based weaknesses across sectors (see Annex A). Corporate debt has grown faster than earnings in most EMDE countries over the last several years, evidenced by the increase in the ratio of net debt to earnings before interest and taxes (EBIT), which suggests that the leverage of EMDE corporates is increasing, negatively affecting their creditworthiness. The decline in debt-servicing capacity for some corporates has in part driven the IMF's estimates that the share of "debt at risk" in total corporate debt rose by 22% in 2014 from levels in 2010. There could be value in further examination of the extent to which particular economic factors drive the liability structure choices of different types of corporates and whether any financial stability concerns arise from these. For instance, capital-intensive industries (energy sector, mining sector etc.) tend to have more debt-heavy liability structures, whereas service-oriented firms tend to have more equity-heavy (including privately-owned) structures. Larger firms are more likely to issue debt on capital markets than smaller firms, and corporate financing in EMDEs and the euro area tends to be more bank-based compared to other advanced economies.

Shifting market-based debt characteristics

The increase in the supply of corporate debt has in large part been facilitated by the search-for-yield environment created by the extraordinary policy measures undertaken in the US, UK, euro area and Japan. The increased investor demand for riskier and higher yielding investments has in turn altered the composition of corporate debt markets.

For example, global issuance of non-investment-grade bonds increased from \$82 bn in 2000 to \$556 bn in 2013, as well as a shift towards debt with fixed-interest and callable features.⁹ Maturities for higher-yielding debt have increased; for instance the average maturity of external issuance by EMDEs has increased to almost 8 years recently, up from 7.3 years in 2009 immediately after the crisis - although it remains below the pre-crisis average maturity of 9 years. The majority of the total \$1.7 trn currently outstanding external EMDE bonds will mature before 2024, peaking in 2019.

⁸ For details, see Annex B

⁹ For details, see Celik, S. et al (2015), including p. 19-20: "A callable bond gives the issuer the option to redeem the bond prior to maturity. The value of all callable bonds as a share of all corporate bonds issued in 2012 and 2013 exceeded 36% compared to 16% in 2000."

Covenants have also been relaxed. While the increase in covenant-lite bonds¹⁰ in the US has been well documented, work by the OECD¹¹ suggests that globally investor protection covenants in non-investment-grade bonds are half as common as they were 10 years ago. Overall, in recent years, the shift in the micro-structure of the corporate bond market has resulted in greater flexibility for issuers, but potentially greater credit risk for investors (while diminishing yields have reduced investors' compensation for that risk).

Another important trend has been the increase in foreign currency corporate funding. BIS research¹² shows that since the global financial crisis, banks and bond investors have increased the outstanding US dollar credit to non-bank borrowers outside the US from \$6 trn to \$9 trn. This has the potential to create currency mismatches, which may increase financial stability concerns if a sufficient number of corporates are subject to such mismatches and if there is no natural hedge and financial instruments for hedging are not available, as discussed in section 3 below.¹³

2. Structural and regulatory factors influencing corporate funding structures

When considering relative incentives toward equity and debt financing, a useful starting point is the Modigliani-Miller theorem¹⁴, which states that, in the absence of taxes, bankruptcy costs, agency costs, and asymmetric information, and in an efficient market, the value of a firm is unaffected by how that firm is financed. However, there are tax, accounting, incentive and conjunctural factors that in practice limit the neutrality between funding choices.

In this spirit, the academic literature commonly postulates that, when companies seek external financing, they normally tend to prefer debt to equity, since debt financing entails lower costs and does not change ownership structures.¹⁵ Additional equity financing is much less frequent, but will be employed in certain circumstances such as when firms are growing rapidly or debt levels are high. Empirical studies support these predictions, and suggest a number of additional firm and industry-specific characteristics that are likely to play a role in corporates' funding decisions.¹⁶

¹⁰ Covenant-lite bonds are bonds with more relaxed restrictions on collateral, payment terms and other contractual obligations.

¹¹ See Celik, S. et al (2015)

¹² McCauley, R, P McGuire and V Sushko (2015): "Global dollar credit: links to US monetary policy and leverage", *Economic Policy*, April, pp 187–229.

¹³ For details, Annex E.2

¹⁴ Modigliani, F. & Miller, M.H. (1958). "The Cost of Capital, Corporation Finance and the Theory of Investment". *American Economic Review* 48 (3): pp. 261–297.

¹⁵ "Pecking order theory" set out by Myers, S.C. (1984). "The Capital Structure Puzzle", *The Journal of Finance*, 39 (3), pp. 574-592. This theory is referenced in many subsequent papers, for instance, Fama, E.F. & French, K.R. (2002). "Testing Trade-off and Pecking Order Predictions about dividends and debt", *Review of Financial Studies*, 15(1), pp. 1-33. Frank, M.Z. & Goyal V.K. (2009). "Capital Structure Decisions: Which Factors are Reliably Important?", *Financial Management*, 38(1), pp. 201-222.

¹⁶ In general most of the studies categorise the factors into corporation-specific factors and macroeconomic factors or country specific factors; such as De Jong, A. Kabir, R & Nguyen, T.T. (2008). "Capital Structure Around the World: The Roles of Firm-and-Country-Specific Determinants", *Journal of Banking and Finance*, 32(9), pp. 1954-1969, Kayo,

This section sets out some of the factors that can be relevant to corporate decisions about their liability structures.

a. Conjunctural and regulatory factors

Section 1 above described the conjunctural factors leading to increased investor demand for debt instruments as a result of the extraordinary monetary policies following the financial crisis. In particular, debt accumulation has been encouraged by the availability of low-cost, abundant and flexible debt, which has provided an unprecedented opportunity to increase returns to the equity holders. More generally, debt issuance by nonfinancial corporations is influenced both by supply-side and demand-side considerations, each with their own policy implications.

On the supply side of debt issuance, especially for some EMDEs, nonfinancial corporations have seen growing incentives and opportunities to increase leverage, by borrowing in both foreign and domestic currencies. The depth of corporate debt markets varies across countries. Nevertheless, as discussed above, they have taken advantage of the low all-in yields available to fund expansion plans, where they have stronger growth prospects. Moreover, the increased depth and breadth of the markets, as well as improved fundamentals in a number of EMDEs triggering multiple sovereign credit rating upgrades, decreased the risk premium for issuing EMDE corporate debt.

On the demand side, institutional investors are important investors in global equity and bond markets, with the overall size of the sector's balance sheet exceeding the size of the economy in many advanced economies. While investors have different mandates, incentives and knowledge of the markets in which they are investing, regulatory developments have remained an important factor in shaping institutional investors' asset allocation strategies. In particular, changes in regulations, in the aftermath of the equity downturn in 2000-2002, have aimed to incentivise pension funds and insurance companies to reduce their risk profiles and directly consider asset-liability matching in asset allocation decisions including their demand for corporate debt.¹⁷ Accordingly, in an effort to de-risk, these investors have tended to shift their asset allocation decisions away from equities to fixed-income securities. Moreover, different quantitative restrictions have traditionally been applied for pension funds in many countries, normally stipulating upper limits on investment in specific asset classes, including equity. A survey conducted by the OECD states that several countries impose limits on the proportion of equity held in portfolios, such as Austria, Czech Republic, Denmark, Finland,

E.K. & Kimura, H. (2011). "Hierarchical Determinants of Capital Structure", *Journal of Banking & Finance*, 35 (2), pp. 358-371. Joeveer, K. (2013), "Firm, Country and Macroeconomic Determinants of Capital Structure: Evidence From Transition Economies", *Journal of Comparative Economics*, 41, pp. 294-308

¹⁷ See "Institutional Investors, Global Savings and Asset Allocation", CGFS papers no:27 (2007), Bank for International Settlements, accessible at: <http://www.bis.org/publ/cgfs27.pdf>

Germany, Greece, Korea, Norway, Sweden, Switzerland and Turkey.¹⁸ On the other hand, demand for both equity and debt securities has been stimulated in some EMDEs by well-developed pension fund industries (notably in Latin America) and insurance industries (notably in Asia).

Traditionally bank loans constitute the main source of debt financing for the majority of European firms. However, deleveraging by banks after the global financial crisis has led to a shrinkage of bank balance sheets and, for the nonfinancial corporate sector, bank borrowing has been at least partly substituted by an increase in corporate bond issuance.

The diversification of funding sources should lead to more efficient capital allocation and better risk sharing, with a positive impact on long term growth. Moreover, local bond issuance does not share the strongly pro-cyclical behaviour of bank lending.¹⁹

b. Role of tax deductibility

In most corporate income tax systems, interest can be deducted in calculating liability to corporate taxation but returns to equity cannot.²⁰ Langedijk et al (2015)²¹ states that ‘the corporate debt bias’ – the asymmetric tax treatment of different sources of finance at the corporate level - originates from historical conventions and does not have any economic rationale. This asymmetry distorts incentives in two ways:

Debt bias: an incentive for corporates to prefer debt financing over equity financing beyond that which would otherwise be justified in economic terms.

Debt shifting: cross-country differences in corporate income tax rates that can lead corporate groups to conduct internal lending from low-tax countries to high-tax countries, or by locating external borrowings in high-tax countries (although tax authorities are likely to challenge artificial structures that are intended to evade tax).

The two are related: within multinational groups, the tax gains from debt shifting may exacerbate the bias in favour of financing externally by debt.

A sizeable empirical literature finds that tax distortions have a significant and considerable impact on corporate leverage in the nonfinancial sector: one meta-study (calculating a consensus from the full set of studies) suggests that it could lead, at a corporate income tax rate of 40 percent, to leverage ratios being 10 percentage points higher than under a system which was neutral between debt and equity.²² Similarly, Feld et al (2013) (as cited in

¹⁸ OECD (2011), “Pension Funds Investment in Infrastructure: a Survey”, accessible at <http://www.oecd.org/futures/infrastructureto2030/48634596.pdf>. See also forthcoming OECD report to the G20, “Regulation of Insurance Company and Pension Fund Investment” (2015).

¹⁹ Ayala, D., M. Nedeljkovic, C. Saborowski, (2015) “What slice of the Pie? The Corporate Bond Market Boom in Emerging Economies”, IMF Working Paper, WP/15/148

²⁰ The relative treatment of interest and equity income under the personal income and withholding taxes also needs to be taken into account, and in some cases may offset the asymmetry at the corporate level.

²¹ Langedijk, S, G Nicodeme, A Pagano and A Rossi (2015) "Debt bias in corporate income taxation and the costs of banking crises", VOX, CEPR's policy portal, accessible at <http://www.voxeu.org/article/corporate-debt-bias-and-cost-banking-crises>

²² de Mooij (2011), “The Tax Elasticity of Corporate Debt: A Synthesis of Size and Variations,” IMF Working Paper 11/95

Langedijk et al (2015)) predict that each one percentage-point increase in the corporate tax rate increases the debt-to-assets ratio by 0.27 percentage points.

Policy makers in several countries, increasingly conscious of these distortions, have adopted a range of measures to mitigate or address them. Action 4 of the G20-OECD Base Erosion and Profit Shifting (BEPS) project limiting base erosion via interest deductions aims at addressing profit shifting using interest.²³ This is, however, not always intended to address the basic tax asymmetry that gives rise to debt bias. To address debt bias, some countries have simply adopted limits on the interest expense that can be deducted, perhaps relative to current earnings²⁴ and a few have provided an ‘Allowance for Corporate Equity’ (ACE) that eases the asymmetry by also providing a deduction for the cost of equity finance.²⁵ Countries typically limit interest deductions and only a few provide an allowance for corporate equity. However, in the past, such policy responses have been divergent and often ad hoc.

Annex C on ‘The Role of Taxation in Shaping Corporate Liability Structures’ elaborates on this issue, including on the implications for financial stability.

c. Public disclosures

No evidence is available that public disclosure requirements are a significant factor in corporate decisions about whether liabilities they issue should be in the form of debt or equity.²⁶

The IOSCO annex *International Policies for Public Disclosure- Corporates as Public Issuers of Debt and Equity Securities* (Annex D) outlines the steps taken by securities regulators to enhance transparency for both equity and corporate bond issues. Over time IOSCO has provided more guidance to regulators on issuers’ disclosure of information to investors in the public capital markets.²⁷

The disclosures that a securities regulator requires are intended to give investors information that is timely, material and not misleading about a company and its circumstances (for example, issuer domicile, size, industry, number of securities holders). As equity represents an interest in the residual profits of a company, the pricing of equity may, more keenly than

²³ The BEPS report on Action 4 is expected to recommend a consistent and comprehensive approach to limiting interest deductibility in order to address BEPS risks.

²⁴ For example, in the European Union, several reforms were undertaken in 2012 and 2013 to address the debt bias in corporate taxation. “These measures mostly tended to restrict the level of deductible interest. France and Portugal restricted the deduction of interest payments above a threshold of EUR 3 million. In France, the limit is 85% (75% from 2014) of interest paid, while in Portugal it is 70% of profit obtained before depreciation, net financing expenses and taxes from 2013, falling to 30% in 2017. Spain and the Netherlands revoked their thin capitalisation rules and introduced new rules on the non-deductibility of certain interest expenses (a so-called earning stripping rule). Spain, Sweden and Finland limited the scope of deductibility of interest expenses on intra-group loans. In contrast, Hungary introduced a cash-flow tax for small companies, which in practice allows immediate expensing of all financing costs.” (For details, European Commission (2013), *Tax Reforms in EU Member States: Tax Policy Challenges for Economic Growth and Fiscal Sustainability*, European Economy 5, 2013)

²⁵ These countries include Austria, Belgium, Brazil, Croatia, Italy and Latvia.

²⁶ Companies may face differing disclosure requirements for public offerings and for private offerings (The latter is an increasing form of issuance for some EMDE corporates.)

²⁷ See IOSCO Objectives and Principles of Securities Regulation, June 2010, available at: <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD323.pdf>

debt, depend on disclosures made that provide information relevant to future profits. On the other hand, the pricing of debt may be particularly sensitive to disclosures about the issuer's cash flow and liquidity in the timeframe that the debt service is required.

d. Accounting requirements

Issuers prepare the financial statement element of their financial information disclosures in accordance with a set of accounting standards, such as national accounting standards or International Financial Reporting Standards (IFRS). IFRS contain standards that address how an issuer should recognise, measure and present its outstanding debt and equity in its balance sheet, as well as disclose information about each in the footnotes to its financial statements.

Accounting standards also contain provisions for distinguishing between financial liabilities and equity in financial statements. Under IFRS a liability is defined as “a present obligation of the entity arising from past events, the settlement of which is expected to result in an outflow from the entity of resources embodying economic benefits”, and equity is “the residual interest in the assets of the entity after deducting all its liabilities”.²⁸ The IASB is aware that these definitions, and the more detailed requirements in IAS32 “Financial Instruments: Presentation”, are not always applied in a way that results in a consistent distinction between equity and non-equity instruments. The IASB has a project underway to reassess these treatments, but it is at an early stage of development.

Particular challenges in reassessing these treatments arise from instruments that include both some characteristics of debt and some characteristics of equity. It is challenging to determine whether these instruments (or components of them) are best classified as liabilities or as equity. It is also important to ensure sufficient disclosure of the characteristics of these instruments, regardless of how they (or their components) are classified. The classification of these instruments, and the nature of disclosures about them, have implications for collating data and statistics about corporate funding structures.

Accounting standards help to elicit historical financial information that addresses users' objective to be able to assess the amount, timing and uncertainty of future cash flows, and the information needs of debt and equity investors are converging. In an environment where the disclosure requirements are similar, disclosure requirements are unlikely to have a significant effect on companies' decisions on whether to opt for debt or equity finance. However, the need for market transparency, and costs of disclosures, can be reasons for some privately-owned companies to avoid issuing publicly-traded securities at all (whether it be debt or equity). In such cases, companies may opt instead for bank borrowing or private debt issues.

e. Bank capital requirements

No evidence is available that bank capital requirements are a significant factor in corporate decisions about whether liabilities they issue should be in the form of debt or equity. Nevertheless, it is possible that recent regulatory reforms (e.g. Basel III framework, the Dodd-Frank Act in the US and the Banking Union in the EU) may indirectly have an impact

²⁸ IFRS Conceptual Framework 4.4(b) and 4.4(c). The definition in the US FASB Framework is similar

on the decision making process of corporates when choosing between equity or debt financing, as well as when choosing between bank versus market debt.

Within the banking sector, in December 2014 the Basel Committee issued, as part of its reforms to the capital framework, a consultation paper on proposed revisions to the standardised approach for measuring credit risk in the capital framework.²⁹ The revisions to the standardised approach are, *inter alia*, intended to improve the granularity and risk sensitivity of the framework, reduce the reliance on external ratings and improve the alignment with exposures risk weighted under the internal ratings-based approach.

To enhance the risk sensitivity of the current standardised approach as set forth in Basel II,³⁰ the Basel Committee has proposed to introduce a specific treatment for corporate equity exposures involving higher capital requirements than corporate senior debt exposures.³¹ This would be consistent with other parts of the capital framework which recognise that equity investments are riskier than debt.

These proposals are still under consultation, and therefore cannot explain the observed increase in leverage since the crisis; moreover many other factors than regulation affect banks' demand for corporate instruments. In addition, given that banks are not typically major holders of nonfinancial corporate equity, the impact of changes in bank regulation on the future cost of equity is likely to be negligible.

3. Financial Stability Concerns

Expanding corporate bond markets indicate a deepening and diversification of capital markets with overall benefits for funding of the real economy. However, financial stability concerns

²⁹ Basel Committee on Banking Supervision. Consultative Document. "Standards: Revisions to the Standardised Approach for Credit Risk", March 2015. Accessible at <http://www.bis.org/bcbs/publ/d307.pdf>

³⁰ The current standardised approach for credit risk is set out in Basel II: International Convergence of Capital Measurement and Capital Standards: A Revised Framework – Comprehensive Version, June 2006. Accessible at <http://www.bis.org/publ/bcbs128.pdf>.

The current risk weighting for corporate exposures using the standardised approach to calculate regulatory capital requirements is based upon the external rating of the corporate borrower with risk weights ranging from 20% for AAA to AA- rated corporates, to 150% for corporates rated below BB-. Unrated corporates – and this constitutes the vast majority of corporate borrowers – are assigned a risk weight of 100%.

In the current standardised approach equity investments in other banks are risk weighted at either 100% or 250%. However, a distinct treatment for equity issued by corporates is not prescribed (as opposed to the internal ratings-based approach, where either bank or corporate equity receive a specific treatment).

³¹ The proposed rules might still be subject to substantial change since the consultative document mentioned that the Basel Committee has not ruled out introducing a limited role for external ratings (e.g. to distinguish between investment and non-investment grade) in the final version. Also, the consultative document mentioned that proposed risk weights were only for indicative purposes.

Under the proposed revisions to the standardised approach:

- The risk weighting of senior corporate borrowings (i.e. debt) are based upon two risk drivers: revenue and leverage, with indicative risk weights ranging from 60% to 130%. Exposures to firms with negative equity will be risk weighted at 300%; and,
- Equity exposures would be risk weighted 300% if the firm is publicly listed and 400% for all other firms. This approach would align the treatment for equities with that of the simple risk-weight method in the internal ratings-based approach

may arise in instances where overall debt levels are high and the credit quality of nonfinancial corporate debt has declined.

- Recent increases in corporate debt levels and lower debt-servicing capacity in certain countries have raised the sensitivity of these corporates to macroeconomic and financial shocks.³² High private-sector debt levels can also negatively impact economic growth³³, thus potentially reinforcing recessions and hampering recovery.
- The continuing low interest rate environment may lead to excessive upward pressures on bond prices which – together with declining underwriting standards – could lead to the build-up of a “bond bubble” (and therefore at some point the risk of a sharp and disorderly reversal). There could be value in undertaking further work on the investment objectives and horizons of investors in corporate bonds in this environment.
- Given the rapid development of non-investment-grade debt markets in many countries, the sensitivity of markets to shocks may be accentuated in some instances by the lack of investor experience with the performance of lower-rated debt in credit cycle downturns.
- The strong issuance of debt in foreign currency raises another financial stability issue. While many jurisdictions and market participants are relatively sanguine about the extent of this particular risk,³⁴ a number of jurisdictions lack data to adequately assess the degree of any currency mismatch, including the degree to which debt-related currency exposures are hedged through other instruments. As the volume of foreign currency debt and cross-border investment in debt grows, so does the need for data on corporate hedging and other derivatives positions as well as financial statements for non-listed companies (as well as information on the extent to which companies are developing natural hedges by matching interest expense with revenues in the same currency).³⁵ There would be value in further investigating the potential for development of domestic corporate bond markets or more affordable hedging instruments.

Impact of debt on corporate fundamentals

After a prolonged period of extraordinarily low funding costs, a risk exists that interest rates could reverse rapidly at some point, potentially interacting with declining corporate profitability to increase the financial stress of certain corporate issuers. To some extent tighter financing conditions have already taken hold in certain emerging markets. Corporate debt levels relative to both GDP and earnings have steadily increased.

³² See for example Giroud, X., Mueller, H.M. (2015): “Firm Leverage and Unemployment during the Great Recession”, NBER Working Paper No. 21076, April 2015.

³³ Liu, Y. & Rosenberg, C. (2013), “Dealing with Private Debt Stress in the Wake of the European Financial Crisis”, IMF Working Paper WP/13/44.

³⁴ For details, see Annex E.1.

³⁵ Letter to the G20 Finance Ministers and Central Bank Governors by IMF/FSB/BIS dated September 11, 2014. Accessible at http://www.financialstabilityboard.org/wp-content/uploads/r_140923b.pdf

In the IMF's note (Annex A), a sensitivity analysis is conducted looking at the simultaneous impact of increasing borrowing costs, declining earnings and exchange rate depreciation on EMDE corporate borrowers' "debt at risk" (which IMF defines as the debt of firms with interest coverage ratios below 1.5). This exercise finds that the combination of these shocks can lead to a material increase in "debt at risk" among EMDE borrowers, particularly in jurisdictions with high levels of foreign-currency denominated debt and fewer natural hedges (e.g. export earnings in FX).

The World Bank paper (Annex B) reinforces this point. It notes that pro-cyclical investor behaviour can have systemic implications for EMDEs once the global cycle winds down or when global shocks occur. Large foreign currency exposures raise risks, particularly for unhedged issuers, and the recent rapid strengthening of the US dollar against most EMDE currencies may already have increased strains for some borrowers. In this context, the inevitable exit from extraordinary monetary policies will tighten international funding conditions, which could prove disruptive for EMDE currencies, balance sheets, and funding capacity. Additionally, fragility in EMDEs can be further compounded by the concentration of foreign investors in their growing but still relatively shallow local financial markets.

Bank exposures

Corporate fragility can have important knock-on effects on the banking sector. First of all, as the OECD-IMF paper (Annex C) sets out, if debt is preferred over equity and debt is primarily channelled through the banking system, debt bias increases the size of bank loan books. In addition, the IMF paper (Annex A) notes that weaknesses in the corporate sector could put pressure on banks' asset quality. In particular, across a sample of 15 major EMDEs, sensitivity analysis illustrates that a 15% default on the total debt at risk owed to banks would lead to a significant deterioration in banks' buffers – defined as Tier 1 capital and provisioning – in more than half the countries. And in about a quarter of cases, these buffers would appear particularly low, when benchmarked against Basel III's minimum capital requirements (including the capital conservation buffer requirement)

In some EMDEs (as well as advanced economies) corporate deposits have increased steadily over the past few years. A BIS paper (Annex E.3) suggests that another channel of corporate spill-over on banks could be through the impact of the withdrawal of corporate deposits on local banks' funding, especially if these banks have come to rely on corporate deposits for part of their wholesale funding. Deposits from corporates exploiting the "carry" between local and foreign currency interest rates could be withdrawn if the carry positions are unwound when interest rate differentials narrow or market volatility increases. Deposits that are denominated in foreign currencies, in turn, tend to be more pro-cyclical than other types of deposits and may thus be subject to sudden withdrawals by corporates facing roll-over risks.

Debt and broader market liquidity concerns

High corporate debt levels can act on financial stability both directly through credit cycle downturns and defaults, and indirectly through market channels and mark-to-market losses. A key concern amongst policy makers is that secondary market liquidity in bond markets has declined, and that in times of stress this could exacerbate price movements and lead to outsized losses for market participants. (In such stress periods, market participants may find that they are only able to sell those of their assets that are most liquid; so, for instance, selling pressure in EMDE markets may be concentrated in larger countries with more liquid assets.)

Work done by the BIS suggests that both cyclical and structural components have contributed to this reduction in secondary market liquidity. Market-making practices have changed, putting upward pressure on bid-ask spreads and trading costs and resulting in concentration of liquidity into a narrow set of instruments at the expense of others.

From a policy perspective, however, a key question is whether the trends underway in market-making are consistent with robust liquidity at times of stress, i.e. the times when liquidity is most needed. If the trends are consistent, then the price of market-making services should rise in normal times to account for the higher costs of liquidity in bad times. Admittedly, price realignments are unlikely to prevent an exceptionally large shock from bringing financial markets to a halt. But by properly pricing liquidity risk, price realignments should encourage financial behaviour that takes market liquidity into account and does not naively rule out an eventual price collapse, especially when excesses are building up. By reducing market participants' vulnerability to ordinary liquidity shocks, this would make it less likely that such shocks could feed on themselves and undermine system-wide liquidity.

At the same time that the nonfinancial corporates have expanded their market-based borrowing, asset managers, through the investment funds they manage, have become a relatively larger part of the investor base. The potential financial stability risks emanating from the asset management industry have been discussed in the IMF's April 2015 Global Financial Stability Report. The FSB also has work underway to assess the financial stability issues related to asset management and the potential for a disorderly bond market sell-off in the current environment and will report to the G20 later this year.

Data gaps

The IMF-FSB-BIS report to G20 Finance Ministers and Central Bank Governors in September 2014 on data gaps involving foreign exchange exposures included key messages from a workshop jointly held by the BIS Committee on the Global Financial System (CGFS) and the FSB Standing Committee on Assessment of Vulnerabilities (SCAV) on currency mismatches and leverage in corporate balance sheets. The key messages of this workshop (see Annex E.1) were: that EMDE corporate leverage was rising; that increasing use of bond markets may have shifted duration risk to institutional investors; and that the unavailability of consistent granular data might mask the concentration of risk in particular sectors or institutions.

The two main data gaps identified by the workshop participants were, first, in corporate hedging activities and other derivatives positions; and second, in the availability of financial statements for non-listed companies. The workshop summary includes suggestions for a number of approaches that could help to fill these data gaps.

Structural versus cyclical factors

The financial stability concerns outlined above may have both cyclical and structural causes, as follows:

Leverage: Much of the increase in debt likely results from the very low interest rate environment, which is clearly cyclical (unless the low interest rate environment is the “new normal,” in which case this could be considered structural). In addition, bank deleveraging has contributed to the increased bond issuance, and this deleveraging has both cyclical (cleaning up balance sheets post-crisis) and structural (new regulations making lending more

capital intensive) components. Other key elements behind increased leverage have been financial deepening in EMDEs and the tax advantages of debt financing, both of which are structural.

Possible asset price bubbles: This owes, in part, to investors searching for yield and moving towards higher-yielding assets. The source of the search for yield is related to the very low risk-free rates that resulted from extraordinary monetary policy and hence is cyclical. However, to the extent that the increased demand for some bonds is driven by regulation that has driven up the demand for high-quality liquid assets, there are structural elements as well.

Pro-cyclicality: If short-term investors increase their involvement in the corporate debt market, this can increase the market's vulnerability to pro-cyclicality. To the extent that money has flowed to emerging market assets as a result of a search for yield, this represents a cyclical factor.

Currency mismatch: To the extent that the currency mismatch present in some cases has been driven by the ease of issuing debt denominated in foreign currencies in the current conjuncture, this would be cyclical. However, another reason to issue debt in foreign currencies is because of a lack of depth in domestic markets, which is a structural cause.

Interconnectedness: One source of increased interconnectedness can come from a form of carry trade whereby corporates raise funds abroad and deposit those funds in the domestic banking system. This could be cyclical to the extent it is driven by a search for yield, but it also has structural causes to the extent that stable exchange rate regimes facilitate this type of carry trade. In addition, a bias toward debt financing makes firms more reliant on banks than they otherwise would be, and this is a structural cause of interconnectedness.

Data gaps: Data gaps are a structural concern, although the concern is exacerbated when debt issuance goes up, which can have cyclical causes.

4. The Potential Role of Macroprudential Policies in Addressing Financial Stability Concerns³⁶

As noted in the FSB-IMF-BIS progress report to the G20 on Macroprudential Policy Tools and Frameworks³⁷, macroprudential policy is characterised by reference to three defining elements:

- (i) Its objective: to limit systemic risk – the risk of widespread disruptions to the provision of financial services that have serious negative consequences for the economy at large.
- (ii) Its scope: the focus is on the financial system as a whole (including the interactions between the financial and real sectors) as opposed to individual components (that take the rest of the system as given).

³⁶ This is based on “[Staff Guidance Note on Macroprudential Policy—Detailed Guidance on Instruments](#)” prepared by IMF staff and completed on 6 November 2014. Accessible at <http://www.imf.org/external/np/pp/eng/2014/110614a.pdf>.

³⁷ http://www.financialstabilityboard.org/2011/10/r_111027b/, 27 October 2011.

(iii) Its instruments and associated governance: it uses primarily prudential tools calibrated to target the sources of systemic risk. Any non-prudential tools that are part of the framework need to clearly target systemic risk.

To mitigate any financial stability risks from corporate liability structures, policymakers could explore the use of macroprudential tools—including tools specifically targeted at corporate credit as well as at foreign exchange risks—to complement other policy measures. Currently, most of the tools available fall under the purview of bank supervisors. The tools vary by jurisdiction, and any decisions over the use of such tools would need to take into account national economic and financial conditions, including whether the type of corporate financing (e.g. bank or market based) appear to present systemic risks.

Tools that target corporate credit

If strong growth in bank lending to the corporate sector is generating systemic risks, macroprudential authorities could consider raising capital requirements on banks' lending to firms, e.g. by increasing risk-weights on these exposures, or by imposing countercyclical capital buffers. The build-up of additional capital buffers could increase banks' resilience to corporate credit shocks, while these measures may at the same time restrain the growth in bank credit to the corporate sector. If such capital measures are not expected to be sufficiently effective in containing systemic risk, caps on the growth rate of new credit or the share of new corporate loans in total new loans could also be considered. Indirectly, when they incentivise banks to ration out less creditworthy borrowers, caps on credit growth can also help improve banks' underwriting standards.

Any use of such tools would need to be carefully assessed and calibrated. Applying broad measures on corporate credit can restrict credit growth to industry sectors that are receiving too much credit, but may also further restrict credit to industry sectors already experiencing a downturn or receiving insufficient credit. Such caps could also have spill-over effects by leading banks to increase credit instead to other sectors (e.g. the consumer sector).

Tools that target foreign exchange loans

The credit risk associated with firms with large foreign currency debts is significantly higher, particular for those without “natural” hedges. In addition, banks that lend in foreign currency can also be exposed to roll-over risks if there is a maturity mismatch with the underlying financing, e.g., if medium- or long-term foreign currency loans are financed by short-term foreign currency borrowing from abroad. To alleviate credit risks, targeted macroprudential policy measures such as higher risk-weights, and outright limits, on banks' lending in foreign currency can help, while recognizing that excessive flexibility in use of risk weights could impair predictability.³⁸ The extent to which these tools can differentiate effectively between hedged and unhedged corporate borrowers will depend on the availability of information and supervisory capacity. These areas should be strengthened to enable well-informed and prudent decisions regarding the risks involved in foreign currency borrowing.

If *de facto* dollarisation is widespread, other structural tools should be considered alongside tighter macroprudential measures. These would include ensuring sound macroeconomic

³⁸ Here, as with other type of tools, use of macroprudential measures needs to be consistent.

policy frameworks; encouraging the development of domestic financial markets in domestic currency; and a shift of public sector borrowing in foreign currency to domestic currency. Tightly calibrated macroprudential tools that may complement these measures include limits on net open position in foreign exchange; differentiated reserve requirements across currencies; or liquidity requirements differentiated by currency.

Potential leakages

As noted, most of the current tools available for addressing systemic risks arising corporate credit fall under the purview of bank supervisors. In implementing macroprudential policies in the banking sector, macroprudential authorities should be mindful of the potential leakages that could arise when corporate borrowers substitute domestic bank credit with borrowing from unregulated financial institutions or domestic capital markets (domestic leakages), as well as borrowing from abroad (cross-border leakages). These leakages can constrain the effectiveness of policies. In particular, while the intended increase in resilience for the banking sector from higher capital requirements can be preserved, leakage can make it difficult for authorities that seek to constrain the build-up of leverage in the corporate sector to effectively achieve that goal.

Containing these leakages can be particularly challenging in countries where capital markets are well-developed and where corporate borrowers have access to alternative sources of credit. Where credit is being provided by non-banks, such as dedicated leasing companies, or other non-bank finance companies, domestic leakages can be reduced by extending the regulatory perimeter to unregulated entities. (One such example of extending the perimeter would be, in the case of non-banks related to banks, expanding the scope of prudential requirements so as to consolidate such activity.) However, containing corporate leverage can be more difficult where market-based funding, such as through corporate bond issuance, is readily available. Macroprudential authorities should ensure that banks have sufficient capital to ensure resilience to corporate credit shocks, but tools need to be well calibrated; inappropriate and untimely usage of macroprudential tools to restrict corporate credit could incentivise more leakage and exacerbate the risks.

Strategies to address cross-border leakages can include reciprocity arrangements; greater host control; and in certain circumstances, targeted capital flow management measures (CFMs).³⁹ Reciprocity on risk weights for corporate exposures is currently not subject to international agreement, and may be difficult for countries with well-developed capital markets, but some host authorities are actively pursuing cooperation with other national authorities on the implementation of higher risk-weights and counter-cyclical capital buffers. Greater host control includes encouraging or requiring banks that are foreign affiliates to be established as subsidiaries, subject to countries' rights and obligations under international agreements including GATS and the OECD Codes of Liberalisation, in order to subject them to capital regulation and/or caps on credit growth.

³⁹ Measures that are both capital flow management and macroprudential measures can have a role in supporting both macroeconomic policy adjustment and safeguarding financial system stability in certain circumstances. These include circumstances: (i) where the room for adjusting macroeconomic policies is limited, (ii) where the needed policy steps require time, or when the macroeconomic adjustments require time to take effect, (iii) where an inflow surge raises risk of financial system instability, or (iv) where there is heightened uncertainty about the underlying economic stance due to the surge. However, such measures should not be used as substitutes for warranted macroeconomic adjustment.

The use of targeted CFMs needs to be in line with established principles ([IMF \(2012\)](#); [IMF \(2015\)](#))⁴⁰ and [OECD \(2015\)](#)⁴¹, and emphasis should be given to lengthening the maturity of corporate debt issuance and reducing the reliance on FX borrowing. As an alternative or additional measure, policies that correct the tax bias favouring debt would reduce corporate demand for credit and help mitigate the risks from excessive corporate leverage.

The need to consider benefits and costs

In implementing these measures, macroprudential authorities need to strike a balance between ensuring the effectiveness of these tools in securing financial stability, and the need to maintain the efficient provision of financial services so as not to jeopardize economic growth and development. This implies a need to calibrate these macroprudential measures carefully and in a manner that takes account of country circumstances and the phase of the credit cycle. Where stability risks are rising in the upswing of the credit cycle, macroprudential authorities should consider tightening macroprudential tools. Where these risks have receded, or financial stress materializes, these measures could be relaxed to encourage credit growth to support economic activities. To guide the calibration of macroprudential tools, bank and corporate balance sheet indicators should be used along with market and credit flow indicators.

5. Possible next steps

There is evidence that corporate debt levels relative to GDP are increasing in many countries. While in many cases this may represent welcome financial deepening, in some cases this could adversely affect financial stability. Prudential regulations are aimed at controlling the financial risks to banks from corporate exposures. Basel Committee capital standards require banks to hold capital in proportion to credit risk, and the ongoing review of the standardised and internal-model approaches aim, among other things, to improve the risk-sensitivity of current standards. Prudential supervisors also regularly require stress tests of banking assets (including for corporate exposures). Furthermore, accounting standard setters (both the IASB and US FASB) are introducing expected loss approaches to provisioning that will require more forward-looking provisions that have regard to wider macroeconomic factors. All of these changes to regulation could result in some banks being required to raise additional capital and should have the effect of mitigating potential adverse effects on financial stability that might arise via banking sector exposures to corporate loans.

However, better tools are needed to monitor for, and to address, any excessive corporate debt accumulation that may be adding to systemic risks, and there could also be value in further examining whether there are incentives that may artificially favour debt over equity and, where necessary, removing any such incentives. Possible measures that could be further discussed by the FSB and G20 Ministers and Governors include:

⁴⁰ IMF (2012), “The Liberalization and Management of Capital Flows – An Institutional View”, November 2012. Accessible at <http://www.imf.org/external/np/pp/eng/2012/111412.pdf>, [IMF \(2015\)](#), “[Measures which are Both Macroprudential and Capital Flow Management Measures: IMF Approach](#)” April 2015. Accessible at <http://www.imf.org/external/np/pp/eng/2015/041015.pdf>.

⁴¹ OECD (2015), “The OECD’s Approach to Capital Flow Management Measures used with a Macro-prudential Intent” – Report to G20 Finance Ministers”, April 2015. Accessible at <http://www.oecd.org/g20/topics/trade-and-investment/G20-OECD-Code-Report-2015.pdf>

- **Filling data gaps:** Information on corporate sector exposures, while not costless to collect, is essential for policy makers to assess the risks and develop policies accordingly. The CGFS/SCAV workshop noted that regular reporting of more consistent and granular data would enable more effective monitoring of the liability structure of the corporates, the extent of foreign currency hedging and other derivatives positions, as well as data on non-listed companies. In the meantime, supervisors should use existing data to monitor foreign currency exposures and detect emerging vulnerabilities.
- **Addressing the debt-equity tax bias:** The clear evidence of a sizeable tax bias toward debt financing raises evident financial stability concerns. While there is growing concern with the problems caused by the asymmetric tax treatment of debt and equity, the significance of this bias has not been assessed, and there is no consensus on how best to address it. The IMF/OECD paper notes that a pragmatic response to address this bias is to extend rules limiting excessive interest deductions as proposed in the G20/OECD BEPS Project, although interest limitation rules may generally be more focussed on addressing debt shifting than the asymmetry at the heart of the debt bias. While some countries have enacted an ‘Allowance for Corporate Equity’ (ACE), such an approach needs careful design to address concerns about revenue cost and potential for tax avoidance. In navigating these complex issues, policy makers would benefit from a careful review of the significance of tax distortions for financial stability and of the effectiveness of the different approaches that have been, or might be adopted (unilaterally or in cooperation).
- **Macroprudential policy tools to address the conjunctural factors:** To mitigate the risks presented by this rapid growth of corporate leverage, particularly in foreign currency, national policymakers should explore the use of macroprudential tools to mitigate such risks taking into account the likely benefits and costs to the financial system and different national economic and financial conditions (as described in section 4 above).
- **Potential further work in 2016:** There could be value to further work including on: i) further analysis of data on nonfinancial corporate leverage to examine the extent to which particular economic factors drive the liability structure choices of different types of corporates and whether any financial stability concerns arise from these, ii) existing country experiences with the use of macroprudential tools used to address risks arising from corporate debt financing, iii) country-specific case studies on addressing the debt-equity tax bias.

List of contributions by International Organisations annexed to this paper

A IMF paper *Analysis of Balance Sheet Risks in Emerging Market Corporates*

B World Bank paper *Global Liquidity and External Bond Issuance in Emerging Markets and Developing Economies*

C IMF-OECD paper *The role of taxation in corporate liability structures*

D IOSCO paper *International Policies for Public Disclosure - Corporates as Public Issuers of Debt and Equity Securities*

E BIS papers *Risks related to EME corporate balance sheets: the role of leverage and currency mismatch; Nonfinancial corporations from emerging market economies and capital flows; and Summary: Joint CGFS – FSB-SCAV workshop on risks from currency mismatches and leverage on corporate balance sheets*

Total debt by sector (excluding the financial sector)

As a percentage of GDP

Table 1

	Level in 2014				Change since end-2007 ¹			
	Household	Corporate	Government ²	Total	Household	Corporate	Government ²	Total
<i>Advanced economies</i> ³	74	89	96	259	-4	4	32	32
United States	78	68	88	235	-17	1	38	21
Japan	66	103	209	379	0	4	59	62
Euro area	61	103	92	257	2	6	25	33
France	56	122	95	273	10	18	30	58
Germany	55	55	75	185	-8	0	10	2
Italy	43	79	132	254	6	6	30	43
Netherlands	113	124	68	305	4	-1	24	28
Spain	73	114	96	284	-7	-8	59	44
Australia	116	75	30	221	10	-3	22	29
Canada	93	103	64	260	17	14	15	46
Hong Kong SAR	64	218	5	287	13	87	3	103
Korea	83	104	38	225	11	14	14	43
Singapore	60	80	99	239	21	24	12	57
Sweden	83	166	41	290	19	36	1	56
Switzerland	120	90	34	245	12	19	-6	25
United Kingdom	88	77	88	253	-7	-9	46	30
<i>Emerging markets</i> ³	26	88	42	156	10	33	2	44
Argentina	6	10	43	59	2	0	-4	-2
Brazil ⁴	25	47	62	134	12	19	-2	29
China	35	154	41	230	16	53	6	76
India	9	51	66	126	-2	9	-9	-1
Indonesia	17	22	25	64	6	8	-9	5
Malaysia ⁴	68	62	53	183	13	0	11	25
Mexico	15	21	33	69	2	7	12	21
Russia ⁴	19	50	15	86	8	10	5	26
Saudi Arabia	11	37	2	50	-1	4	-19	-16
South Africa	38	33	53	123	-4	-1	20	16
Thailand	68	50	30	148	23	4	7	34
Turkey	21	51	34	106	10	27	-8	29

¹ In percentage points of GDP. ² BIS Credit to the government at nominal values except for Korea for which only market values are available. ³ Weighted averages of the economies listed based on each year GDP and PPP exchange rates. ⁴ Breakdown of household debt and corporate debt is estimated based on bank credit data.

Sources: IMF, *World Economic Outlook*; OECD; national sources; BIS database on total credit.

Total debt by sector (excluding the financial sector)

As a percentage of GDP

Table 2

	Level in 2014				Change since end-1999 ¹			
	Household	Corporate	Government ²	Total	Household	Corporate	Government ²	Total
<i>Advanced economies</i> ³	74	89	96	259	14	9	34	56
United States	78	68	88	235	13	7	40	59
Japan	66	103	209	379	-8	-27	103	68
Euro area	61	103	92	257	13	22	19	54
France	56	122	95	273	22	31	33	86
Germany	55	55	75	185	-15	2	14	1
Italy	43	79	132	254	23	27	19	69
Netherlands	113	124	68	305	39	3	5	51
Spain	73	114	96	284	33	48	33	114
Australia	116	75	30	221	50	13	9	73
Canada	93	103	64	260	31	11	-12	30
Hong Kong SAR	64	218	5	287	6	108	5	119
Korea	83	104	38	225	36	-3	28	57
Singapore	60	80	99	239	23	6	13	41
Sweden	83	166	41	290	37	70	-24	83
Switzerland	120	90	34	245	14	11	-16	11
United Kingdom	88	77	88	253	22	9	46	76
<i>Emerging markets</i> ³	26	88	42	156	17	39	-15	37
Argentina	6	10	43	59	0	-10	9	-1
Brazil ⁴	25	47	62	134	16	20	5	41
China	35	154	41	230	25	56	3	84
India	9	51	66	126	3	28	-4	27
Indonesia	17	22	25	64
Malaysia ⁴	68	62	53	183	15	-17
Mexico	15	21	33	69	6	0	11	17
Russia ⁴	19	50	15	86	18	22	-99	-54
Saudi Arabia	11	37	2	50	3	9	-101	-89
South Africa	38	33	53	123	6	5	-1	7
Thailand	68	50	30	148	19	-45	11	-24
Turkey	21	51	34	106	19	29	-9	-20

¹ In percentage points of GDP. ² BIS Credit to the government at nominal values except for Korea for which only market values are available. ³ Weighted averages of the economies listed based on each year GDP and PPP exchange rates. ⁴ Breakdown of household debt and corporate debt is estimated based on bank credit data.

Sources: IMF, *World Economic Outlook*; OECD; national sources; BIS database on total credit.

Balance Sheet Risks in Emerging Market Corporates

International Monetary Fund—Monetary and Capital Markets Department (MCM)¹
August 12, 2015

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I. RISING VULNERABILITIES

Corporate debt issuance in major emerging market countries has risen sharply in recent years, against the backdrop of ample global liquidity and prolonged low global interest rates. New corporate bond issuance rose 10 percent in 2014, with Asia leading other regions (Figure 1). Issuance in foreign currency amounted to one fifth of total issuance over the last five years, growing at a compounded annual rate of 15 percent during the period. Sectors such as industry, utilities and energy accounted for three-quarters of the new debt in 2014. In Latin America (Latam) and Europe, Middle East and Africa (EMEA), the energy sector comprised the largest share of issuance, while in Asia, the lion share came from industries.

Along with the rise in corporate bond issuance, borrowing from banks has also increased. In aggregate, this has led to higher levels of corporate leverage as measured by the ratio of corporate debt to GDP. In some countries, this ratio is close to levels seen during the Asia financial crisis. Although economic growth has slowed the rise of the corporate debt to GDP ratio, it is high in China, Chile and Malaysia. In China, corporate debt is mostly funded by domestic banks and domestic capital market, thus rendering firms there more sensitive to domestic factors. In contrast, firms in Chile and Malaysia are more dependent on external financing.

Slowing growth in emerging markets is putting pressure on firms' profitability. Corporate profitability has declined relative to its five-year averages across most emerging market countries, with broad-based weaknesses across sectors (Figure 2). At the same time, debt has

¹ The lead author of this note is Julian Chow.

grown faster than earnings in most countries, evidenced by the increase in the ratio of net debt to EBIT. As a result, debt-servicing capacity has deteriorated, and the share of debt at risk² in total corporate debt has risen by 22 percent in 2014 from levels in 2010.

Despite the growing exposure to foreign currency debt, comprehensive firm-level data on foreign currency liabilities, the currency breakdown of these liabilities, and their maturity structure remain sparse. The size of foreign currency debt may be underestimated, particularly in instances where firms issue debt abroad through special purpose vehicles (SPVs) or affiliates and do not consolidate these exposures in their balance sheets. Moreover, data on “natural” hedges from foreign currency revenue and financial hedges from derivatives are extremely limited³. Unless the collection of financial data on corporates improves, data limitations will continue to complicate monitoring and risk management.

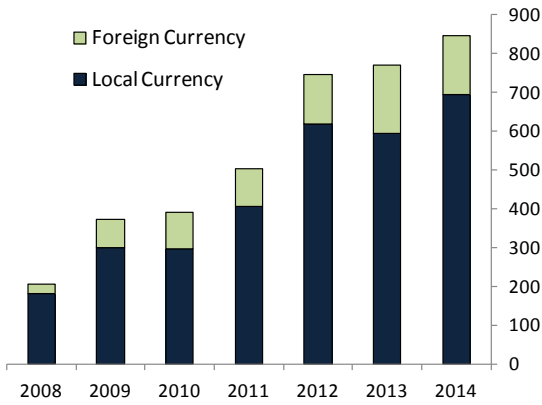
² Debt at risk is defined as debt owed by firms where the interest coverage ratio is below 1.5.

³ The effectiveness of these financial hedges are also a concern as some derivative hedges are undertaken for the short term, and derivative instruments with knock-out features will terminate once the exchange rate depreciates beyond certain thresholds thus rendering the hedge worthless.

Figure 1. Nonfinancial Corporate Debt Issuance and Rising Leverage

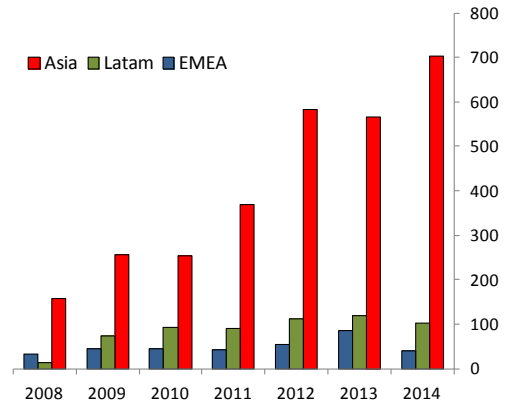
Corporate bond issuance has risen sharply over the past several years...

1. Bond Issuance by Currency (in US\$ billion)



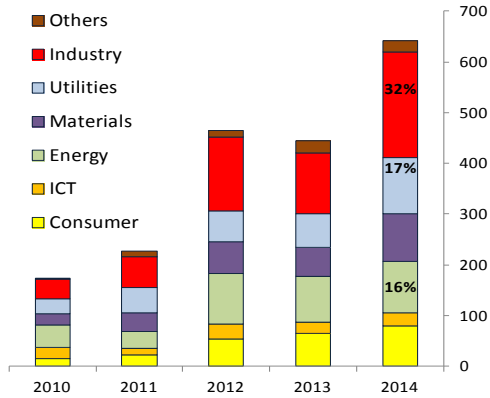
... with Asia leading the rise

2. Bond Issuance by Regions (in US\$ billion)



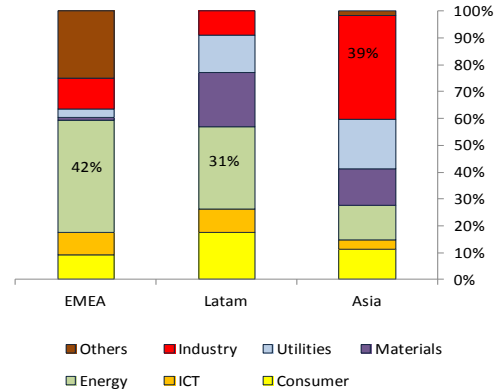
Industry, utilities and energy account for bulk of the issuance ...

3. Bond Issuance by Sector (in US\$ billion)



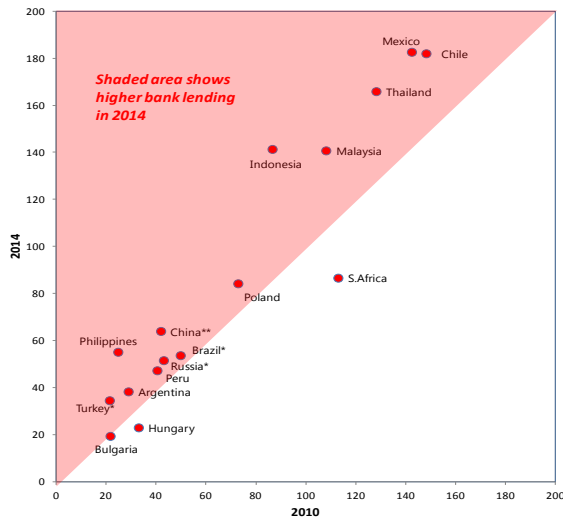
... with energy being the largest share in Latam and EMEA, and industry in Asia

4. Bond Issuance by Sector in 2014



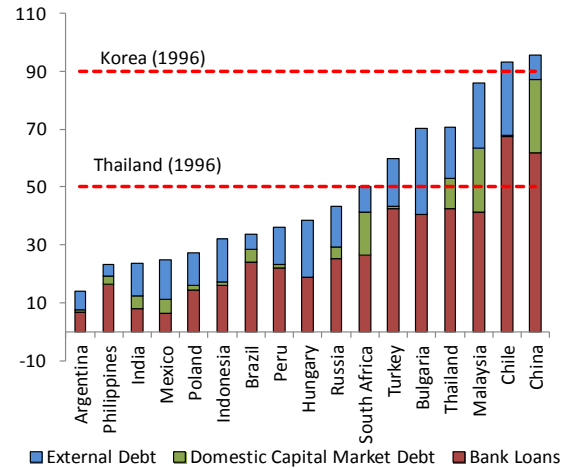
Bank lending has also increased...

5. Bank Lending to Nonfinancial Corporate (in US\$ billion)



... leading to higher debt loads and high levels of corporate leverage in several countries

6. Nonfinancial Corporate Debt to GDP (in percent)



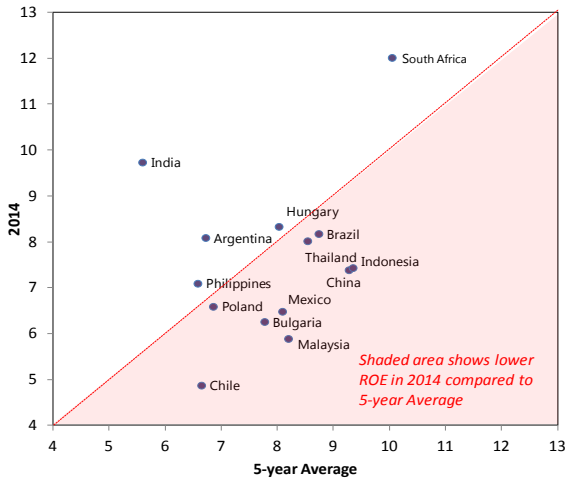
* scaled by 10 billion; **scaled by 100 billion.

Sources: IMF, Bloomberg, Standard Chartered Bank, Orbis

Figure 2. Weakening Nonfinancial Corporate Credit Metrics

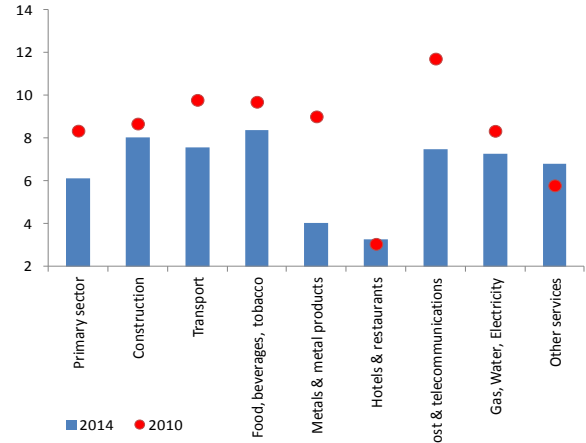
Slowing economic growth is putting pressure on profitability ...

1. Returns on Equity (in percent, median)



... with broad-based weaknesses across sectors

2. Returns on Equity by Sector (in percent, median)

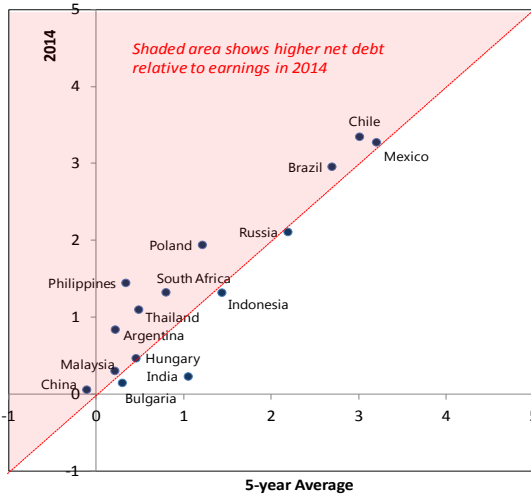


**Primary sector includes oil and gas, mining, agriculture.*

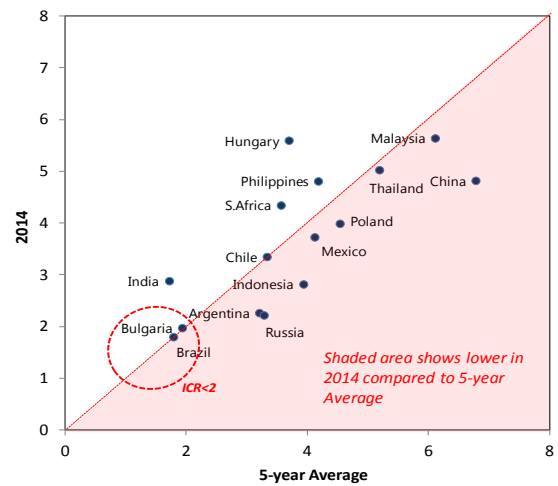
Leading to weaker debt service capacity ...

Debt has also grown faster than earnings in most countries ...

3. Net Debt to EBIT (in multiples, median)

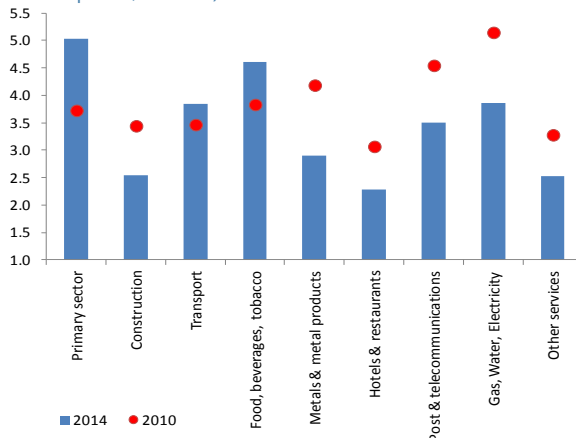


4. Interest Coverage Ratio (EBIT/Interest Expense, median)



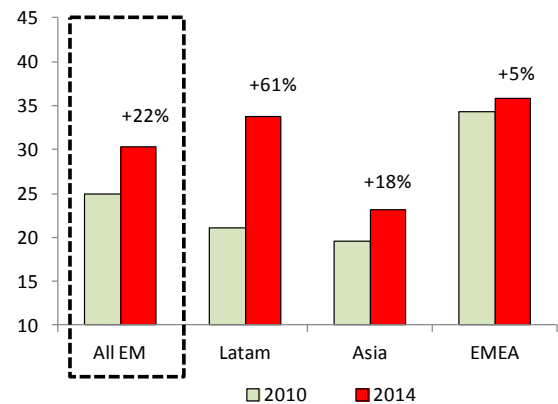
... across most sectors

5. Interest Coverage Ratio by Sector (EBIT/Interest Expense, median)



As a result, debt at risk is on the rise ...

6. Debt at Risk¹ (in percent of total debt)



1. Refers to debt of firms with interest coverage ratios below 1.5

II. SENSITIVITY ANALYSIS

Higher debt loads and lower debt-servicing capacity increase the corporate sector's sensitivity to macroeconomic and financial shocks. Exchange rate depreciation exposes firms to losses from the revaluation of FX debt service. At the same time, tighter external financing conditions could precipitate a rise in borrowing costs, and a further slowdown in economic growth could reduce earnings.

Recognizing that these shocks may have an adverse impact on the health of the corporate sector, we conducted a sensitivity analysis on a sample of companies in selected emerging market countries⁴ (Appendix 1). The magnitudes of the "severe but plausible" shocks for the stress scenarios are based on the following considerations:

- 30 percent increase in borrowing costs, derived from an average of the country median increase in firms' borrowing costs during the Global Financial Crisis. Country medians ranged from 3 percent to 69 percent.
- 20 percent decline in earnings, based on an average of the country median decline in firms' EBIT during the Global Financial Crisis. Country medians ranged from an increase of 12 percent to a decline of 106 percent.
- Exchange rate depreciation of 30 percent against the dollar based on dollar appreciation of late 1990s, and 15 percent depreciation against the euro to take into account of the divergence in monetary policy in the U.S. and Euro area⁵.

Potential hedges are also taken into consideration based on the following assumptions:

- The "natural" hedge is based on the share of foreign sales. The currency breakdown of the natural hedge between the dollar and the euro is derived from the trade weights.
- The financial hedge assumes 50 percent derivative hedging on FX debt interest and principal.

The combination of these three shocks could significantly increase debt at risk, especially in countries with high shares of external debt and low natural hedges (Figure 3). This is especially worrisome in countries where firms' debt interest coverage ratios are already weak. Debt at risk could rise above half of total corporate debt in Brazil, Bulgaria, Hungary

⁴ They include China, India, Indonesia, Malaysia, Thailand, Philippines, Brazil, Mexico, Chile, Argentina, Peru, Russia, Poland, Hungary, Bulgaria and South Africa.

⁵ We recognize that some currencies are pegged, or are in a heavily managed regime. This sensitivity analysis examines what could potentially happen in an adverse scenario.

and Indonesia. Within the sample of 15 countries⁶, debt at risk of weak firms could increase by another \$680 billion, accounting for 45 percent of total corporate debt compared to 29 percent of total corporate debt in 2014. Large firms continue to account for the bulk of the debt at risk in Asia and Latam, while in EMEA, one third of the debt at risk is attributed to small and medium size firms.

Shocks to earnings, interest rate and exchange rates could affect commodities-related firms and state-owned enterprises (SOE) in some countries. Results from the sensitivity analysis suggest that a combination of the three shocks could substantially increase the commodities sector debt at risk in Hungary, Philippines, Indonesia and Thailand, though they remain at low levels in these countries. In Brazil, the debt at risk from commodities-related companies is high, comprising around one third of total debt. For SOEs, debt at risk could rise above 3 percent of GDP in Malaysia, Hungary, China, Thailand and Brazil, if these shocks materialize.

Caveat

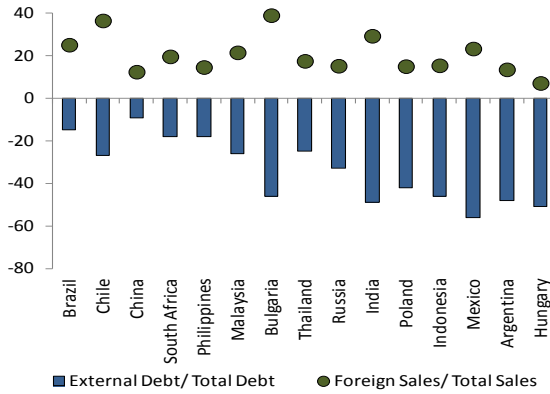
It is worth noting that the coverage and representativeness of the sample obtained from the Orbis database vary across countries. This, to certain extent, may lead to some biasness in the results and renders cross-country comparisons difficult. Where small firms are under-represented in the sample of a particular country, the analysis may understate the true debt at risk.

⁶ Excludes Turkey due the lack of a good representative sample of firm-level data.

Figure 3. Sensitivity Analysis

Some countries have relatively more foreign sales that provide "natural" hedges...

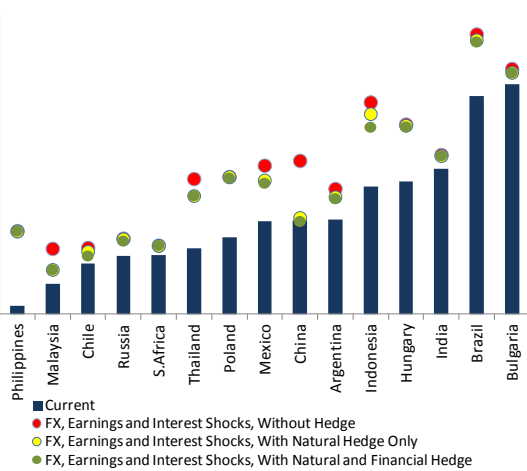
1. Share of Foreign Sales and FX Debt¹ (in percent of Total Sales and Total Debt, respectively)



1. The share of foreign sales is based on median, from Worldscope's data. The share of external debt is derived from QEDS.

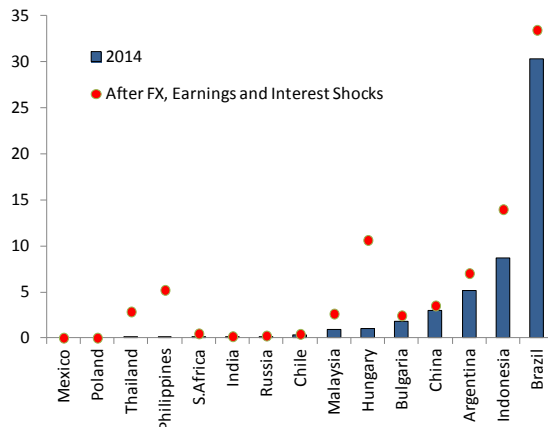
...leading to higher debt at risk

3. Debt at Risk (in percent of Total Corporate Debt)



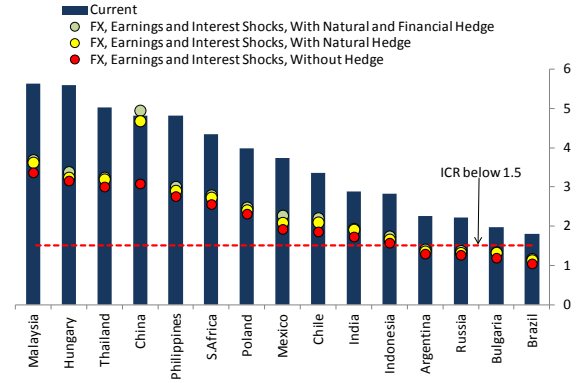
Commodities-related firms are weak in some countries...

5. Debt at Risk of Commodities Sector (in percent of total debt)



...shocks to exchange rates, earnings and interest expense could weaken debt servicing capacity ...

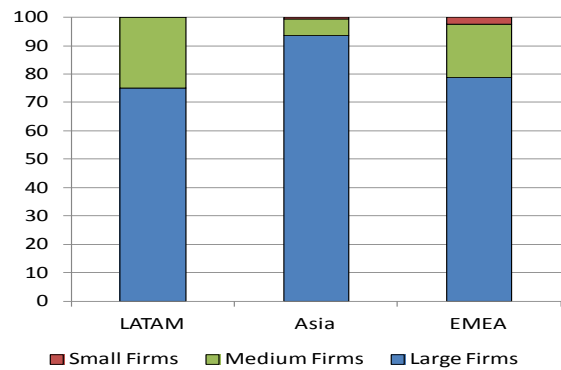
2. Interest Coverage Ratio (EBIT/Interest Expense, median)



*Natural hedge is based on trade exposure and foreign sales; financial hedge assumes 50 percent hedge on FX debt principal and interest.

...large firms continue to account for the bulk of the debt at risk

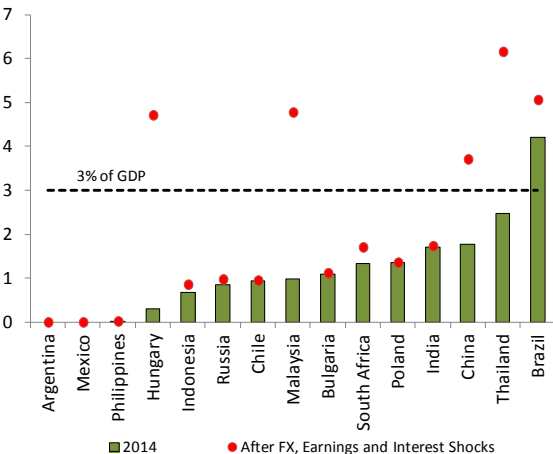
4. Distribution of Debt at Risk by Firm Size (in percent of total debt at risk)



**Firm size is derived from the country's sample firms by asset size: Large=Top 25th percentile; Small=Last 25th percentile; Medium=In between.

...while some state-owned companies are also at risk ...

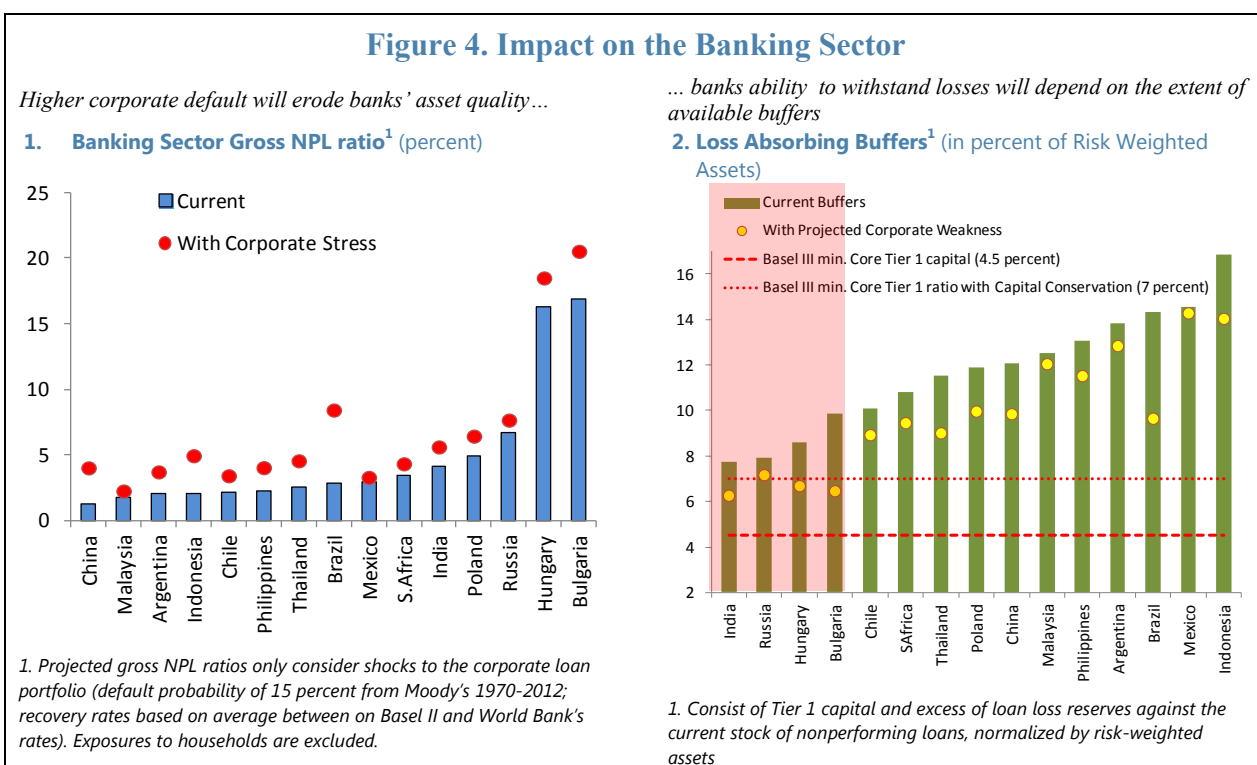
6. SOE Debt at Risk (in percent of GDP)



III. IMPACT ON BANKS

Weaknesses in the corporate sector could put pressure on banks' asset quality (Figure 4). The ability of banks to withstand losses will depend on the extent of available buffers. Our sensitivity analysis assuming that the after-shock corporate debt at risk owed to banks were to default with a probability of 15 percent⁷ suggests that buffers comprising Tier 1 capital and provisioning appear low in India, Russia, Hungary and Bulgaria, when benchmarked against Basel III's minimum capital requirement.

In some cases, bank buffers may be over-stated due to lax recognition of doubtful assets and loan forbearance. In such instances, loan losses in a severe downturn and higher corporate default could overwhelm what were thought to be adequate levels of equity capital.



Sources: IMF, Haver, Orbis, IMF Staff Computations

⁷ Based on Moody's default probability for corporate debts with interest coverage ratio of 1.5 for a three-year horizon from 1970-2012.

IV. POLICY IMPLICATIONS

Corporate leverage, particularly in foreign currency, has continued to increase in several emerging market countries. While this may reflect the positive outcome of financial deepening and integration into global capital markets, rapidly growing levels of debt and leverage could increase firms' susceptibility to shocks and affect financial stability. Policymakers in a number of countries have initiated measures to address the rising vulnerabilities in the corporate sector. To further mitigate these risks, the following measures could be considered:

- Strengthen the monitoring of corporate liabilities structure. Authorities could mandate better disclosure of firms' liabilities, especially those in foreign currency, and improve the collection and analysis of financial data. Timely and more granular data are needed on off and on-balance sheet derivatives obligations and the extent of foreign currency hedging.
- Tighten microprudential policies through regulation and supervision. Where feasible, countries should consider imposing limits on firm's foreign currency borrowing and more stringent bank lending and underwriting standards. Countries whose banking sector has low loss absorbing buffers should consider measures to bolster banks' resilience through the buildup of more equity capital and provisioning. This includes mandating banks to submit strict time-bound action plans to address the capital gaps. In addition, authorities could also consider expanding the perimeter of prudential supervision to include nonbank financial institutions to ensure that risks are adequately captured, buffers are built and safety nets are in place.
- Improve macroprudential policy tools to address the rapid growth of corporate leverage, particularly in foreign currency. Policymakers could identify macroprudential tools to mitigate rollover risk, debt service burden and balance sheet sensitivity to interest rate changes and exchange rate risk. In addition, tighter macroprudential policies could be considered in countries where large capital inflows have fuelled rapid credit growth and the buildup of overly leveraged positions.

APPENDIX 1. METHODOLOGY FOR CORPORATE SENSITIVITY ANALYSIS

A. Analytical Approach

A firm's capacity to service debt hinges on its interest coverage ratio (ICR), computed as EBIT/Interest Expense, *where* EBIT is earnings before interest and taxation⁸. The lower the ratio, the more the company is burdened by debt expense relative to earnings. An ICR of less than 1 implies that the firm is not generating sufficient revenues to service its debt without making adjustments, such as reducing operating costs, drawing down its cash reserves, or borrowing more. This analysis uses an ICR threshold of 1.5 times to take into account of the potential vulnerabilities to funding risks, in addition earnings risks, that could emanate in a scenario when funding liquidity thins, particularly during times of heightened global risk aversion. This is also a benchmark used widely by analysts as an early warning signal as firms with ICR below 1 may have already been in distress.

B. Data

The analysis is based on annual firm-level balance sheet information from 15 emerging market countries across Asia (China, India, Indonesia, Philippines, Malaysia, Thailand), Latin America (Argentina, Brazil, Chile, Mexico) and EMEA (Poland, Hungary, Bulgaria, Russia, South Africa). Data is sourced from Orbis, with close to 43,000 firms in the sample countries that include public and private, large and small companies, though they vary between countries. The coverage of firms' total assets is around half of the total GDP of these sample countries (Table 1).

Table 1. Coverage of Firms by Orbis

	Number of Firms	Total Assets (in percent of GDP)	Total Debts (in percent of GDP)
Asia			
China	3,720	48	16
India	4,818	16	5
Indonesia	436	28	10
Malaysia	2,986	130	42
Thailand	4,920	91	36
Philippines	4,982	87	33
LATAM			
Argentina	4,994	18	6
Chile	367	170	71
Brazil	573	52	24
Mexico	123	52	28
EMEA			
Russia	195	51	18
South africa	289	45	14
Poland	4,902	31	9
Hungary	4,587	185	45
Bulgaria	4,741	226	67

Source: Orbis

C. Estimating the Proportion of Debt at Risk

The sensitivity analysis shows how the combination of exchange rate, earnings and interest rate shocks affects debt at risk – defined as those with ICR below 1.5. In this analysis, a simultaneous shock of 30 percent increase in

⁸ EBIT (also known as operating profit/loss) is used as a measure of earnings instead of EBITDA (earnings before interest, taxation, depreciation and amortization) to account for the need for investment and replacement of assets.

interest expense, 20 percent decline in EBIT and exchange rate depreciation (30 percent and 15 percent against the dollar and euro respectively) is applied across the sample firms⁹. Debt at risk for each country is computed as:

$$\frac{\sum \text{Debt of Firms with ICR} < 1.5}{\sum \text{Debt of All Firms}}$$

D. Estimating the Share of Corporate External Debt

As the breakdown of firm-by-firm foreign currency borrowing is not available through Orbis and other in-house databases, such debts are approximated, at the aggregate level, by external debt statistics and other sources as follows:

Sources of Corporate Borrowing	Data
External Debt 1/	Quarterly External Debt Statistics (QEDS) (http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/EXTDEC/QEDS/0,,contentMDK:20721958~menuPK:4704607~pagePK:64168445~piPK:64168309~theSitePK:1805415,00.html) NOTE: QEDS shows a breakdown of corporate external debt according to debt from affiliates, direct investment and others which include loans, money market instruments, trade credits, bonds and notes.
Domestic Banks	Banking system data from “Financial Soundness Indicators”
Domestic Capital Markets	Bloomberg

1/ While external debt could be in foreign or local currency, most of foreign holdings of corporate debts are in hard currencies given that (i) many emerging market local currency debt markets are illiquid; (ii) most foreign funds are less willing to take exchange rate risk in addition of liquidity and corporate credit risks (carry trade-driven funds, on the other hand, would prefer local currency government debts rather than corporate debts as the former are more liquid and easier to unwind); and (iii) disclosures and covenants in some emerging market local currency bonds are weak and are not rated by widely accepted international rating agencies.

The share of aggregate corporate external debt to total corporate debt is estimated as:

$$\frac{\text{External Debt}}{\text{External Debt} + \text{Loans from Domestic Banks} + \text{Borrowings from Domestic Capital Markets}}$$

E. Estimating Potential Exchange Rate Losses from Foreign Currency Debt

Potential exchange rate losses from foreign currency debt interest payment due in the current year could be estimated as:

⁹ These levels of shocks are consistent with observed median in sample countries following the Global Financial Crisis. The differences in exchange rate depreciation against the dollar and euro account for the synchronicity of monetary conditions between the U.S. and euro area.

$$\text{Share of External Debt} \times \text{Borrowing Cost} \times \text{Total Debt} \times \left[\left(\frac{\text{Share of USD Debt} \times \text{Nominal Exch. Rate}}{\text{Depreciation vs USD}} \right) + (\text{Share of EUR Debt} \times \text{Nominal Exch. Rate Depreciation vs EUR}) \right]$$

Assumptions underlying this estimation are:

- The share of FX debt is approximated by the share of external debts.
- The proportion of debts denominated in USD and EUR is approximated by the share of USD and EUR bonds from Bloomberg.

F. Accounting for Natural Hedges

FX losses from interest expense and revaluation of foreign currency debt principal and are offset by FX gains from overseas earnings, computed as:

$$\text{Share of Foreign Sales} \times \text{EBIT} \times [(\text{Share of USD Revenue} \times \text{Nominal Exch. Rate Depreciation vs USD}) + (\text{Share of EUR Revenue} \times \text{Nominal Exch. Rate Depreciation vs EUR})]$$

Assumptions underlying this estimation are:

- Foreign sales are assumed to be in foreign currencies.
- The share of FX revenues is derived from the country trade weights.
- The multiplication by EBIT (operating profit) effectively takes into account of foreign currency costs as it assumes that the share of these costs are in proportion to foreign currency incomes.

It is worth noting that the effectiveness of natural hedges is an approximation as it may fall short of expectations. Past episodes have demonstrated that overseas revenues declined in tandem with the depreciating currencies during turbulent periods.

G. Accounting for Financial Hedges

Currency hedging of foreign currency debts could also mitigate potential FX losses. Offset from financial hedging of foreign currency debt principal and interest is computed as:

$$\text{Hedge Ratio} \times (\text{FX losses from interest and principal revaluation})$$

As information on financial hedging is sparse, this analysis assumes that at least 50 percent of foreign currency debts are hedged, on aggregate basis.

Global Liquidity and External Bond Issuance in Emerging Markets and Developing Economies

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Swati Ghosh

Katie Kibuuka

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Abstract

Using the universe of all externally issued bonds by corporates and sovereigns in emerging and developing economies during 2000-14, this paper analyzes various issuance trends, including the unprecedented post-crisis surge. The paper focuses on external issuance at the country-industry and individual bond levels and finds that global factors matter greatly for emerging and developing economies issuance. A decrease in U.S. expected equity market (or interest rate) volatility, U.S. corporate credit spreads, and U.S. interbank funding costs and an increase in the Federal Reserve's balance sheet (i) raise the odds that the monthly issuance volume of a country-industry is above its historical average; (ii) decrease individual bond yields and spreads; and (iii) raise bond maturities, after controlling for country pull factors and bond characteristics (for example, type of issuer, industry, and riskiness). Additionally, we document support that the risk-taking channel of exchange rate appreciation also operates for external bond issuance. Moreover, while the paper finds that country pull factors affect the impact of global factors, it does not find consistent evidence for this across the board. This result suggests that, during loose global funding conditions, flows are mostly driven by push factors and do not systematically discriminate between emerging and developing economies. Taken together, the findings suggest that although issuers might be able to benefit from benign international funding conditions, the large issuance volumes, currency risks, and high exposure to global factors could pose external and domestic challenges for policy makers, particularly when global cycles reverse.

Key words: Global Liquidity, Bonds, Primary Market, Capital Flows, International Finance.

JEL Classification: F21, F32, F36, G12, G15.

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I. Introduction

The global financial crisis has given new impetus to the debate on the global financial liquidity cycle, which is primarily brought forth by monetary policy, risk appetite, and leverage in “financial center countries” and transmitted through loose funding conditions to the rest of the world (e.g. Rey (2013)). Emerging and developing economies (EMDEs) benefited from the pre-crisis upturn in this global cycle mainly through internationally active banks (e.g. Bruno and Shin (2015a, 2015b)). However, the process had also led to a build-up in global imbalances and financial fragilities which came to the fore when global banks deleveraged to strengthen their balance sheets and to comply with the new global regulatory architecture.

In the wake of the crisis, various developed economies embarked on unprecedented, extraordinary monetary policies (EMPs) to rekindle domestic economic growth and battle disinflationary pressures mainly via (promises of future) ultra-low policy rates and large-scale asset purchasing programs (LSAP) that aimed to bring down long-term interest rates. Since 2009-10, EMPs in the United States in particular have produced a prolonged episode of ultra-low global interest rates as well as extremely low volatility in financial markets. This in turn has contributed to a revival of ample global funding conditions and widespread financial risk taking as developed market investors searched for yield to meet targeted returns.

The spillover effects of these EMPs on EMDEs have been profound—EMDEs have experienced an unparalleled surge in total gross capital inflows from an annual average of \$0.5 trillion during 2000-2007 to \$1.1 trillion during 2010-2013. As a result, portfolio investors in developed markets currently allocate over \$4 trillion or 13 percent of their investments to EMDEs. Moreover, bonds funds allocations from developed markets to EMDEs have grown by 375% to \$385 billion since 2009 (Figure 1), equities funds allocations have expanded by 70% to \$985 billion (Figure 2), and foreign participation in some local bond markets has increased up to 26 percent of volume outstanding (Figure 3).

These massive capital inflows can set a in motion a feedback loop in EMDEs that consists of: i) ample domestic liquidity and loosening lending conditions, ii) increasing leverage, iii) rising asset prices and stronger domestic balance sheets through local currency appreciation, and iv) an improving growth and fiscal outlook. And as long as the cycle is virtuous, it attracts even more inflows which reinforces the cycle. Yet, while producing short-term growth, boosting investor optimism, and potentially extending debt maturities, these flows also provide challenges for EMDE policy makers, as they can put pressure on currencies and foreign reserves management, interfere with the local credit cycle and monetary policy, produce shadow banking risks, distort asset prices, and reduce incentives for structural reform.

In this context, the inevitable exit from EMPs and the normalization of global interest rates could prove disruptive for EMDEs (e.g. Rajan (2013), Turner (2014), IOSCO (2014)). The “Taper Tantrum”¹ episode is instructive in this respect and shows that market expectations regarding EMPs matter greatly (e.g. Eichengreen and Gupta (2014)). Now, more than 6.5 years later since their launch, EMPs appear to have contributed to the nascent economic recovery in the United States, and the Federal Reserve has finally discontinued its LSAP series of mortgage-backed securities and Treasury bonds purchases and is preparing to raise the policy rate for the first time

¹ In May 2013, the Federal Reserve hinted it might start scaling down its LSAP triggering virulent bouts of volatility in EMDE currencies, equities, and capital inflows.

in a decade. In contrast, the European Central Bank has recently launched its own LSAP in addition to other EMPs. These measures have helped drive down yield curves in Europe to record lows, suggesting the impacts of EMPs on global financial markets and its contribution to global liquidity will endure.

This paper focuses on the impact of global liquidity factors on a subset of capital inflows to EMDEs which has grown dramatically: the external issuance of bonds by corporates and sovereigns. Bond markets have become a major transmission channel of global liquidity (e.g. Shin (2013), Avdjiev et al (2014)). During 2009-14, corporates and sovereigns in EMDEs cumulatively issued \$1.5 trillion in external bonds—overwhelmingly in foreign currencies—representing almost a tripling from \$520 billion in 2002-07. This surge is not driven by a single region or country, but reflects a broad-based trend since the cumulative issuance to GDP ratio is 6.7% for the median EMDE, up from 4.3% in the pre-crisis period. For example, various countries issued externally for the first time during the period, including Angola, Armenia, Botswana, Ghana, Kenya, Laos, Namibia, and Mozambique.

Against this backdrop, this paper seeks to answer five main research questions:

- Question 1: What are the main trends in external issuance by EMDE entities during the 2000-14 period (e.g. volumes, stocks, currencies, maturities, yields)?
- Question 2: What is the impact of global factors—proxied by financial conditions in the United States—on the *propensity* to issue external bonds by an EMDE country-industry compared to its historical issuance average?
- Question 3: What is the impact of these global factors on two important bond characteristics at the time of issuance: its *yield* (and spread) and *maturity*?
- Question 4: Do country characteristics interact and amplify or dampen the impact of global factors?
- Question 5: Does the risk-taking channel through exchange rate appreciation as described and tested in Bruno and Shin (2015a, 2015b) also operate in a similar fashion for external bond issuance by increasing the propensity for country-industries to issue externally? In our setting, this channel hypothesizes that local currency appreciation strengthens local borrowers' balance sheets and their external bond issuance capacity which triggers higher cross-border flows by international investors who are willing to take on more risk.

Our paper makes four contributions. First, we compile external bond issuance data sets, which cover the universe of external bond issuances by EMDEs during 2000-14. We use these data sets to document recent trends in bond flows, stocks, pricing, and maturities across EMDEs. Second, to our knowledge, this paper is the first to study the impact of global factors on primary activity of EMDE entities in international bond markets since the start of new millennium. Third, we find support for the risk-taking channel of exchange rate appreciation for external bond issuance. Fourth, we undertake the analysis on the country-industry or bond tranche level which allows us to account for industry-specific and deal-specific factors (e.g. currency, bond riskiness, bond size). This ameliorates bias due to compositional and selection effects which are present in aggregated capital flows data which are typically the focus of inquiry in the literature.

The remainder of this paper is structured as follows. Section II provides a brief overview of the literature. Section III documents external issuance trends to answer Question 1. Section IV

discusses the data. Section V lays out the methodology to address the other research questions and section VI discusses the empirical results. Section VII concludes.

II. Literature Overview

Global liquidity

The pronounced simultaneous resurgence in capital flows to EMDEs seen since 2009-10 is not a new phenomenon. An extensive literature dating to the 1990s (e.g. Calvo et al (1993)) has emphasized the importance of global push factors, notably real interest rates and growth in advanced economies. Indeed, capital flows to EMDEs have long tended to exhibit strong co-movements suggesting that common drivers in the global environment are at play—both across types of flows (with the exception of FDI flows) and across geographical regions. This observation is corroborated by Koepke (2015), who, while summarizing relevant empirical literature, concludes that global push factors matter relatively more than country pull factors for portfolio flows. He finds that country pull factors matter more for banking flows.

Bekaert, Hoerova and Lo Duca (2013) show that a lower Federal Funds rate triggers a subsequent reduction in measures of uncertainty and risk aversion, proxied, for example, by the VIX index, which measures the 30-day ahead expected volatility derived from S&P 500 index options (Figure 16). And Forbes and Warnock (2012) show that a lower VIX is associated with a surge in capital flows. Rey (2013) finds that capital inflows are negatively correlated with the VIX even at a geographically disaggregated level, and that this pattern holds even when conditioned by other global factors such as the real interest rate and world growth rate.

Bruno and Shin (2015a, 2015b) highlight banks as a channel of transmission. Bruno and Shin (2015a) provide and empirically test a model of risk-taking through currency appreciation. They show that the leverage cycle of international banks is associated with higher cross-border bank flows. This triggers currency appreciation in the recipient countries which strengthens local balance sheets allowing banks to lend more. In a VAR framework, Bruno and Shin (2015b) find that a lower VIX entices globally active banks to take on additional leverage, arguably because they target a certain value-at-risk (VaR) measure which mechanically allows for higher leverage when uncertainty measures fall (e.g. Adrian and Shin (2010)). They also find that the U.S. Dollar depreciates as VIX decreases, which results in a loosening of Dollar lending conditions in international funding markets. Rey (2013) and Bruno and Shin (2015b) also provide evidence that higher leverage leads to a subsequent fall in risk aversion measures, giving rise to a positive feedback loop. The mechanism is as follows: when balance sheets expand in response to lower uncertainty (VIX) through increased collateralized lending and borrowing by financial intermediaries, the newly released funding resources chase available assets for purchase. If this leads to a generalized increase in asset prices in the financial system, it then affects future risk appetite (leads to a fall in risk aversion).

However, recently, bond markets have taken over as a transmission channel. For example, Shin (2013) documents the impact of the VIX on portfolio bond flows. He argues that since 2010, “reaching for yield” by investors in developed economies has contributed to the decline in risk premiums for debt securities and a surge in issuance of international debt securities. In particular,

Shin (2013) discusses the increase in offshore issuance of international debt securities by non-financial firms that operate across borders.

Co-movement of capital flows also translates to co-movement of asset prices. For example, Miranda-Agrippino and Rey (2012) look at equity markets and show that about 25% of the variance of a large cross section of prices of risky assets is explained by a single global factor (the VIX). That is, they find that irrespective of the geographical location of the market in which the assets are traded or the specific asset class they belong to, risky returns load to a large extent on this global factor.

Of course, domestic factors still matter for capital inflows as well. For instance, Ghosh et al (2010) look at aggregate capital inflows and find that, conditional on a surge of capital inflows occurring (which is determined by global factors), whether or not a particular country receives any flows depends on its domestic macroeconomic and institutional factors. Similarly, Fratzscher (2011) documents that common shocks exert a large effect on portfolio flows, but also finds the effects are highly heterogeneous across countries, with a large part of this heterogeneity explained by differences in the quality of institutions, country risk and the strength of domestic fundamentals. Cerutti et al. (2014) who analyze cross-border banking flows in particular, find that, while U.S. financial conditions (VIX and term premia) are important, recipient country characteristics affect both the level of country specific flows as well as the cyclical impact of global liquidity on the domestic economies.

EMPs

EMPs mainly operate through various channels to affect investor portfolio decisions and contribute to the global liquidity cycle, with the attendant domestic and international consequences, including:

- *The portfolio balance channel:* To the extent that assets are not perfectly substitutable, the central bank's purchase of a security such as a U.S. Treasury, affects the available supply of this asset to investors and reduces its yield, pushing investors into holding other assets.
- *The expectations channel:* If the markets interpret the central bank's announcements or operations as signaling lower future policy rates than they had previously expected, bond yields may decline via a lower risk neutral component of interest rates.
- *The confidence channel:* The central bank's actions may also provide new information about the current state of the economy –which in turn could affect the portfolio decisions and asset prices by changing investors' risk appetites.
- *The liquidity channel:* Assets purchased through LSAP operations boost the reserves of commercial banks held at the central bank which can more easily be traded on secondary markets than can long term securities. As a result, the liquidity premium declines, which helps unclog funding markets, lower borrowing costs, and boost bank lending (Joyce et al. 2012).

Recent research has also looked specifically into the effects of EMPs in the United States on both capital flows and asset prices in EMDEs. Fratzscher, Lo Duca and Straub (2013) find that the first LSAP or quantitative easing (QE1) in the United States (which focused on providing liquidity to financial institutions to repair markets) triggered a reversal of flows back to the

United States as investor anxiety over U.S. conditions subsided. In contrast, subsequent LSAPs (QE2 and QE3, which focused on asset purchases) had the opposite effect and induced a portfolio rebalancing out of U.S. equities and bonds and partly into EMDEs. These effects occurred both at the time of announcement of the program as well as during actual asset purchases.

Burns et al (2014) find that 13% of the total variation in capital flows from developed economies to EMDEs can be specifically attributed to a QE effect in the United States. Jointly, financial conditions in the United States and domestic pull factors in EMDEs account for 60% and 40% of the variation, respectively.

Expectations regarding EMPs in the United States particularly matter for flows to EMDEs. Koepke (2014) finds that a one percentage point increase in market expectations for the Federal Funds rate three years forward was associated with a short-term decrease of \$6-7 billion on bond flows to EMDEs and \$1.2-6.5 billion on equity flows. The cumulative, long-term effect might be twice as large. The effect also appears to be asymmetric as a shift towards expectations of monetary tightening is much larger than a shift towards expectations of easing.

III. The Evolution of EMDE Activity in International Primary Bond Markets

This section addresses the first research question. Since 2000, external issuance of corporate and sovereign entities in EMDEs has shown various trends. We discuss i) issuance volume, ii) outstanding stocks, iii) currencies, iv) issuing industries and use of proceeds, v) maturities and yields at issuance, vi) maturing profile, and vii) quality of issuance. Panel A in Appendix 2 provides summary statistics on bond issuance by year.

Issuance volume trends

1. **External bond issuance increased steadily before the global financial crisis and accelerated rapidly after the crisis reaching unprecedented levels (Figure 4).** Total annual issuance rose from around \$64 billion in 2000 to \$400 billion in 2014. For the pre-crisis years (2000-07), annual average issuance was about \$80 billion and grew at an average annual rate of 6%. The global financial crisis negatively affected external issuance across all the regions. Subsequently, total external issuance dropped to \$48 billion in 2008 compared to \$100 billion a year before. However, issuance resumed quickly and during the post-crisis period (2009-14) average annual issuance was about \$250 billion and grew by an average 24% annually. South Asia (SAR), Africa (AFR) and the Middle East (MNA) regions have been the smallest external issuers, and, although in recent years absolute volumes have increased, they are still among the lowest. Of particular interest is China's issuance, which grew rapidly since 2009 in the wake of the major credit stimulus driven by banks and real estate developers, and surpassed Latin America (LAC) in 2014.
2. **Pre-crisis external issuance was mostly driven by sovereigns whereas post-crisis issuance was dominated by corporates (Figure 5).** Issuance by sovereigns and corporates has been increasing on average since 2000 at 5% and 23% annually, respectively. However, the pace of issuance accelerated in the post crisis period, especially for corporates which posted a total issuance of around \$300 billion in 2014, compared to \$14 billion in 2000. EMDE sovereigns experienced a much more moderate

increase in their external issuance, issuing \$99 billion in 2014 compared to \$50 billion in 2000.

3. **Cumulative post-crisis issuance is large relative to country GDP and grew much faster for the poorest countries (Figure 20).** For all EMDEs combined, the median cumulative external issuance to GDP ratio was 6.7% in 2009-14, a significant increase from 4.3% in 2002-07. Richer EMDEs are the main issuers, accounting for 85% of total issuance during this period. Yet, the median ratio for the poorest country group (LMIC)² is 6.2% of GDP, up from 1.9% in 2002-07. This dramatic increase has important implications for sovereign and corporate liability structures in these countries.
4. **External issuance of oil exporting EMDEs has also increased and might pose additional risks given recent oil price and U.S. Dollar developments (Figure 20).** Total volumes by this group has increased from \$68 billion in 2002-07 to more than \$100 billion by 2009-14. Cumulatively, external bond issuance in 2009-14 was 3.8% of GDP for the median oil exporter, up from 1.2% in 2002-07. A strong Dollar, current oil price trends, and tightening of international funding conditions all raise financial risks for this group.

Outstanding stock trends

5. **External debt stocks in absolute terms and relative to the size of the economy have risen to unprecedented levels post-crisis. This is a widespread phenomenon and is not driven by a single country or region (Figure 6).** For March 2015, we estimate poorer EMDEs (LMICs) have about \$280 billion outstanding while the corresponding figure for richer EMDEs (non-LMICs) is \$1.4 trillion. We find that the median ratio of outstanding external bonds issued since 2000 to GDP has risen across all regions. Most of the increase across regions has taken place since 2009 and 2011 when LSAPs in the United States were fully operational and the long-term refinancing operations (LTROs) of the European Central Bank were launched, respectively. In February 2015, the median ratio was largest in LAC with 12.6%, up from 7.5% in 2007. It is also high in Eastern Europe (ECA) and East Asia (EAP, excluding China) standing at 9.2 and 7.8%, respectively. The ratio almost quadrupled in ECA from a crisis nadir of 2.3% in 2008. Similarly, the ratio tripled for MNA to over 6% currently.

Currency trends

6. **External issuance is still mostly denominated in foreign currencies. As such, the recent trend of a strong U.S. Dollar raises financial vulnerabilities. Local currency issuance has increased, driven by Dim Sum bonds (Figure 7).** External issuance has mostly occurred in foreign currencies though the share of local currencies has been increasing gradually. In 2000, around 1% (\$327 million) of total issuance by EMDEs was in local currencies and this has increased to 15% (\$60 billion) in 2014. A key contributor to the trend are Dim Sum bonds issued offshore by Chinese entities which are denominated in renminbi.

Industry and use of proceeds trends

² These are countries with a GNI per capita of \$4,125 or lower, according to World Bank Income group definitions.

7. **The largest issuing industries include the Finance and Utilities Sectors (Figure 8).** Finance captured the largest share among sectors by second half of 2014. This might be driven by the fact that large internationally active banks started to deleverage in the face of stricter regulatory requirements and market pressures. Utilities and Other sectors (which includes agribusiness, forestry and paper, healthcare, chemicals, closed end funds, defense, and government) are the other two sectors with relatively larger volumes of total issuances.
8. **Proceeds have mostly been used to finance general corporate activities and public investment. In the wake of the “Taper Tantrum”, refinancing has become a key use (Figure 9).** General corporate activities include capital expenditures, R&D expenditures, and other productive investments. Refinancing of debt surged around the “Taper Tantrum” suggesting EMDE entities issued to make their debt profiles less risky while funding conditions were still benign. Public sector uses which cut across industries are also substantial and primarily used for financing community projects at the sovereign and sub-sovereign levels.

Maturities and yields trends

9. **Average yields of new external issuances have dropped precipitously since the crisis (Figure 10).** In 2007, right before the financial crisis, yields stood at 8.4% and have fallen since to about 5% in 2015. As expected, yields of the poorest countries (LMICs) have been consistently higher than for richer EMDEs (non-LMICs). However, the spread between the two has declined steadily from a peak of 4.4% in 2009 to 1.8% in 2015. Taken together, these findings are consistent with search-for-yield motives.
10. **The average maturity of external issuances dropped sharply during the crisis. While maturities have increased since, they remain well below pre-crisis levels (Figure 11).** Right before the crisis, volume-weighted average maturities were almost 9 years. The crisis triggered a sharp drop to 7.3 years in 2009. While maturities recovered somewhat since, around the time of the Taper Tantrum, they started falling again, reaching 6.7 years by the end of 2013, when search for yield flows resumed. Currently, the average maturity for new issuances is almost 8 years. Maturities in richer EMDEs (non-LMICs) were particularly affected during the crisis, dropping from almost 9 years in 2007 to 7.3 years in 2009. Since then they have been on an upward trend and currently stand at almost 8 years. Post-crisis volatility of maturities have been high for poorer EMDEs (LMICs), reflecting lower deal volume compared to non-LMICs. With that caveat, since 2014, LMIC maturities have been increasing sharply from 6.6 to 8.6 years.

Maturity profile of currently outstanding bonds

11. **The majority of the \$1.7 trillion currently outstanding external bonds of EMDEs will mature before 2024 with a peak in 2019. Richer EMDEs will experience another peak in 2017 (Figure 12).** In March 2015, we estimate the outstanding stock of external bonds for EMDEs to be \$1.7 trillion, of which \$1.5 trillion will mature by 2035. Of this initial \$1.7 trillion stock, the average still outstanding monthly amount of bonds maturing within the next 12 months is highest during 2015-19 when it peaks at \$207 billion. During this period, the average monthly amount of maturing bonds is \$164 billion (\$28 billion and \$136 billion for LMICs and non-LMICs, respectively). This monthly maturing amount declines during 2020-24 in which the average drops to \$109 billion.

Non-LMICs experience two peaks of roughly \$150 billion in 2017 and 2019. LMICs will experience a single peak in 2019 when the amount that matures within 12 months reaches \$40bn. According to current market expectations, these peaks will occur after the Federal Reserve has raised interest rates.

12. **By 2020, all regions will have experienced peaks in which more than 10% of their currently outstanding stocks will mature within 12 months (Figures 13 and 14).** China's peak should occur in 2017 in when almost 20% of its currently outstanding bonds will mature (\$333 billion). A significant portion of these bonds however are denominated in renminbi which ameliorates currency risks. South Asia peaks in 2019 with 20% of its current stock (\$81 billion). Eastern Europe peaks at almost 15% in 2018 (current stock: \$239 billion). East Asia (ex-China) peaks at 12% in 2019 (current stock: \$174 billion). Africa, Middle East, and Latin America peak at 15%, 15% and 10% in 2020, respectively (current stocks; \$64 billion, \$42 billion, and \$751 billion).

Credit quality

13. **The credit quality of post-crisis external issuance has improved significantly (Figure 15).** Before the crisis, only 30-40% of issuance was investment grade. Since 2010, this fraction has steadily improved from around 50% to 70%. While this is a positive trend, it is important to keep in mind that ratings can be pro-cyclical.

IV. Data

We now turn to the description of our two data sets that cover the universe of EMDE external bond issuance in the period 2000-14. Table 1 describes the variable definitions. Our data sets matches three types of data: i) highly granular bond data (i.e. industry or bond deal level), ii) high frequency financial global push factors, and iii) country pull factors. Data on bonds are derived from Dealogic which provides information on borrowers, bond yields and non-pricing terms at origination on the individual deal level, which typically comprises several tranches. Global push factors are from Bloomberg and country pull factors are sourced from the IMF's World Economic Outlook.

A. Bond Deals

Country-industry panel dataset

First, to analyze the impact of global factors on the propensity to issue external bonds by EMDE entities, we compile a balanced panel data set of monthly total external bond issuance for each industry in 71 emerging and developing countries between 2000 and 2014. There are 7 industrial sectors, which translates to 497 individual country-industries for which we have monthly observations. Note that some of these country-industries have not issued externally at all in our sample. Hence the number of country-industry-month observations in the panel is about 84,000.

Our dependent variable is a dummy which denotes for a particular country-industry whether its total volume issuance in a given month is above its historical average over the period 2000-07. In doing so, we essentially control for general issuance patterns for each country-industry and ameliorate bias due to absolute size effects.

Bond tranche deal dataset

Second, to study the impact of global factors on individual bond yield and maturities, we construct a data set which captures the universe of 6,307 individual bond deals for 71 emerging and developing economies in the 2000-14 period. These bonds are issued by 210 country-industries. The other 289 country-industries never issued externally during the sample period. Appendix 1 provides details of issuance activity on the country level. Bonds often consist of multiple tranches with different characteristics. Therefore the number of observations in this dataset is 6,925 bond tranches.

Our two bond variables of interest are *yield to maturity* (defined as the rate of return on a bond assuming the bond is held until maturity at the time of issuance) and *maturity* (defined as the number of years for which the bond remains outstanding at the time of issuance). We lose tranche observations due to missing data. As a result, we have yield data for 5,962 bond tranches and maturity data for 6,804 (non-perpetual) bond tranches, respectively.

This bond tranche level data set allows us to control for bond-specific characteristics that could influence the two variables of interest. We can therefore account for changes in issuance composition over time. These bond tranche level variables include:

- *Size of bond tranche issued* refers to the total U.S. Dollar volume of the individual tranche of the deal;
- *Currency* is an indicator variable that captures the currency in which the tranche is issued;
- *Investment grade type* is a set of indicator variables that indicates whether the bond tranches are investment grade or not – i.e. a credit rating of BBB- or higher according to S&P or Baa3 or higher according to Moody's. This variable allows us to control for adverse selection issues;
- *Borrower industry* is a set of indicator variables that captures the industrial sector of the issuing entity (Consumer, Finance, Metals, Professional Services, Transportation, Utilities, and Other);
- *Borrower type* distinguishes between three different types of borrowing entities, public-local (local and state/provincial authorities), public-other (central government) and non-public; and
- *Deal type* is a set of indicator variables which reflects the type of bond tranche such as Asset Backed Securities, Corporate Bond-High Yield, or Sovereign (see Table 2 for more details). The grouping is defined by Dealogic.

B. Global Push Factors

We study the impact on external bond issuance of four global push factors that proxy for global financial conditions:

1. The VIX index (*VIX*) (Figure 16) captures the options-implied 30-day ahead volatility of the S&P 500 equity index and is the most frequently used indicator as a proxy for global risk appetite, risk, and uncertainty. Higher values of *VIX* are associated with higher bond

yields and lower maturities. Research suggests EMPs have contributed to extremely low volatility.

2. The Libor-OIS spread (*LIBOR*) (Figure 17) is used as a control for risk perception in credit markets. This spread is a measure of inter-bank risk and liquidity in the money market and captures fear of bank insolvency. Higher spreads indicate low liquidity and an unwillingness of banks to lend to each other, and are typically associated with higher bond yields and a decrease in maturities.
3. The corporate credit spread (*RISK*) (Figure 18) tracks the performance of U.S. Dollar denominated investment grade rated corporate debt that is publically issued in the U.S. domestic market. This options-adjusted spread is the difference between U.S. treasury bonds and corporate bonds with a BBB rating or higher. *RISK* is an indicator of corporate sector health, where wider spreads are associated with deteriorating investor confidence and are expected to increase bond premiums and shorten the duration at which EMs can issue debt. Search-for-yield will exert a downward pressure on this spread. In unreported robustness regressions we use the high-yield corporate debt spread instead with qualitatively similar results.
4. The size of the Federal Reserve Balance Sheet (*FED*) (Figure 19), calculated as the sum of mortgage- backed securities and U.S. treasuries, is used to gauge spillover effects from U.S. LSAPs.

Panel B in Appendix 2 provides average values of these global push factors around time of each individual bond issue by year.

In all our regressions, we also control for the United States 10-year Treasury yield (*UST10Y*), which is generally considered a pricing benchmark and a proxy for global liquidity conditions as well. Falling U.S. long-term treasury yields are associated with an abundance of capital in the international market and an increased willingness to hold relatively riskier assets, such as emerging and developing market debt. Indeed, the empirical literature has found this global factor to be a key determinant of emerging market bond prices. Notably, an increase in U.S. treasury yields tends to increase emerging market bond yields and spreads while decreasing the probability of bond issuance (e.g. Eichengreen and Mody (1998a) and Eichengreen and Mody (1998b)).

Global push factors are all based on daily time series. To best estimate the global financial conditions that impacted bond issuance as well as investor confidence, we incorporate these global factors into our two data sets as follows (See Table 2 for more details on global push factors). For the industry-level dataset, we calculate for each month the average value of each factor for the 6 preceding months. For the bond-level data set, for each individual bond we compute the average value for each factor the 6 months prior to the issuance date.

C. Domestic Pull Factors

As regards country-specific factors, the analysis controls for five macro-financial variables used to evaluate a country's development, creditworthiness, and vulnerability. These variables are available on an annual basis and we match the macro variables with the corresponding year for

each month in the industry-level panel dataset and the year of the bond issue date in the bond-level dataset:

- Real GDP per capita in U.S. Dollars (*GDPPC*) is used to control for the level of development of a country given its positive correlation with international bond issuance.
- Real GDP growth rate (*GROWTH*) is used to proxy for investment opportunities as higher economic growth can potentially drive down bond yields and increase their maturities.
- The current account balance expressed as a percent of GDP (*CA*) is used as larger current accounts can make countries more vulnerable to a slowdown in capital inflows or sudden stops and hence can result in higher yields and shorter maturities on debt issued.
- Total external debt as a percentage of GDP (*EXT*) is used as lower levels of external debt are expected to reduce default risk and boost investor confidence in the economy which can positively impact bond issue prices and maturities.
- Total bank credit to the private sector as a percentage of GDP (*PCRED*) is often used as a proxy of financial depth and development which can enhance resilience to economic and financial shocks, and, in turn, positively impacts bond prices and maturities. While private sector credit is considered a financial variable, it is also an indicator of economic activity – improved economic activity is usually reflected in greater credit growth and potentially in reduced prices and maturities for bonds.

D. Descriptive Statistics and Correlations

Table 2 provides descriptive statistics. Panel A shows the average yield and maturity at issuance in our universe of bonds during the 2000-14 period was 5.1% and 6 years, respectively. The average bond size was about \$123 million. The average propensity for a country-industry to issue above its 2000-07 historical average in any month was 3% (Panel B). All global push factors exhibit very high variation as a result of the pre-crisis boom, the global financial crisis, and the effect of subsequent policy measures, including EMPs, which drove down interest rates, volatility, and risk spreads.

Table 3 reports correlations. We document a particularly strong negative unconditional association between individual bond yields in EMDEs and the size of the Fed's balance sheet around the time of issuance ($\rho=-0.58$), suggesting that EMPs have contributed to search-for-yield climate to EMDEs. The correlations between bond features and various country characteristics (e.g. *PCRED*) are also quite high, suggesting pull factors are important as well. Correlations between the global push factors are relatively strong, with the exception of the Fed's balance sheet.

Appendix 2 Panels A, B and C display annual bond issuance characteristics (excluding issuance by Chinese entities) and annual averages of push and pull factors around the time of issuance. Panel D shows the fraction of all country-industries with monthly issuance volume above their historical average by year.

A few points are worth highlighting. Panel C shows that the country profile of issuers has changed significantly, with both positive and negative features. Post-crisis, issuing countries are significantly richer than before the crisis as measured by GDP per capita (2010-14: \$7,800 vs. 2000-07: \$4,300). They also have deeper financial systems as proxied by private credit to GDP (2010-14: 51% vs. 2000-07: 36%). Moreover, they have lower levels of external debt to GDP (2010-14: 39% vs. 2000-07: 48%). However, at the same time the current account and economic growth of issuing countries has deteriorated significantly, particularly during 2011-14 (3.8% and -3% of GDP, respectively).

Panel D clearly shows the presence of synchronized external issuance waves on the country-industry level, even after correcting for historical average issuance patterns of individual country-industries. In the run up to the crisis, the average monthly fraction of country-industries with higher issuance than their own average during 2000-07 climbed from 1.59% in 2002 to 3.35% in 2006. This fraction fell to 1.14% during the height of the crisis in 2008. However, the fraction has increased again since 2010 to record levels from 3.67% in 2010 to 5.30% in 2013.

V. Methodology

This section describes our econometric approach to analyze research questions 2, 3, and 4 of this paper.

A. Modeling the Propensity to Issue Externally on the Country-Industry Level

To address the first research question, we fit logistic regressions on our industry-level panel data set to test the impact of our global factors on the tendency of country-industries in EMDEs to issue external bonds above their own historical average. By comparing monthly issuance of a country-industry to its own historical average issuance volume, we effectively control for country-industry level issuance trends. In all regressions, we cluster standard errors on the country-industry level to allow for within industry correlation. We estimate the issuance propensity for a particular country-industry as:

$$P(ABOVE_AVG_ISSUANCE_{ist} = 1) = F(\beta_0 + \beta_1 X_{it}^{INT} + \beta_2 X_{it}^{DOM} + \beta_3 \text{Industry fixed effects} + \beta_4 \text{Country fixed effects} + \beta_5 \text{Year fixed effects}) \quad (1)$$

where $ABOVE_AVG_ISSUANCE_{ist}$ is an indicator variable which assumes a value of 1 if total issuance volume in industry s in country i during month t is above the pre-crisis historical monthly average of industry s during 2000-07 and 0 otherwise. $F(\cdot)$ denotes the cumulative logistic distribution. X_{it} denote vectors of time-varying explanatory variables that contain global push factors (INT) and domestic pull factors (DOM). The vector of global factors consists of $X_{it}^{INT} = (GF_t, UST_t)$ where $GF_t \in (VIX_t, RISK_t, FED_t, LIBOR_t)$. In other words, we always control for the United States 10 year Treasury rate. The vector of domestic factors is defined as: $X_{it}^{DOM} = (GDPPC_{it}, GROWTH_{it}, CAD_{it}, EXT_{it}, PCRED_{it})$.

Importantly, we include a battery of fixed effects. We account for *time-invariant country factors* such as the overall institutional environment, the macro-financial framework, and the level of development of the country which influences investment opportunities and investor appetite. We include *year factors* to capture the overall impact of global conditions such as trade and crisis effects. As such, we exploit within-year variation and avoid drawing false inference due to general cyclical or time trends. Finally, we include *industry factors* to capture intrinsic differences between industries in terms of their need for and use of external bond finance.

B. Modeling Yields and Maturities on the Bond Tranche Level

We estimate pooled OLS regressions on the bond tranche-level dataset to evaluate the impact of global factors on the pricing and maturity of bonds. Again, in all regressions, we cluster standard errors on the country-industry level to allow for within industry correlation. The model can be written as:

$$BF_b = \beta_0 + \beta_1 X_b^{INT} + \beta_2 X_b^{DOM} + \beta_3 X_b^{BOND} + \beta_4 \text{Year of issuance fixed effects}_b + \beta_5 \text{Country of issuance fixed effects}_b + \varepsilon_b \quad (2)$$

where BF_b denotes the yield to maturity³ or the maturity of bond tranche b . The first two X_b vectors capture global push factors (INT) and domestic pull factors (DOM) around the time bond b was issued, as described above. X_b^{BOND} is a vector of bond-specific characteristics: *Size of bond issued, Currency, Investment grade, Borrower industry, and Deal type*. For yield to maturity regressions, we also include *Maturity* in X_b^{BOND} . Importantly, X_b^{BOND} allows us to isolate the impact of issuance composition and bias effects (e.g. differences in bond risk, bond size or industry) so we can make much stronger inference than is possible at higher levels of aggregation where such information is lost. We also incorporate two sets of indicator variables that capture general global conditions such as global trade and general crisis effects in the year which bond b was issued (*Year of issuance_b*) as well as time-invariant factors associated with the country in which bond b was issued (*Country of issuance_b*).

Missing data in X_{it}^{DOM} limits the sample size. Therefore, in robustness regressions we substitute X_{it}^{DOM} and the country fixed effects for *country-period* fixed effects. Our model becomes:

$$BF_b = \beta_0 + \beta_1 X_b^{INT} + \beta_2 X_b^{BOND} + \beta_3 \text{Year of issuance fixed effects}_b + \beta_4 \text{Country - period of issuance fixed effects}_b + \varepsilon_b \quad (3)$$

VI. Empirical results

This section addresses research questions two through five. It summarizes and discusses the main empirical results for the impact of global push factors on external bond issuance in EMDEs. Given that the global factors are relatively highly correlated, we estimate their effects in separate regressions.

³ Note that because the regression controls for the 10-yr U.S. government yield, the results can also be interpreted as if the dependent variable were a “spread”.

A. Impact of Global Factors on the Propensity to Issue Externally on the Country-Industry Level

Table 4 shows the results of the logistic regressions that estimate Equation (1) on the country-industry-month level in EMDEs during the 2000-14 period. All four global push factors (VIX, RISK, FED, and LIBOR) are highly statistically significant on the 1-percent level with the expected sign. This finding supports the notion that external issuance across EMDEs is highly synchronized with the global financial cycle which triggers capital flows out of developed markets in search for yield in EMDEs.

Model 1 shows that industries are less likely to issue above their historical 2000-07 average if VIX increases even after controlling for the UST10Y, and time-varying and time-invariant (e.g. country fixed effects) country pull factors. The result is also economically significant. A 10% increase in the VIX leads to a decline in the odds an industry will issue above its average by almost 6% ($1.1^{(-0.63)}-1$).

Model 2 shows that a decrease in the BBB U.S. corporate credit spread (RISK) lowers the odds of above-average issuance even more than for the VIX. These odds drop by 10% for a 10% increase in RISK. Model 3 indicates that an increase in the size of the Fed's balance sheet (FED) boosts the odds of above-average issuance. The coefficient suggests that a 10% increase in the Fed balance sheet increases the odds by 8%. Finally, Model 4 shows that lower interbank risk increases the above-average issuance odds. A 10% decline in LIBOR increases the odds by 5.5%.

Table 4 also consistently shows that GDP per capita (GDPPC), GDP growth (GROWTH), and the current account (CA) are the most important country pull factors. Industries in countries with higher GDPPC and GROWTH are more likely to issue above their historical 2000-07 average volume in a given month. This could reflect both demand and supply factors: industries in more developed or faster growing countries could have a higher need for external finance while investors have more appetite to supply it given lower risks. Similarly, industries in countries with current account surpluses are less likely to issue above average, perhaps since countries with surpluses are net exporters of capital. We don't find evidence that other macro pull factors such as external debt (EXT) or financial development (PCRED) of the country contain additional information.

In unreported robustness regressions we use the MOVE index and obtain qualitatively similar results as for the VIX in Model 1. The MOVE Index captures expected U.S. Treasury volatility and acts as a proxy for interest rate uncertainty. Higher values indicate greater uncertainty. More specifically, the Merrill Lynch Option Volatility Estimate Index is a yield curve weighted index of the normalized implied volatility on 1-month Treasury options which are based on the 2, 5, 10, and 30 year contracts. Intuitively, MOVE is similar to VIX for the government bond market.

In another set of unreported robustness regressions, we assess the impact of the U.S. Economic Policy Uncertainty (EPU) Index as developed in Baker et al (2015), but do not find any statistically significant results. The EPU Index is based on three types of underlying

components:⁴ *“One component quantifies newspaper coverage of policy-related economic uncertainty. A second component reflects the number of federal tax code provisions set to expire in future years. The third component uses disagreement among economic forecasters as a proxy for uncertainty.”*

B. Impact of Global Factors on Yields of External Bonds at Time of Issuance

Table 5 presents bond tranche-level OLS regressions which document the impact of the global factors on individual bond yields in EMDEs during the 2000-14 period. For each global push factor we present two models to estimate Equations (2) and (3), respectively. We exclude Chinese issuance in the second model to avoid a possible China bias since 2,945 bonds in the sample (consisting of 3,143 tranches) are issued by Chinese entities.

A consistent picture emerges in which favorable global conditions bring down bond yields across EMDEs in a synchronized manner. Since the regressions control for the 10-year U.S. treasury yield (UST10Y), the results also imply that the “spread” (see footnote 3) relative to U.S. treasuries falls when global factors are benign. Except for one model, all results are significant at the 5 percent level at least.

Models 1 and 2 demonstrate that a decrease in the VIX is associated with lower bond “spreads” across EMDEs. A 10% decrease in the VIX decreases the EMDE bond “spread” by 6 to 12 basis points. Model 2 excludes Chinese issuance and adds data for 11 countries by dropping time-varying country factors and produces a result that is significant on the 1 percent level and doubles in magnitude. Models 3 and 4 show that the impact of RISK is strong and highly significant as well. A 10% decrease in RISK decreases EMDE bond “spreads” by 12-13 basis points. Models 5 and 6 are also highly significant and indicate that a 10% increase in the Fed’s balance sheet size brings down EMDE bond “spreads” by 8-9 basis points. Finally, a 10% fall in the LIBOR-OIS spread is significantly associated with a reduction in EMDE bond spreads by 3-6 basis points.

As expected, we find that the UST10Y and bond maturity have a consistent positive impact on the yield. The size of the bond does not contain additional explanatory power. Unreported regressions show the level of economic development (GDPPC) as well as economic growth (GROWTH) are significantly negatively associated with spreads, as expected. However, after inclusion of year fixed effects the GDPPC coefficient switches sign and GROWTH is no longer significant. This suggests global factors play a more significant role.

Again, in unreported robustness regressions we use the MOVE index and obtain qualitatively similar results as for the VIX in Models 1 and 2. In another set of unreported robustness regressions assessing the impact of the U.S. Economic Policy Uncertainty (EPU) Index, we again do not find any statistically significant results.

⁴ For details, see <http://www.policyuncertainty.com/>.

C. Impact of Global Factors on Maturities of External Bonds at Time of Issuance

Table 6 documents bond tranche-level OLS regression results which show the impact of global factors on maturities of non-perpetual external bonds issued during 2000-14. The standard errors are clustered on the country-industry level. As in Table 5, for each global push factor we present two models to estimate Equations (2) and (3), respectively. Overall, we find that favorable global factors are associated with a maturity extension across EMDEs. This result is consistent with a willingness of investors to extend maturities when global liquidity is ample and search for yield effects are strong. However, the results are somewhat weaker in terms of statistical significance, compared to the impact on yields.

Models 1 and 2 suggest that a 10% fall in VIX extends bond maturities by 16-17 weeks, although Model 2 is only significant at the 10-percent level. The results in Models 3 and 4 are statistically strongest, both at the 1 percent level, and suggest that a 10% fall in RISK boosts maturities by 17-24 weeks. Only Model 5 is statistically significant and suggests a 10% increase in the Fed's balance sheet increases maturities by 14 weeks. We do not find strong evidence of a significant impact of a lower LIBOR-OIS spread although the coefficient has the expected sign, suggesting that a lower spread has a positive impact on maturities.

Across regressions we also find evidence that larger bonds typically carry longer maturities. This is in line with expectations since larger issuers are typically able to issue at longer maturities. As regards country characteristics, in unreported regressions we find that economic growth (GROWTH) has a strong significant positive impact on maturities, consistent with expectations as well. However, after inclusion of year fixed effects, GROWTH is no longer significant.

In unreported robustness regressions we use the MOVE index and obtain similar results as for the VIX in Model 1 and 2. The impact of the U.S. Economic Policy Uncertainty (EPU) Index is again statistically insignificant.

D. Interaction of Country Characteristics with Global Factors

Appendix 3 contains 60 additional regressions in which we investigate whether country characteristics amplify or dampen the impact of our four global factors $GF_t \in (VIX_t, RISK_t, FED_t, LIBOR_t)$. In doing so, we modify Equations (1) and (2) by sequentially adding an interaction between a global factor and a country variable from $X_{it}^{DOM} = (GDPPC_{it}, GROWTH_{it}, CAD_{it}, EXT_{it}, PCRED_{it})$. This strategy produces $4 \times 5 = 20$ additional regressions for each independent variable. For all 40 bond tranche level regressions (i.e. Equation (2)), we omit Chinese bonds to avoid a China bias.

While some of these interactions are statistically significant, we do not find consistent evidence across the board that country variables amplify the effect of global factors. This suggests search-for-yield flows during loose global funding conditions do not strongly discriminate between EMDEs but are primarily driven by global factors.

In that context, in our 20 additional augmented Equation (1) regressions we highlight that the interaction with PCRED is significant for VIX and FED at the 1-percent level and RISK at the 10-percent level. This suggests higher financial development could amplify benign global factors and raise the odds that a country-industry will issue above its historical average.

In addition, for our 20 additional Equation (2) regressions to explain individual bond yields (and “spreads”), we document that the interaction with GROWTH is significant for VIX and RISK at the 5-percent level and LIBOR at the 1-percent level. We also find significant interactions for EXT with RISK and LIBOR at the 5-percent level. These findings provide some support for the notion that country growth and external debt can amplify the impact of these global factors on individual bond yields and spreads.

We do not find any strong results in our 20 additional Equation (2) regressions to explain individual bond maturities, indicating that maturities are not significantly differently affected by global factors across EMDEs with different domestic characteristics.

E. The Risk-Taking Channel of Exchange Rate Appreciation

Following Borio and Zhu (2012) and Bruno and Shin (2015a, 2015b), in this section, we briefly explore the risk-taking channel of financial conditions and monetary policy in developed countries via exchange rate appreciation. As described earlier, Bruno and Shin (2015b) argue that looser financial conditions are associated with an increase in cross-border capital flows intermediated through higher leverage in the international banking system. The mechanism operates via stronger local borrower balance sheets as a result of local currency appreciation, allowing banks to lend them more and take on more risk.

We test whether this risk-taking channel is active for international investors and external bond issuance as well. Under that hypothesis we would expect U.S. Dollar depreciation/local currency appreciation to be associated with a higher propensity for country-industries to be able to issue higher external bond volumes, all else equal.

We use two exchange rate variables as global push factors, following Bruno and Shin (2015a, 2015b):

- The 6-month log difference of the U.S. real effective exchange rate (USREER), along the lines of the VAR framework in Bruno and Shin (2015b). USREER is a trade-weighted Dollar index. Higher values imply a real depreciation of trade partner currencies (appreciation of the U.S. Dollar).
- The 6-month log difference of the real U.S. Dollar – Local currency exchange rate (XRATE), which is similar to the panel regression setting in Bruno and Shin (2015a). XRATE reflects the real bilateral exchange rate where higher values indicate a real depreciation of the local currency (appreciation of the U.S. Dollar). We use the 6-month log difference of the real exchange rate which is calculated as the log of the nominal exchange rate multiplied by the U.S. CPI and divided by the local CPI.

Table 7 presents the results. Analogous to Table 4, Models 1 and 2 estimate Equation (1) and provide strong support for the risk-taking channel of exchange rate appreciation hypothesis: the coefficients on USREER and XRATE are negative and highly statistically significant⁵. This indicates that the propensity to issue bonds externally above historical average volumes for a particular country-industry is significantly higher when the U.S. Dollar depreciates in real terms in the 6 months prior. In other words, when the local currency appreciates, local borrowers' balance sheets strengthen. This in turn increases their external borrowing capacity which triggers higher cross-border flows by international investors who are willing to take on more risk.

These results are closely tied to our findings in Table 4 of the impact of the VIX on external bond issuance volume discussed in Section A. Particularly, the results point to a channel through which the VIX operates since Bruno and Shin (2015b) document a link between the VIX and USREER.

VII. Conclusion and Policy Implications

Using the universe of all externally issued bonds during the 2000-14 period, this paper shows the post-crisis period has seen an unprecedented surge in external bond issuance and stocks across emerging and developing economies (EMDEs). Bond yields (and spreads) at the time of issuance have fallen to record lows, in part as a result of loose global funding conditions produced by extraordinary monetary policies (EMPs) in developed economies.

In particular, the volume of bonds issued in the six post-crisis years tripled to \$1.5 trillion compared to the six years before the crisis, overwhelmingly denominated in foreign currencies and driven by corporate issuance. This surge is not driven by a single region or country, but reflects a broad-based trend, since the 2009-14 cumulative external issuance to GDP ratio is 6.7% for the median EMDE, up from 4.3% in the pre-crisis period. The trend is also present at the country-industry level across EMDEs even after we correct for their own historical issuance average. Under such benign conditions, many EMDEs issued externally for the first time, including Armenia, Angola, Ghana, Laos, and Tanzania.

Contrasting the pre- and post-crisis periods, we find that countries of external issuers currently are on average richer, have deeper financial systems, and lower external debt. The fraction of issuance that is rated investment grade has also improved. However, these countries currently also have much slower GDP growth and larger current account deficits which can weaken debt servicing capacity and raise external vulnerabilities.

This paper also finds that global factors have a powerful impact on primary activity in international bond market by corporates and sovereigns EMDEs. Controlling for United States interest rates, a battery of country pull factors, and year fixed effects to account for the overall impacts of major global conditions and time trends, we find that a decrease in i) expected U.S. equity market (or interest rate) volatility, ii) U.S. corporate credit spreads, iii) U.S. interbank funding costs and iv) an increase in the Federal Reserve's balance sheet:

⁵ We are aware that there may be potential endogeneity issues in that the local currency appreciation could also be the *result* of capital inflows. While the use of the 6-month prior exchange rate difference should help to address this issue, we leave it to future work to examine it further.

1. Raise the odds that a country-industry's monthly external issuance volume is above *its own* historical average. For example, a doubling (halving) of the Fed's balance sheet increases these odds by about 75% (-43%);
2. Lower the yield-to-maturity spread of external bonds at the time of issuance, *even* after accounting for individual bond characteristics (e.g. volume, currency, riskiness, industry, type of issuer). For example, a doubling (halving) of the Fed's balance sheet lowers (increases) a bond's spread by 63 basis points; and
3. Increase the maturity of non-perpetual external EMDE bonds at the time of issuance, again after accounting for individual bond characteristics. For example, a doubling (halving) of the Fed's balance sheet is associated with a maturity lengthening (shortening) of 48 weeks.

We also find empirical support that the risk-taking channel of exchange rate appreciation (e.g. Bruno and Shin (2015b)) also operates for external bond issuance: real depreciation of the U.S. Dollar is associated with a higher propensity for country-industries to issue externally above their historical average volume. More specifically, when the local currency appreciates, local borrowers' balance sheets strengthen. This in turn increases their external borrowing capacity which triggers higher cross-border flows by international investors who are willing to take on more risk. This process can be self-sustaining, at least for a while.

In addition, in line with the literature, we find evidence that some country characteristics such as the level of financial development can affect the impact of global factors. However, the results are not consistently statistically significant implying that the global cycle is mostly driven by push factors and does not structurally discriminate between EMDEs.

Taken together, our findings provide strong support for synchronized primary issuance flows across EMDEs driven mostly by global factors. As a result, both sovereigns and corporates in EMDEs have collectively been able to take advantage of ample international liquidity by lowering their borrowing costs and extending maturities which can improve risk profiles, although in the wake of the crisis, maturities in EMDEs remain below pre-crisis levels.

The massive and widespread external issuance in EMDEs raises important questions regarding the impact of procyclical investor behavior once the global cycle winds down, or if global shocks materialize, with potential systemic implications for EMDEs. Moreover, while issuance at lower cost and maturity extension can help lower individual borrower risk profiles, large foreign currency exposures raise risks, particularly for unhedged issuers. The recent trend of a rapidly strengthening U.S. Dollar against most EMDE currencies further heightens currency risks.

In this context, the inevitable exit from EMPs will tighten international funding conditions, which could prove disruptive for currencies, balance sheets, and funding capacity in EMDEs. Additionally, fragility in EMDEs can be further compounded by their shallow local financial markets and a lack of strong institutions, supervisory and surveillance capacity, and technical experience. As such, in terms of financial sector policies, there is a continued need for, *inter alia*: i) creating vibrant local currency (corporate) bond markets and an active, diverse domestic investor base; ii) building macroprudential tools and monitoring capacity to deal with synchronized foreign investor activity to prevent or manage a situation where certain flows create a variety of risks which jeopardize undoing financial and (socio-)economic progress made; iii) strengthening data collection efforts, particularly regarding sufficiently granular and timely

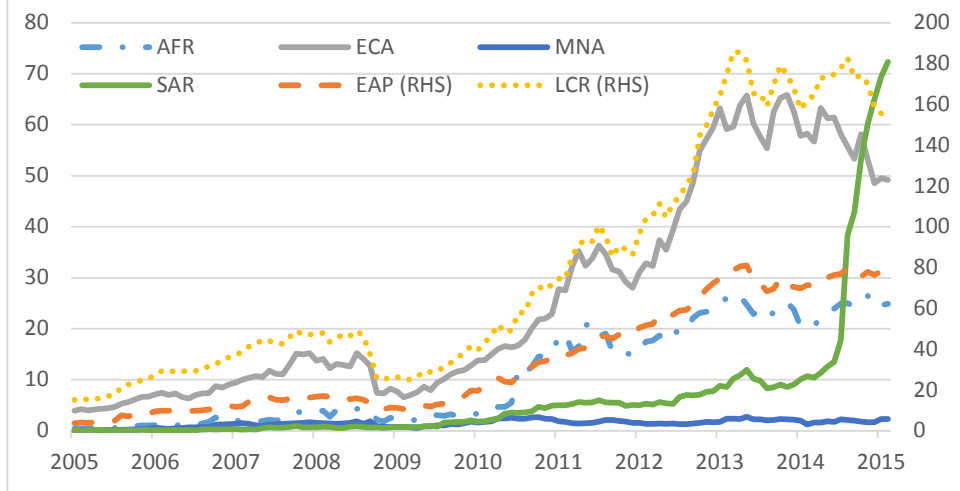
foreign currency exposures and natural and financial hedges; and iv) strengthen the banking sector to safeguard against potential spillovers.

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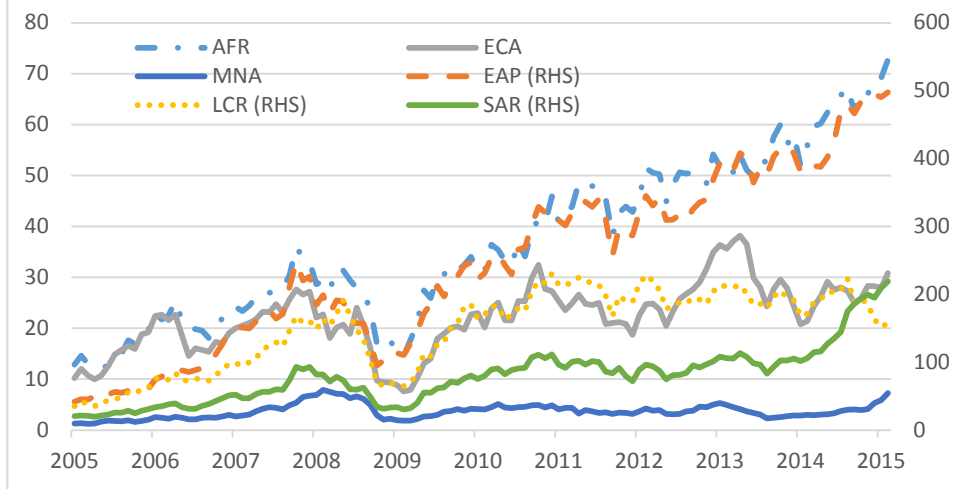
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Figure 1: Bonds Funds Allocations (\$ billions)



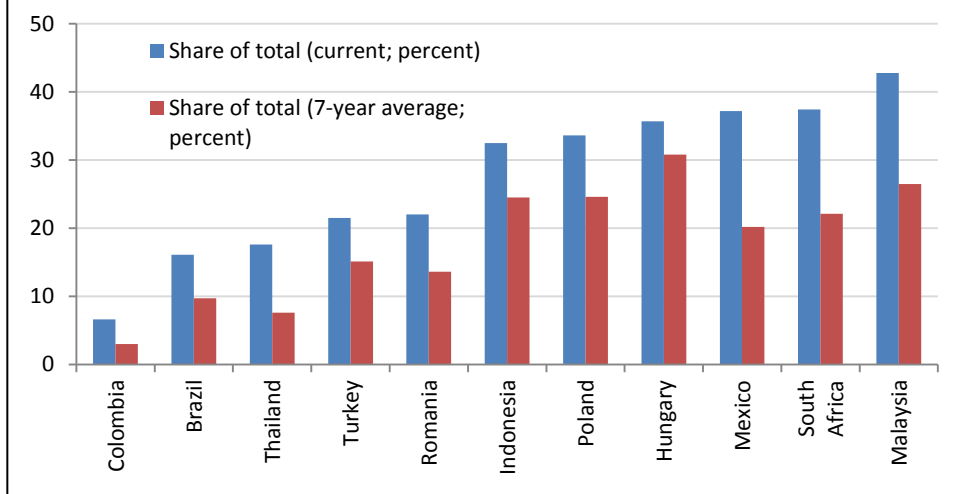
Source: EPFR; Author's calculations

Figure 2: Equities Funds Allocations (\$ billions)



Source: EPFR; Author's calculations

Figure 3: Foreign participation in local currency government bond markets (%)



Source: IMF Global Financial Stability Report (2014)

Figure 4: Total External Volume Issued by EMDEs (billions USD)

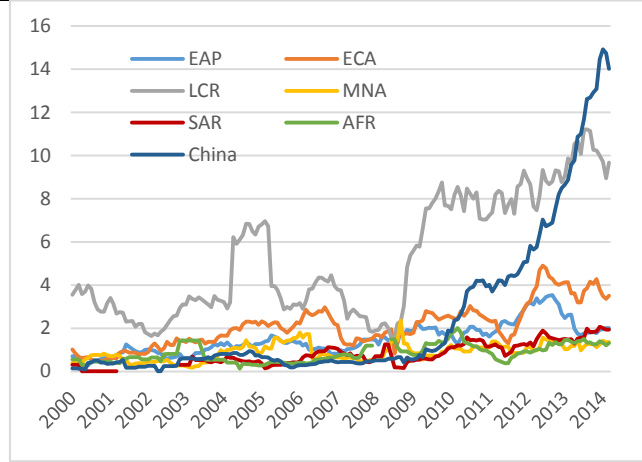


Figure 5: Total External Volume Issued by EMDEs, by borrower type (billions USD)

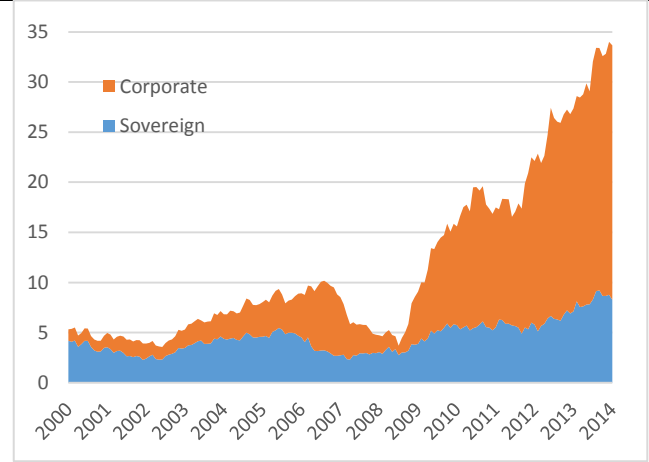


Figure 6: Outstanding External Bonds as % of GDP by EMDEs - Medians

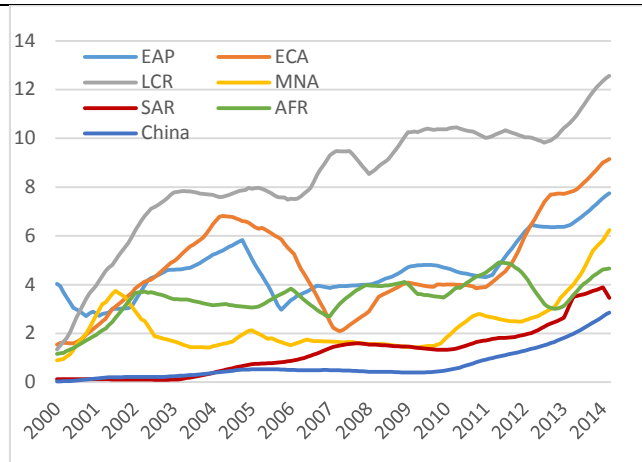


Figure 7: Total External Volume Issued by EMDEs, by currency (billions USD)

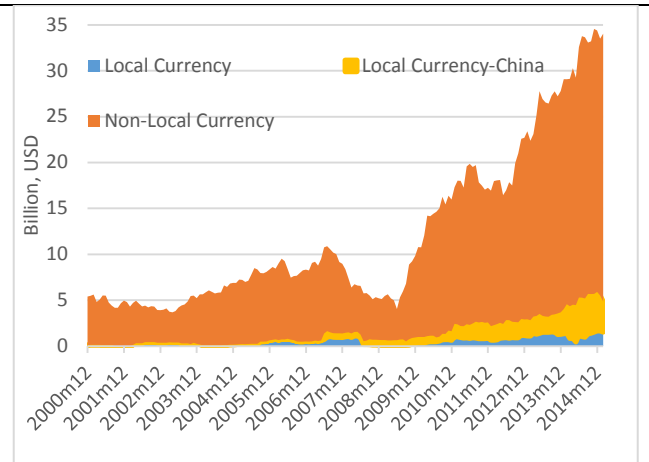


Figure 8: Total External Volume Issued by EMDEs, by industry (billions USD)

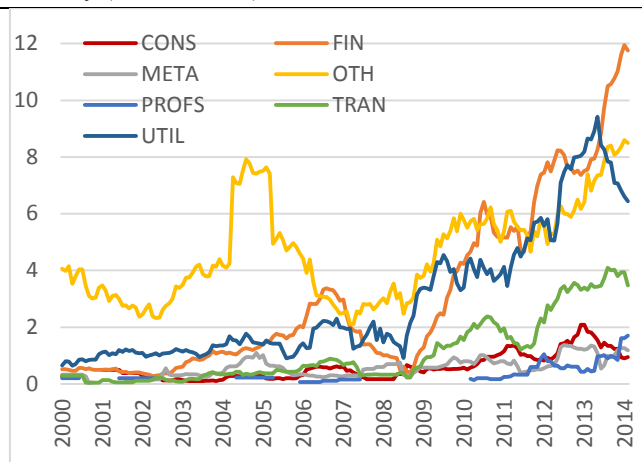


Figure 9: Total External Volume Issued by EMDEs, by use of proceeds (billions USD)

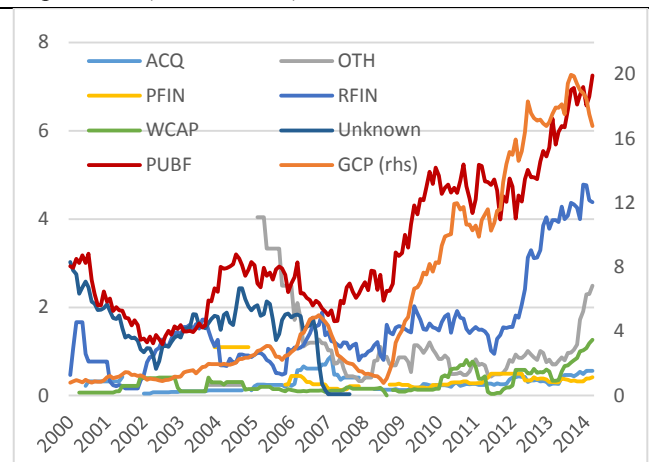


Figure 10: Yields of External Issuance by EMDEs, by income level

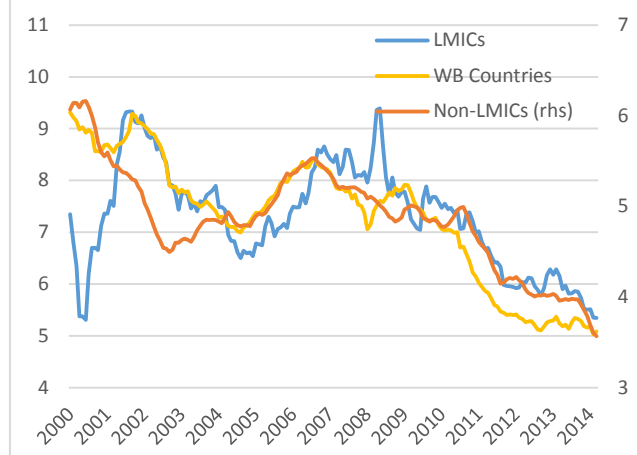


Figure 11: Maturities of New External Issuance by EMDEs, by income level

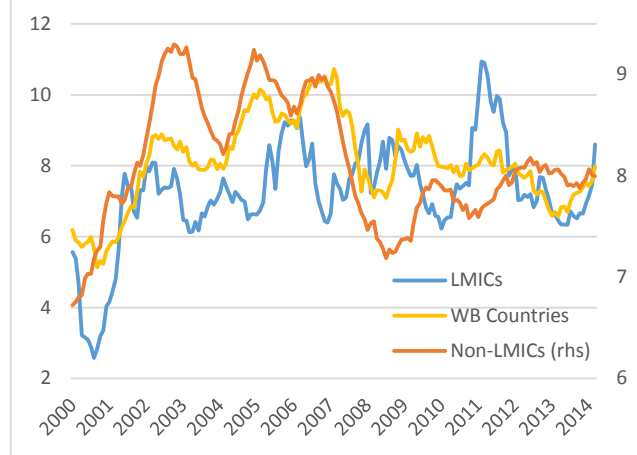


Figure 12: Maturity Profile Outstanding External Bonds, by Income Group (billions USD) per March 2015

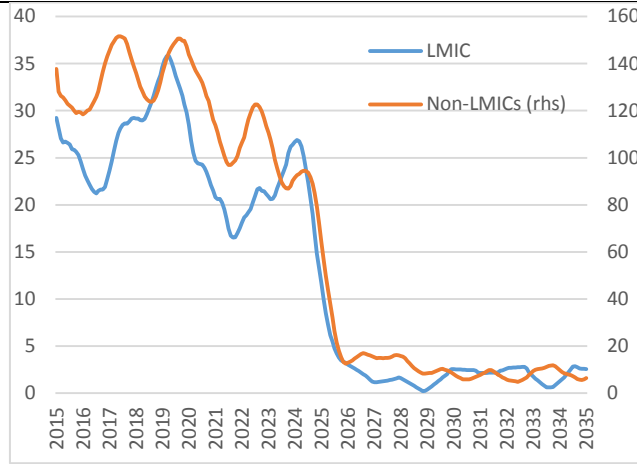


Figure 13: Maturity Profile Outstanding External Bonds, by Regions (billions USD)

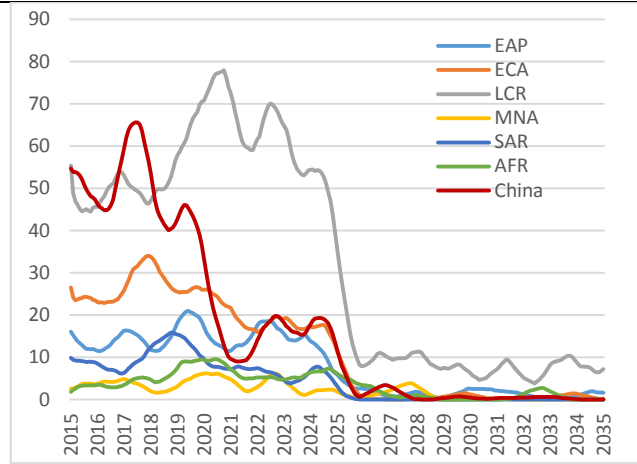


Figure 14: Maturity Profile Outstanding External Bonds, % of stock in March 2015

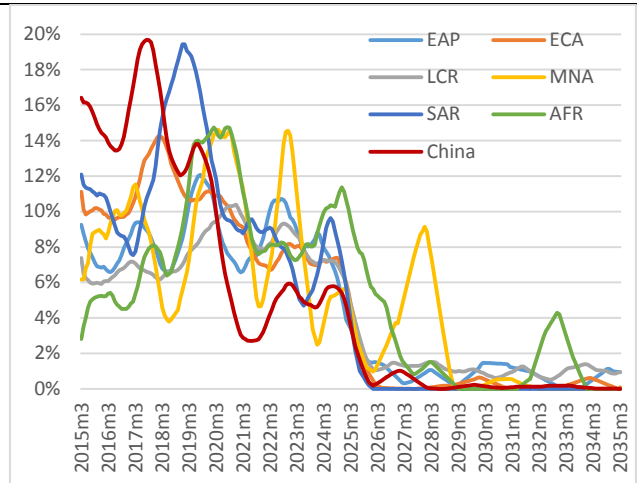


Figure 15: Credit Quality of External Issuance (billions USD)

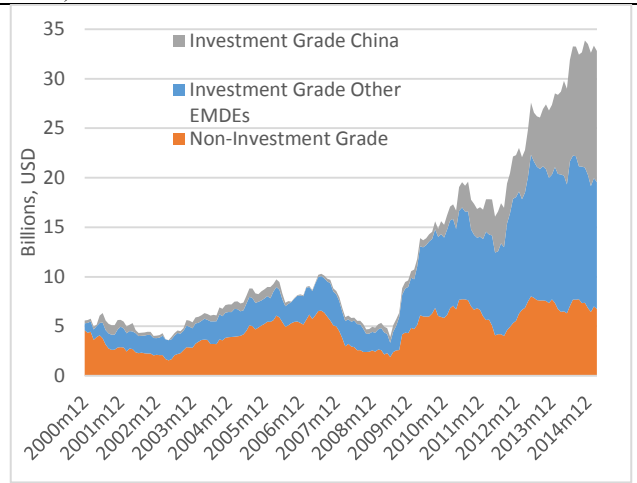


Figure 16: VIX Index (% per annum)

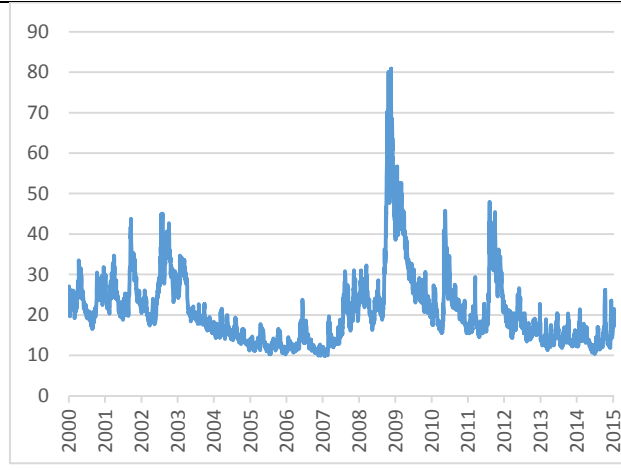


Figure 17: Libor-OIS Spread (bps)

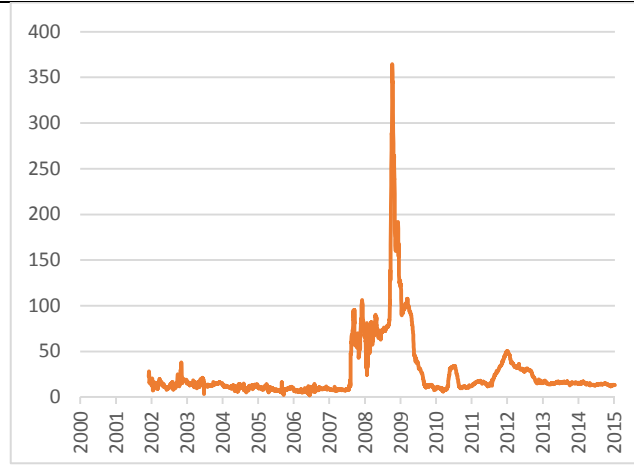


Figure 18: BofA Merrill Lynch U.S. Corporate BBB Index OAS (%)

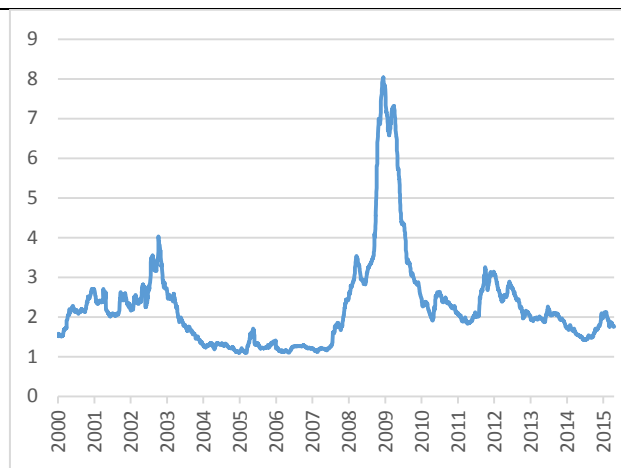


Figure 19: Federal Reserve Balance Sheet Size (billions USD)

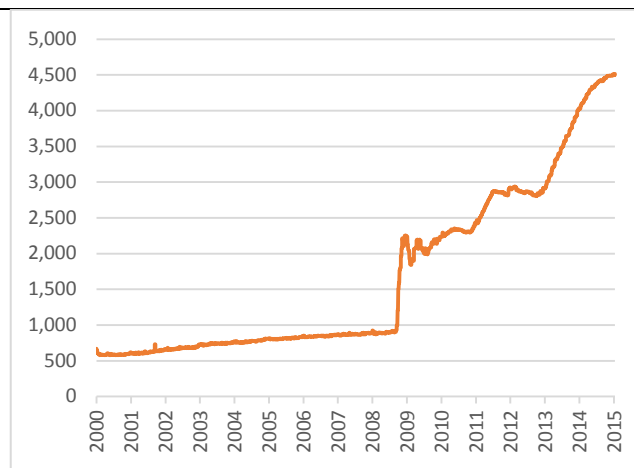


Figure 20: Cumulative total bond issuance by emerging and developing economies

	6 pre-crisis years (2002-2007)			6 post-crisis years (2009-2014)		
	Total Issuance (Bil USD)	Median Issuance/GDP	Issuance in foreign currencies (Bil USD)	Total Issuance (Bil USD)	Median Issuance/GDP	Issuance in foreign currencies (Bil USD)
EMDEs	519	4.3	498	1492	6.7	1323
- Low and Low-Middle Income	87	1.9	82	246	6.2	238
Other	432	6.2	416	1246	9.1	1084
Oil Exporters	68	1.2	64	110	3.8	102

Table 1: Definition of Variables

Variable	Definition	Source
<u>Bond Variables</u>		
Fixed Yield-to-Maturity	Rate of return on security assuming it is held until maturity at time of issuance, weighted by deal volume.	Dealogic
Maturity of Bond issued	Duration (Years) of bonds weighted by deal volume	Dealogic
Log of Size of Bond Issued	Log of total proceeds of bond deal (U.S. Dollars)	Dealogic
Currency	Denotes the currency in which the bond issue is priced, either: U.S. Dollar, Euro, British Pound Sterling, Japanese Yen, Australian Dollar, Canadian Dollar, or Other	Dealogic
Investment Grade	Indicator value with value 1 if a bond tranche is investment grade rated and 0 otherwise (credit rating is BBB- or higher according to S&P or Baa3 or higher according to Moody's)	Dealogic
Borrower Industry	Type of industry: Consumer, Finance, Metals, Professional Services, Transportation, Utilities, and Other	Dealogic
Borrower Type	Type of the borrowing entity, either: Local or State/Provincial Authority, Central Government, Non-Public	Dealogic
Deal Type	Type of security offered, either of the following product types: Asset Backed Securities, Corporate Bond-High Yield, Corporate Bond-Investment-Grade, Covered Bond, Medium-Term Note, Money Market, Mortgage-Backed Security, Non-U.S. Agency, Preferred Share, Short-term Debt, Sovereign, Local Authority	Dealogic
UST10Y	6 month trailing average of 10Y U.S. Treasury Constant Maturity Rate	Bloomberg
<u>Global Push Factors</u>		
VIX	Log of 6 month trailing average of VIX index. VIX captures the implied 30-day ahead market volatility derived from S&P 500 index options.	Bloomberg
RISK	Log of 6 month trailing average of U.S. Corporate BBB Option Adjusted Spread.	Bloomberg
FED	Log of 6 month trailing average of Fed Balance Sheet (Sum of Mortgage Backed Securities and U.S. treasuries)	Bloomberg
LIBOR	Log of 6 month trailing average of 3 Month Libor-OIS Spread (3 Month Libor less 3 Month USD Overnight Indexed Swap)	Bloomberg
MOVE	Log of 6 month trailing average of the MOVE index. The Merrill Lynch Option Volatility Estimate (MOVE) Index is a yield curve weighted index of the normalized implied volatility on 1-month Treasury options which are weighted on the 2, 5, 10, and 30 year contracts.	Bloomberg
USREER	6 month log difference of U.S. Real Effective Exchange rate from BIS. Base year is 2010 (Weighted basket of foreign	Bloomberg

Variable	Definition	Source
	currencies vs USD)	
XRATE	6 month log difference of real exchange rates of each EMDE country in the sample (USD to country local currency)	Bloomberg
<u>Domestic Pull Factors</u>		
GDPPC	Real GDP per capita in U.S. Dollars	IMF World Economic Outlook
GROWTH	Year-on-year percentage changes in real GDP	IMF World Economic Outlook
EXT	Total debt owed to nonresidents repayable in currency, goods, or services as a percent of GDP	IMF World Economic Outlook
CA	Current account balance as a percent of GDP	IMF World Economic Outlook
PCRED	Total domestic private credit to the real sector by deposit money banks as a percent of GDP	IMF International Financial Statistics
<u>Country-Industry Issuance</u>		
ABOVE_AVG_ISSUANCE	Indicators variable which assumes value 1 for a given month in which a country-industry's total external bond issuance is above its monthly 2000-07 average and 0 otherwise	Author's calculations

Table 2. Descriptive Statistics of Variables

Panel A. Bond tranche data

Variable	Obs.	Mean	Std. Dev.	Min	Max
<u>Bond Variables</u>					
Fixed Yield-to-Maturity	5962	5.06	3.25	0.20	12.31
Maturity of Bond issued	6804	6.00	7.31	0.10	100.08
Log of Size of Bond Issued	6925	18.63	1.49	11.51	22.63
<u>Global Push Factors</u>					
VIX	6925	2.86	0.28	2.41	3.95
RISK	6925	0.69	0.29	0.15	1.97
FED	6925	14.44	0.67	13.08	15.23
LIBOR	6573	2.84	0.49	1.92	5.09
MOVE	6925	4.38	0.24	4.03	5.22
USREER	6925	-0.002	0.026	-0.074	0.098
XRATE	6883	-0.015	0.057	-0.319	1.449
UST10Y	6925	3.08	1.14	1.66	6.36
<u>Domestic Pull Factors</u>					
GDPPC	6894	8.62	0.59	6.10	9.63
GROWTH	6897	6.02	3.06	-14.80	34.50
EXT	6918	27.63	29.28	1.30	203.70
CA	6922	-0.15	4.48	-39.50	35.50
PCRED	6905	84.56	48.16	2.23	135.76

Panel B. Country-Industry data

Variable	Obs.	Mean	Std. Dev.	Min	Max
<u>Bond Variables</u>					
ABOVE_AVG_ISSUANCE	89957	0.03	0.17	0	1
<u>Global Push Factors</u>					
VIX	89957	2.99	0.33	2.42	3.95
RISK	89957	0.73	0.41	0.15	1.97
FED	72065	14.00	0.68	13.08	15.24
LIBOR	78029	2.91	0.75	1.92	5.08
MOVE	89957	4.54	0.27	4.04	5.20
USREER	89957	-0.003	0.034	-0.074	0.098
XRATE	84707	-0.007	0.084	-0.570	1.503
UST10Y	89957	3.88	1.17	1.66	6.36
<u>Domestic Pull Factors</u>					
GDPPC	87696	7.79	0.99	4.69	9.64
GROWTH	87780	4.82	4.41	-14.80	59.74
EXT	88452	49.74	35.39	1.30	282.90
CA	88788	-3.82	9.17	-49.80	35.50
PCRED	83328	38.00	26.29	1.97	135.76

Table 3. Correlations between Key Variables

	Fixed Yield- to-Maturity	Maturity of Bond issued	Log of Size of Bond Issued
<u>Global push factors</u>			
VIX	0.1891	0.0251	0.0945
RISK	-0.0677	-0.087	-0.0006
FED	-0.5751	-0.2587	-0.2324
LIBOR	-0.1391	-0.0951	-0.0471
MOVE	0.3311	0.1099	0.1641
USREER	-0.1492	-0.1159	-0.0979
XRATE	-0.0962	-0.0397	-0.0575
UST10Y	0.5469	0.2319	0.2039
<u>Domestic Pull Factors</u>			
GDPPC	-0.2249	-0.0394	-0.0429
GROWTH	-0.358	-0.2328	-0.3234
EXT	0.3692	0.2112	0.2807
CA	-0.2592	-0.1892	-0.2212
PCRED	-0.6565	-0.3912	-0.4685

<u>Global push factors</u>							
	VIX	RISK	FED	LIBOR	MOVE	USREER	XRATE
RISK	0.7864						
FED	-0.2948	0.1282					
LIBOR	0.6738	0.8203	0.1469				
MOVE	0.7908	0.5221	-0.5604	0.3982			
USREER	-0.0118	0.0171	0.2012	0.0792	-0.2156		
XRATE	-0.0885	-0.0361	0.1398	0.0065	-0.146	0.3598	
UST10Y	0.0983	-0.3783	-0.836	-0.4811	0.408	0.8279	0.0249

<u>Domestic Pull Factors</u>			
	EXT	CA	PCRED
GDPPC	-0.0936	-0.0028	0.2108
GROWTH	-0.3165	0.3445	0.5031
EXT		-0.5258	-0.3839
CA	-0.5258		0.3815
PCRED	-0.3839	0.3815	

Table 4. Bond Issuance Logit Regression Results

Dependent variable: Country-industry monthly issuance above 2000-07 average (1=Yes, 0=No)				
	(1)	(2)	(3)	(4)
VIX	-0.603*** (0.185)			
RISK		-0.789*** (0.199)		
FED			0.728*** (0.193)	
LIBOR				-0.494*** (0.0833)
GDPPC	1.543*** (0.384)	1.544*** (0.384)	1.435*** (0.431)	1.431*** (0.443)
GROWTH	0.0294** (0.0133)	0.0294** (0.0133)	0.0339** (0.0156)	0.0375*** (0.0144)
EXT	0.00520 (0.00358)	0.00520 (0.00358)	0.00630 (0.00433)	0.00709* (0.00411)
CA	-0.0329*** (0.0121)	-0.0329*** (0.0121)	-0.0315** (0.0124)	-0.0289** (0.0127)
PCRED	0.000204 (0.00757)	0.000194 (0.00758)	0.00255 (0.00831)	0.00227 (0.00791)
UST10Y	-0.0143 (0.100)	-0.0400 (0.0960)	-0.0858 (0.0990)	-0.196** (0.0962)
Country fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Observations	79,464	79,464	61,824	69,048
No. of Countries	64	64	62	64
No. of Country-Industries	448	448	434	448
Pseudo R-squared	0.359	0.360	0.352	0.356

Robust standard errors clustered on the country-industry level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 5. Bond Pricing OLS Regression Results

Dependent Variable: Fixed yield-to-maturity of Bond Tranche								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VIX	0.550*	1.141***						
	(0.297)	(0.300)						
RISK			1.219***	1.266***				
			(0.299)	(0.376)				
FED					-1.125***	-0.837***		
					(0.295)	(0.308)		
LIBOR							0.335**	0.556***
							(0.146)	(0.145)
GDPPC	0.777**		0.742**		0.740**		1.227***	
	(0.320)		(0.323)		(0.325)		(0.238)	
GROWTH	-0.0187		-0.0206		-0.0200		-0.0284	
	(0.0229)		(0.0231)		(0.0219)		(0.0299)	
EXT	(0.00754)		(0.00761)		(0.00761)		(0.00950)	
	0.0225		0.0217		0.0213		0.0236	
CA	(0.0215)		(0.0215)		(0.0214)		(0.0218)	
	0.00867		0.00857		0.00835		0.0139	
PCRED	-0.000675		-0.000986		-0.000631		0.000119	
	(0.00571)		(0.00576)		(0.00569)		(0.00666)	
Log of Size of Bond Issued	-0.0441	-0.0666	-0.0495	-0.0684	-0.0506	-0.0683	-0.0318	-0.0479
	(0.0479)	(0.0706)	(0.0472)	(0.0706)	(0.0473)	(0.0718)	(0.0471)	(0.0759)
Maturity of Bond issued	0.0537**	0.0344***	0.0542**	0.0347***	0.0536**	0.0341***	0.0548**	0.0326***
	(0.0205)	(0.00766)	(0.0207)	(0.00761)	(0.0203)	(0.00774)	(0.0215)	(0.00764)
UST10Y	0.370*	0.850***	0.378*	0.848***	0.432**	0.822***	0.416*	0.932***
	(0.201)	(0.175)	(0.202)	(0.174)	(0.187)	(0.163)	(0.218)	(0.190)
Bond Tranche fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	No	Yes	No	Yes	No	Yes	No
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-period fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
Includes China issuance	Yes	No	Yes	No	Yes	No	Yes	No
Observations	5,881	3,153	5,881	3,153	5,881	3,153	5,593	2,863
R-squared	0.805	0.703	0.805	0.702	0.805	0.704	0.795	0.687
No. of Countries	63	70	63	70	63	70	63	70
No. of Industries	187	192	187	192	187	192	187	191
No. of Bonds	5437	2865	5437	2865	5437	2865	5176	2602

Robust standard errors clustered on the country-industry level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 6. Bond Maturity OLS Regression Results

Dependent Variable: Maturity of Bond Tranche								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
VIX	-2.951** (1.245)	-3.076* (1.749)						
RISK			-3.301*** (0.983)	-3.201*** (1.157)				
FED					1.186 (1.824)	2.822** (1.385)		
LIBOR							-1.364* (0.738)	-1.176 (0.735)
GDPPC	-2.046** (0.836)		-1.988** (0.847)		-2.031** (0.844)		-2.213* (1.121)	
GROWTH	0.0968 (0.0652)		0.0996 (0.0657)		0.0929 (0.0658)		0.0974 (0.0763)	
EXT	-0.0355* (0.0185)		-0.0351* (0.0187)		-0.0346* (0.0186)		-0.0419* (0.0229)	
CA	-0.0553 (0.0714)		-0.0549 (0.0719)		-0.0563 (0.0721)		-0.0273 (0.0654)	
PCRED	0.0528* (0.0316)		0.0542* (0.0320)		0.0532 (0.0324)		0.0609 (0.0387)	
Log of Size of Bond Issued	0.524** (0.250)	0.717** (0.320)	0.527** (0.246)	0.713** (0.317)	0.525** (0.253)	0.722** (0.311)	0.445* (0.238)	0.573 (0.352)
UST10Y	0.00287 (0.265)	-0.361 (0.533)	0.0999 (0.257)	-0.339 (0.501)	0.160 (0.301)	-0.299 (0.519)	-0.0613 (0.261)	-0.425 (0.537)
Bond Tranche fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	No	Yes	No	Yes	No	Yes	No
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country-period fixed effects	No	Yes	No	Yes	No	Yes	No	Yes
Includes China issuance	Yes	No	Yes	No	Yes	No	Yes	No
Observations	6,749	3,684	6,749	3,684	6,749	3,684	6,406	3,347
R-squared	0.393	0.298	0.393	0.298	0.391	0.297	0.401	0.301
No. of Countries	64	71	64	71	64	71	64	71
No. of Industries	198	203	198	203	198	203	197	202
No. of Bonds	6144	3268	6144	3268	6144	3268	5840	2969

Robust standard errors clustered on the country-industry level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 7. The Risk-Taking Channel and the Exchange Rate

Country-industry logit regressions

Dependent variable: Country-industry monthly issuance above 2000-07 average (1=Yes, 0=No)

	(1)	(2)
USREER	-4.474*** (0.840)	
XRATE		-2.399*** (0.478)
Controls	As in Table 4	As in Table 4
Observations	79,464	76,664
No. of Countries	64	63
No. of Country-Industries	448	441
Pseudo R-squared	0.360	0.361

Robust standard errors clustered on the country-industry level in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Appendix 1. Country Sample and Issuance Activity by EMDE Entities

Country	Pre-crisis (2000-2006)		Crisis (2007-2010)		Post-crisis (2011-2014)	
	No. of Bonds	Total Volume (\$ mln)	No. of Bonds	Total Volume (\$ mln)	No. of Bonds	Total Volume (\$ mln)
Albania			1	405		
Angola					1	1,000
Argentina	70	40,105	36	6,807	25	6,414
Armenia					1	690
Azerbaijan	2	5	5	279	6	3,444
Bangladesh					1	297
Belarus	3	3	6	1,350	1	800
Belize	2	223				
Bolivia					2	989
Bosnia and Herzegovina			1	110		
Botswana					1	80
Brazil	331	103,668	190	89,006	260	175,420
Bulgaria	12	3,040	1	291	5	4,583
China	48	16,802	132	29,783	2765	374,001
Colombia	42	15,852	18	12,380	43	33,492
Congo, Democratic Republic of			1	478		
Costa Rica	8	1,600			8	5,496
Cote d'Ivoire (Ivory Coast)			1	2,332	1	736
Dominican Republic	10	2,271	3	1,180	9	5,160
Ecuador	1	596			2	2,981
Egypt	7	3,664	4	3,439	7	5,261
El Salvador	12	3,540	2	1,244	4	2,558
Ethiopia					3	741
Fiji	1	149			1	250
Gabon			1	1,000	2	2,109
Georgia			4	982	5	1,645
Ghana			1	750	2	1,985
Grenada	1	99				
Guatemala	5	1,205	1	85	9	3,770
Honduras					2	1,000
Hungary	44	22,675	25	15,872	22	21,385
India	46	10,277	53	22,235	151	53,640
Indonesia	44	14,380	37	22,487	60	43,058
Iran	2	993				
Iraq	1	2,700				
Jamaica	22	4,604	10	4,482	9	6,060
Jordan	8	407	1	742	2	2,250
Kazakhstan	67	15,634	33	19,558	21	14,681
Kenya					2	2,794

Country	Pre-crisis (2000-2006)		Crisis (2007-2010)		Post-crisis (2011-2014)	
	No. of Bonds	Total Volume (\$ mln)	No. of Bonds	Total Volume (\$ mln)	No. of Bonds	Total Volume (\$ mln)
Laos					4	348
Lebanon	41	19,899	17	9,796	10	9,791
Macedonia	1	176	1	243	1	666
Malaysia	41	17,650	11	8,612	75	21,765
Marshall Islands					1	230
Mexico	117	78,882	103	60,935	163	131,257
Mongolia			3	249	7	3,404
Montenegro			1	253	3	744
Morocco	1	453	2	2,007	6	5,674
Mozambique					2	810
Namibia					1	491
Nigeria			2	522	14	5,971
Pakistan	3	1,900	1	750	2	3,000
Panama	15	6,855	7	2,365	13	5,242
Paraguay					6	2,398
Peru	15	6,168	29	14,393	61	22,056
Philippines	76	28,983	25	13,968	35	14,382
Romania	11	3,502	3	2,569	12	17,082
Rwanda					1	393
Senegal			1	196	2	988
Serbia	1	1,018			7	6,109
Seychelles	1	199	1	30		
South Africa	28	11,632	25	13,204	54	23,902
Sri Lanka	1	100	3	2,000	10	5,775
Tanzania					1	600
Thailand	21	6,218	10	3,531	23	15,954
Togo					1	248
Tunisia	9	2,949	1	253	5	2,017
Turkey	78	45,091	30	24,270	128	58,555
Ukraine	28	8,993	27	10,729	32	21,746
Venezuela	23	16,464	10	31,785	4	12,444
Vietnam	1	737	3	1,173	4	1,532
Zambia					2	1,728

Appendix 2. Annualized External Bond Issuance Statistics

Averages are not weighted. Statistics exclude issuance by Chinese entities.

Panel A. Bond issuance characteristics

Year	Total Volume (\$mln)	Number of bond tranches	Avg. Yield (%)	Avg. Maturity (years)	Investment grade (%)
2000	6.33E+10	189	9.5	7.2	21%
2001	5.73E+10	170	8.8	6.7	33%
2002	4.39E+10	125	9.0	8.5	36%
2003	5.76E+10	167	8.0	7.9	41%
2004	7.71E+10	200	7.4	8.3	36%
2005	1.11E+11	249	7.3	9.7	40%
2006	9.56E+10	294	8.0	9.3	32%
2007	9.94E+10	297	8.1	12.2	45%
2008	4.55E+10	103	7.4	8.3	46%
2009	1.07E+11	159	7.7	9.2	48%
2010	1.60E+11	300	7.1	9.4	53%
2011	1.56E+11	284	6.8	9.4	53%
2012	2.05E+11	400	5.3	8.9	70%
2013	2.24E+11	438	5.3	7.8	64%
2014	2.16E+11	407	5.1	8.7	69%

Panel B. Global push factors around time of issuance

Year	Avg. VIX	Avg. RISK (%)	Avg. LIBOR (bps)	Avg. FED (\$mln)	Avg. UST10Y (%)
2000	23.05	1.85	-	5.90E+05	6.20
2001	25.01	2.35	23.33	6.09E+05	5.24
2002	26.12	2.59	14.68	6.63E+05	4.80
2003	24.69	2.25	14.67	6.52E+05	3.93
2004	16.57	1.35	11.85	6.75E+05	4.31
2005	13.13	1.28	9.56	7.19E+05	4.23
2006	13.10	1.23	7.93	7.54E+05	4.73
2007	13.53	1.27	13.87	7.79E+05	4.71
2008	24.17	2.84	70.84	6.67E+05	3.89
2009	33.88	5.08	66.03	9.77E+05	3.30
2010	23.67	2.48	16.28	1.78E+06	3.35
2011	20.41	2.15	15.23	2.16E+06	3.05
2012	21.27	2.68	33.14	2.51E+06	1.88
2013	14.92	2.05	16.66	2.84E+06	2.04
2014	13.80	1.67	14.57	3.84E+06	2.67

Panel C. Domestic pull factors around time of issuance

Year	Avg. GDPPC (real US\$)	Avg. GROWTH (%)	Avg. CA (%)	Avg. EXT (%)	Avg. PCRED (%)
2000	4706	3.64	-3.14	45.39	31.89
2001	4077	0.88	-3.03	52.08	34.40
2002	2980	3.50	-0.87	54.66	36.99
2003	3282	3.00	0.53	48.83	31.53
2004	3983	6.50	-0.01	51.60	36.24
2005	4662	5.36	-0.71	42.64	35.98
2006	4946	6.43	-0.88	47.95	39.65
2007	5799	6.63	-2.62	42.53	42.72
2008	7848	4.28	-1.85	41.81	46.30
2009	6401	0.00	-1.11	41.28	40.34
2010	7507	6.87	-1.62	33.97	41.86
2011	8293	4.64	-2.45	40.36	50.92
2012	7856	3.51	-3.15	38.16	54.65
2013	7611	3.66	-3.40	39.96	53.76
2014	7669	3.43	-3.22	40.77	53.34

Panel D. Fraction of country-industries with monthly issuance volume above historical average

Year	% of country- industries that issue above their historical average
2000	1.98%
2001	1.83%
2002	1.59%
2003	1.91%
2004	2.53%
2005	3.02%
2006	3.35%
2007	3.10%
2008	1.14%
2009	1.96%
2010	3.67%
2011	3.79%
2012	4.63%
2013	5.30%
2014	5.26%

Appendix 3. Interactions between Country Characteristics and Global Factors

Table 1. Country-Industry Level Logit Regressions (Equation (1))

Dependent Variable: Issuance Country-industry monthly issuance above 2000-07 average (1=Yes, 0=No)																											
	Push Factor	<i>GDPPC</i>			Inter-action	Push Factor	<i>GROWTH</i>			Inter-action	Push Factor	<i>EXT</i>			Interaction	Push Factor	<i>CAD</i>			Inter-action	Push Factor	<i>PCRED</i>			Interaction		
<i>VIX</i>	-1.710 (1.269)				-0.710*** (0.135)				-0.735*** (0.154)				-0.713*** (0.103)				-0.351* (0.184)										
Pull Factor		0.504 (0.464)				0.0126 (0.0631)				0.00351 (0.00719)					-0.0334 (0.0381)								0.0197** (0.00918)				
Interaction					0.119 (0.150)				-0.000720 (0.0200)					0.000504 (0.00231)							0.000276 (0.0132)				-0.00724*** (0.00270)		
	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>
	70,644	61	427		70,644	61	427		70,644	61	427		70,644	61	427		70,644	61	427		70,644	61	427		70,644	61	427
<i>RISK</i>	-0.535 (0.873)				-0.642*** (0.120)				-0.575*** (0.128)				-0.628*** (0.0912)				-0.462*** (0.154)										
Pull Factor		1.034*** (0.159)				-0.000531 (0.0201)				0.00636* (0.00329)					-0.0322*** (0.0118)								0.00104 (0.00511)				
Interaction					-0.0111 (0.105)				0.00310 (0.0154)				-0.00126 (0.00173)				-0.000528 (0.00939)								-0.00343* (0.00208)		
	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>
	70,644	61	427		70,644	61	427		70,644	61	427		70,644	61	427		70,644	61	427		70,644	61	427		70,644	61	427
<i>FED</i>	2.540*** (0.939)				0.353*** (0.101)				0.894*** (0.101)				0.569*** (0.0812)				0.178 (0.142)										
Pull Factor		3.183** (1.376)				-0.704** (0.328)				0.112*** (0.0274)					-0.212 (0.182)								-0.111*** (0.0368)				
Interaction					-0.229** (0.106)				0.0540** (0.0236)				-0.00789*** (0.00194)				0.0135 (0.0129)								0.00774*** (0.00255)		
	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>
	53,928	59	413		53,928	59	413		53,928	59	413		53,928	59	413		53,928	59	413		53,928	59	413		53,928	59	413
<i>LIBOR</i>	-1.018** (0.442)				-0.473*** (0.0631)				-0.452*** (0.0684)				-0.462*** (0.0495)				-0.408*** (0.0871)										
Pull Factor		0.921*** (0.190)				-0.000968 (0.0294)				0.00742* (0.00392)					-0.0288 (0.0178)								0.00225 (0.00584)				
Interaction					0.0654 (0.0510)				0.00266 (0.00923)				-0.000242 (0.00115)				8.13e-05 (0.00579)								-0.00105 (0.00117)		
	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>		<i>Obs.</i>	<i>#C</i>	<i>#Id</i>
	60,732	61	427		60,732	61	427		60,732	61	427		60,732	61	427		60,732	61	427		60,732	61	427		60,732	61	427

Robust standard errors clustered on the country-industry level in parentheses. *** p<0.01, ** p<0.05, * p<0.1 Note: Obs. = Observations, #C = Number of Countries, #Id = Number of Industries

Table 2. Bond-Level Pricing OLS Regressions (Equation (2), excluding Chinese issuance)

Dependent Variable: Fixed yield-to-maturity of Bond Tranche																									
	Push Factor	<i>GDPPC</i>			Inter- action	Push Factor	<i>GROWTH</i>			Inter- action	Push Factor	<i>EXT</i>			Inter- action	Push Factor	<i>CAD</i>			Inter- action	Push Factor	<i>PCRED</i>			Inter- action
<i>VIX</i>	-0.907 (1.654)				0.654* (0.334)					0.860** (0.340)					0.946*** (0.328)					1.390** (0.523)					
Pull Factor		-0.423 (0.792)				-0.317** (0.137)					-0.00223 (0.00719)					0.103 (0.108)					0.0153 (0.0233)				
Interaction				0.224 (0.188)				0.0945** (0.0412)					0.00371 (0.00232)					-0.0340 (0.0362)						-0.00814 (0.00805)	
	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	
	2,738	58	173	2,502	2,738	58	173	2,502	2,738	58	173	2,502	2,738	58	173	2,502	2,738	58	173	2,502	2,738	58	173	2,502	
<i>RISK</i>	-0.179 (2.163)				0.893** (0.381)					0.937** (0.390)					1.076*** (0.375)					1.277*** (0.446)					
Pull Factor		0.155 (0.456)				-0.0874** (0.0387)					0.00516 (0.00751)					0.0264 (0.0266)					-0.00645 (0.00557)				
Interaction				0.154 (0.251)				0.0713** (0.0277)					0.00419** (0.00204)					-0.0355 (0.0264)						-0.00396 (0.00655)	
	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	
	2,738	58	173	2,502	2,738	58	173	2,502	2,738	58	173	2,502	2,738	58	173	2,502	2,738	58	173	2,502	2,738	58	173	2,502	
<i>FED</i>	-0.832 (1.844)				-0.640* (0.357)					-0.624* (0.362)					-0.694* (0.382)					-0.655* (0.389)					
Pull Factor		0.0478 (2.794)				0.457 (0.449)					0.0292 (0.0401)					-0.0677 (0.355)					0.00858 (0.0408)				
Interaction				0.0141 (0.207)				-0.0354 (0.0327)					-0.00152 (0.00284)					0.00531 (0.0258)						-0.00125 (0.00300)	
	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	
	2,738	58	173	2,502	2,738	58	173	2,502	2,738	58	173	2,502	2,738	58	173	2,502	2,738	58	173	2,502	2,738	58	173	2,502	
<i>LIBOR</i>	0.311 (1.380)				0.294* (0.170)					0.286 (0.174)					0.438*** (0.149)					0.496** (0.236)					
Pull Factor		0.753 (0.628)				-0.165** (0.0711)					0.00290 (0.00972)					0.0571 (0.0568)					-0.0110 (0.0133)				
Interaction				0.0188 (0.163)				0.0423* (0.0218)					0.00396** (0.00167)					-0.0188 (0.0194)						-0.000521 (0.00460)	
	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	
	2,454	58	173	2,245	2,454	58	173	2,245	2,454	58	173	2,245	2,454	58	173	2,245	2,454	58	173	2,245	2,454	58	173	2,245	

Robust standard errors clustered on the country-industry level in parentheses. *** p<0.01, ** p<0.05, * p<0.1 Note: Obs. = Observations, #C = Number of Countries, #Id = Number of Industries, #Bd = Number of Bonds. R-squared for regressions with the *VIX*, *RISK*, and *FED* = 0.65; R-squared for regressions with *LIBOR* = 0.63.

Table 3. Bond Maturity OLS Regressions (Equation (2), excluding Chinese issuance)

Dependent Variable: Maturity of Bond Tranche																													
	Push Factor	<i>GDPPC</i>			Interaction	Push Factor	<i>GROWTH</i>			Interaction	Push Factor	<i>EXT</i>			Interaction	Push Factor	<i>CAD</i>			Interaction	Push Factor	<i>PCRED</i>			Interaction				
<i>VIX</i>	2.399 (6.849)					-4.766** (2.198)					-4.108 (2.560)					-3.735* (1.869)					-2.003* (1.008)								
Pull Factor		-0.0849 (2.825)					-0.416 (0.412)						-0.0407 (0.0434)																
Interaction					-0.747 (0.780)				0.175 (0.132)																				
	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	
	3,247	60	184	2,887	3,247	60	184	2,887	3,247	60	184	2,887	3,247	60	184	2,887	3,247	60	184	2,887	3,247	60	184	2,887	3,247	60	184	2,887	
<i>RISK</i>	-0.122 (3.943)					-5.049*** (1.873)					-4.708** (1.928)					-4.486*** (1.630)					-3.325*** (1.089)								
Pull Factor		-2.005 (1.254)					0.0198 (0.117)						-0.0366 (0.0229)																
Interaction					-0.531 (0.496)				0.120 (0.115)				0.00145 (0.00741)																
	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	
	3,247	60	184	2,887	3,247	60	184	2,887	3,247	60	184	2,887	3,247	60	184	2,887	3,247	60	184	2,887	3,247	60	184	2,887	3,247	60	184	2,887	
<i>FED</i>	5.666 (3.871)					3.432** (1.406)					3.399** (1.471)					3.649*** (1.365)					4.318*** (1.530)								
Pull Factor		0.912 (5.961)					-0.656 (1.510)						-0.0704 (0.118)																
Interaction					-0.241 (0.454)				0.0552 (0.109)				0.00255 (0.00797)																
	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	
	3,247	60	184	2,887	3,247	60	184	2,887	3,247	60	184	2,887	3,247	60	184	2,887	3,247	60	184	2,887	3,247	60	184	2,887	3,247	60	184	2,887	
<i>LIBOR</i>	0.154 (2.437)					-2.102* (1.107)					-1.496 (1.058)					-1.467 (0.883)					-0.675 (0.561)								
Pull Factor		-2.772 (1.693)					-0.188 (0.183)						-0.0371 (0.0300)																
Interaction					-0.206 (0.293)				0.105* (0.0616)				-0.00277 (0.00381)																
	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	<i>Obs.</i>	<i>#C</i>	<i>#Id</i>	<i>#Bd</i>	
	2,918	60	183	2,595	2,918	60	183	2,595	2,918	60	183	2,595	2,918	60	183	2,595	2,918	60	183	2,595	2,918	60	183	2,595	2,918	60	183	2,595	

Robust standard errors clustered on the country-industry level in parentheses. *** p<0.01, ** p<0.05, * p<0.1 Note: Obs. = Observations, #C = Number of Countries, #Id = Number of Industries, #Bd = Number of Bonds. R-squared for all regressions = 0.25; R-squared for regressions with *LIBOR* = 0.63

Annex C - The role of taxation in shaping corporate liability structures¹

Tax incentives to use debt finance

The deductibility of interest payments against corporate income tax (CIT) is associated with two types of distortion to corporate financial structures favoring debt finance:

- **'Debt bias':** Since returns to equity are generally not deductible, debt finance is tax-preferred over equity finance.²
- **'Debt shifting':** Cross-country differences in rates of CIT create opportunities for tax planning within multinational groups, by lending from low tax countries to related entities in high tax countries or by locating external borrowings in high tax countries. Variants include use of hybrid instruments that give rise to deductible interest expense but no corresponding taxable income elsewhere, and hybrid entities that can claim more than one tax deduction for the same interest expense.

The two are related: within multinational groups, the tax gains from debt shifting may exacerbate the bias in favor of financing externally by debt.

There is ample empirical evidence that these tax distortions significantly affect the financial structures of non-financial corporations.³ The meta analysis in de Mooij (2011) derives a consensus value for the impact of the CIT rate on the debt-asset ratio of non-financial firms of 0.28. This means, for instance, that a CIT rate of, for instance, 40 percent (roughly the combined federal-state rate in the U.S.) might be responsible for leverage ratios that are more than 10 percentage-points higher than otherwise. There is significant variation according to firm size, with the smallest and largest firms being notably more responsive to tax than medium-sized firms (Heckemeyer and De Mooij, 2013). Preliminary OECD analysis suggests that MNEs' overall leverage is sensitive to the possibility to locate external and internal debt in higher-tax rate countries, though the magnitude of this effect appears limited.

¹ Prepared by staff of the International Monetary Fund and the Organisation for Economic Co-operation and Development. This note represents views of those staff and not necessarily those of the Management, Executive Boards or Member States of these organizations. This is a draft and should not be cited.

² Treatment under the personal income tax (PIT) and withholding taxes also need to be taken into account. The tax preference for debt generally remains not only for tax-exempt entities but also for top rate PIT payers (ZEW, 2012).

³ Debt bias is also prevalent in the financial sector, where it might be of a bigger concern to financial stability (see for example Keen and De Mooij (2015)).

There is no good reason to tax-favor debt. The original rationale for allowing a deduction only for debt was that interest is a cost of doing business and equity returns reflect business income, a view also reflected in international accounting principles. In economic terms, however, both payments represent a return to capital and there is no a priori reason to tax one different from the other. In principle, there could be a reason to tax favor debt if, for some reason, leverage ratios would be too low in the absence of taxation. But the corporate finance literature offers little reason to believe this to be the case. To the contrary, to the extent that bankruptcy (or the risk of bankruptcy) imposes costs not borne by shareholders, the presumption is that leverage would tend to be excessive. From a legal and administrative perspective too, the differential treatment is problematic, and hybrid financial instruments (in certain cases treated as debt for tax purposes, but with equity-like characteristics) increasingly blur the distinctions between the two.

Implications for financial stability

The primary financial stability concern is with the tax incentive towards excessive use of external borrowing.⁴ Intragroup debt can result in significant levels of debt of MNE affiliates without showing up on the consolidated financial statement of the MNE group. But so long as there is full risk-sharing within MNE groups, internal borrowing likely has limited stability implications. Manipulating the location of group debt may increase bankruptcy risks of the entities where debt is located if there is not full risk sharing within the group. However, MNE entities are generally thought to benefit from explicit or implicit guarantees from their parents (Huizinga et al., 2008). The primary concern is thus with external debt.

The stability risks associated with excess leverage in the non-financial sector can run through different channels. First, high leverage in firms can magnify financial distress and increase the probability that a firm goes bankrupt—or requires costly bail-out—in case of an adverse shock. Debt bias can thus magnify swings in business cycle and exacerbate the depth of an economic crisis. Second, high debt levels in the non-financial sector may spill over to the financial system. For instance, increased default risks and greater vulnerability of non-financial firms may affect financial institutions through increased losses on bank loans. Finally, if taxation encourages substitution of debt for equity and debt is primarily channeled through the banking system, debt bias makes the banking sector inefficiently large. Given the significant externalities associated with contagion and systemic effects of bank defaults, debt bias in non-financial corporates may thus contribute to the overall size of financial stability risks.

⁴ A few papers have looked at the welfare costs of debt bias under the assumption that the no-tax outcome would be efficient. Sorensen (2014), for instance, puts this at between 2 and 3 percent of total corporate tax revenue for the case of Norway (which has a 28 percent CIT rate). This though ignores the social costs involved with risks to financial stability.

There is little evidence on the significance of these effects, though there are signs that they are not trivial. Sutherland and Hoeller (2012) find that higher leverage in the non-financial corporate sector is associated with a significantly greater volatility of investment spending and, related, a higher probability of, and deeper, recession; Davis and Stone (2004) find that it is associated with larger investment and inventory declines after financial crisis. There have been cases in which non-financial corporates have been treated as systematically important.

Policy responses

Policy makers are increasingly focused on tax incentives to debt financing:

- **Measures to address debt shifting have attracted increased attention (Box 1),** though these relate less directly to stability concerns than does debt bias in relation to external finance.
- **Debt bias concerns have come to increasing prominence,** not only in relation to the financial sector—several countries having introduced special bank levies—but non-financials too. The European Commission, for instance, highlights this as an area requiring attention in making tax policy recommendations to the member states (see for instance, European Commission, 2012).

Box 1: Addressing debt shifting

Thin capitalization or earnings stripping rules, which limit the extent of interest deductibility, have become more widespread. In two-thirds of the countries with such restrictions, however, they apply only to intracompany interest, rather than all interest expenses (Merlo and Wamser, 2014), and so do not address the debt bias.

The empirical evidence is that these restrictions have the intended effect of reducing leverage in the country adopting them, but may result in external and internal debt being shifted to other countries (Blouin et al., 2014; Buettner et al. 2012; Overreach and Wamser 2014). This points to the importance of a coordinated approach to this aspect of avoidance, which is being addressed in Action 4 of the G20-OECD Base Erosion and Profit Shifting (BEPS) Project.

A pragmatic response to debt bias is to extend interest limitation rules to loans between both related and unrelated parties. The disadvantage of this is that simple limits struggle to take account of the distinct circumstances of different sectors and enterprises.

One way to eliminate debt bias is by denying all interest deductions: a ‘comprehensive business income tax’ (CBIT). The base broadening this implies would also allow the statutory CIT rate to be cut as part of a revenue-neutral reform. However, the CBIT has serious drawbacks: it (i) increases the cost of capital on debt-financed investment (unless compensating measures are taken); (ii) raises significant problems with the taxation of banks (not least in terms of public perception), which would become effectively untaxed on their margin-based profits; and

(iii) significantly distorts international financial transactions. No country has ever adopted the CBIT.

A more promising and practicable approach than the CBIT is to provide an 'Allowance for Corporate Equity' (ACE) deduction: a deduction, that is, for a notional return on equity. The base to which this rate would apply is the book value of equity, minus equity participations in other firms (to avoid duplication of tax relief). There is now meaningful experience from countries that have or had an ACE or a variant thereof for some time, including Austria, Belgium, Brazil, Croatia, Italy, and Latvia. The system seems to have reduced leverage ratios (Hebous and Ruf, 2015).

Potential concerns with the adoption of an ACE include its revenue cost and avoidance opportunities—but these can be mitigated. Tentative calculations suggest that an ACE, being a base-narrowing measure, would have an average budgetary cost in advanced countries of 0.5 percent of GDP, or over 15 percent of CIT revenues (De Mooij, 2012). This loss can be mitigated by applying the ACE only to new investment (as in Italy), without reducing the economic benefits of the ACE since, for existing capital, the ACE is simply a windfall gain. Care is also needed to craft the ACE to limit avoidance opportunities (Hebous and Ruf, 2015; Zangari, 2014).

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International Organization of Securities Commissions

International Policies for Public Disclosure - Corporates as Public Issuers of Debt and Equity Securities

I. Introduction

The International Organization of Securities Commissions (IOSCO) has established six principles of securities regulation related to an issuer's disclosure of information to investors who purchase its securities in the public capital markets.¹ These principles are primarily in support of IOSCO's objective of securities regulation related to investor protection.

To assist securities regulators in implementing these six principles IOSCO has also developed standards and principles specific to the content of issuer disclosure for cross-border offerings and listings of both debt and equity securities in the public capital markets. Further, from time to time IOSCO has made public statements related to the issuer financial information element of these issuer disclosures. These public statements—versus IOSCO's development of its own principles for the preparation of issuer financial statements—are precipitated by the fact that other international organizations develop international accounting and auditing standards, respectively.

Securities regulators establish issuer disclosure requirements to protect investors by addressing the asymmetry of information about the issuer that exists between management and the investors who buy, hold, and sell a company's securities in the public capital markets. The disclosures that a securities regulators selects are intended to give investors information that is timely, material and not misleading about a company and its circumstances (for example, issuer domicile, size, industry, number of securities holders, and so forth). As an interest in the residual profits of a company, the pricing of equity capital may more keenly depend on the disclosures made to address this asymmetry than the pricing of debt capital.

Issuer disclosure requirements for publicly traded debt and equity securities may be one factor that companies consider in assessing the cost of capital for purposes of making capital structure determinations, such as whether to raise capital by issuing debt securities, equity securities, or some combination of each or utilizing other sources of capital, such as bank loans. More broadly speaking, companies' capital structure (debt versus equity) decisions involve their assessment of market conditions and their own company characteristics and needs. All of these would affect the overall cost of capital.

¹ See *International Organization of Securities Commissions Objectives and Principles of Securities Regulation*, June 2010, available at: <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD323.pdf>

II. Issuer Disclosure for Cross-Border Offerings and Listings

IOSCO has developed two sets of issuer disclosure standards and principles for prospectuses used in cross-border offerings and listings of securities in the public capital markets; namely, the *International Debt Disclosure Principles*² (debt principles) and the *International Equity Disclosure Standards*³ (equity standards). IOSCO principles and standards are not self-executing; rather, they are prepared to assist national securities regulators in establishing national requirements by informing them of the view of multiple countries on a particular policy matter.

The *International Debt Disclosure Principles* are more in the form of principles that jurisdictions can implement as they deem appropriate in the context of their national regulatory frameworks. In this sense the debt principles are intended as more of a starting point for consideration by national securities regulators. The *International Equity Disclosure Standards*, however, are broadly accepted as a disclosure benchmark, and the equity disclosure regimes of many IOSCO member jurisdictions are based more directly on them. The next page contains a comparison of the disclosure topics that IOSCO has cited in its *International Debt Disclosure Principles* as compared to those it has cited in its *International Equity Disclosure Standards*. The actual debt principles and equity standards contain more elaborative and detailed content than is listed here.

IOSCO has also developed issuer disclosure principles to complement its debt principles and its equity standards. These are the *Ongoing Disclosure Principles*⁴ (ongoing principles) and the *Periodic Disclosure Principles*⁵ (periodic principles). Both the ongoing and the periodic principles address the issuer disclosure that informs investors who participate in the secondary public capital markets; that is, the trading that occurs among investors after the initial offering and /or listing of an issuer's securities. A common example of this type of disclosure is an issuer's annual financial report. In developing its ongoing and periodic principles, IOSCO has not distinguished between disclosures that issuers would make to the secondary public debt markets versus to the secondary public equity markets.

² See *International Disclosure Principles for Cross-Border Offerings and Listings of Debt Securities by Foreign Issuers - Final Report*, Report of the Technical Committee of IOSCO, March 2007, available at: <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD242.pdf>.

³ See *International Disclosure Standards for Cross-Border Offerings and Initial Listings by Foreign Issuers, Report of IOSCO*, September 1998, available at: <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD81.pdf>.

⁴ See *Principles for Ongoing Disclosure and Material Development Reporting by Listed Entities*, A Statement of the Technical Committee of the International Organization of Securities Commissions, October 2002, available at: <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD132.pdf>.

⁵ See *Principles for Periodic Disclosure by Listed Entities - Final Report*, Report of the Technical Committee of IOSCO, February 2010, available at: <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD317.pdf>.

IOSCO Principles and Standards for Issuer Disclosure
In Cross-Border Offerings and Listings

<i>International Debt Disclosure Principles – Disclosure Topics</i>	<i>International Equity Disclosure Standards - Comparable Disclosure Topics</i>
Identity of Parties Responsible for the Document	Identity of Directors, Senior Management and Advisors
Description of the Debt Securities (including Covenants Relating to the Issuance)	Offer and Listing Information
Risk Factors	Key Information: selected financial data, capitalization and indebtedness, reasons for the offering, use of proceeds, and risk factors
Markets (including identity of exchanges, and entities providing liquidity)	Offer and Listing Information
Information about the Public Offering	Offer and Listing Information; Offer Statistics and Expected Timetable
Taxation	Additional Information (e.g., taxation)
Selected Financial Information	Key Information: selected financial data, capitalization and indebtedness, use of proceeds, and risk factors
Information about the Issuer	Information on the Company
Operating and Financial Review and Prospects	Operating and Financial Review and Prospects
Directors, Senior Management and Employees	Directors, Senior Management and Employees
Major Shareholders and Related Party Transactions	Major Shareholders and Related Party Transactions
Interests of Experts and Counsel	Identify of Directors, Senior Management and Advisors
Financial Information	Financial Information
Additional information (e.g., memorandum and articles of association; material contracts)	Additional Information (e.g. share capital, material contracts, subsidiary information)

III. Issuer Financial Statement Disclosure

Issuers prepare the financial statement element of their financial information disclosures in accordance with a set of accounting standards, such as a set of national accounting standards or International Financial Reporting Standards (IFRS). IFRS contain standards that address how an issuer should recognize, measure, and present its outstanding debt and equity in its balance sheet, as well as disclose information about each in the footnotes to its financial statements.^{6, 7}

An issuer's debt and equity financing will often comprise a large majority of its total financing, and thus compose a significant portion of the right hand side of its balance sheet, and sometimes of its statement of cash flows. Thus, debt and equity are typically substantial components of an issuer's financial statements, and therefore the associated disclosures may be extensive. The next page contains a comparison of IOSCO's understanding of the IFRS disclosure topics for an issuer's outstanding debt as compared to those contained in IFRS for its outstanding equity.

In certain circumstances, an entity may be involved with a structured entity (SE) that has its own debt or equity financing. In some cases, the structured entity will be consolidated by the reporting entity, and therefore the issuer will make disclosures in its financial statements about the debt issued by the SE of the same type as for its own debt. In the circumstances in which the issuer does not consolidate the SE, IOSCO understands that IFRS nonetheless requires issuer disclosures about the risks and potential exposures that result from its relationship with the SE.

In 2007 IOSCO surveyed its members about their experience with financial reporting for SEs (also often referred to as Special Purpose Entities or SPEs, or as Structured Entities or Variable Interest Entities).⁸ During the years immediately preceding the issuance of the survey results, IOSCO members had implemented various approaches to improving disclosure and reporting of SEs. In some jurisdictions the national accounting standard setter had also made improvements to the accounting and disclosure requirements, and in other jurisdictions, the securities regulator had taken similar steps to improve disclosure requirements. At the time of the survey IOSCO members observed that there were fewer unconsolidated SEs than there had been before the most recent accounting standard setting. Accordingly, this may have led to a lesser influence on an issuer's pursuit of issuing debt in an SE versus its own debt or equity.

The other common obligation of an issuer that may contain an element of financing is the issuer's commitments as a lessee. Based upon specified criteria IFRS requires an issuer to reflect certain lessee payment commitments on its balance sheet, and to disclose the others.

⁶ IFRS disclosure requirement for debt are described in the following standards: IAS 1, *Presentation of Financial Statements*; IFRS 7, *Financial Instruments: Disclosure*; IFRS 9, *Financial Instruments*; IAS 23, *Borrowing Costs*; IAS 17, *Leases*; IAS 32, *Financial Instruments: Presentation*.

⁷ IFRS disclosure requirements for equity are described in the following standards: IAS 1, *Presentation of Financial Statements*; IAS 32, *Financial Instruments: Presentation*; IAS 33, *Earnings per Share*.

⁸ See *Special Purpose Entities*, Technical Committee of the International Organization of Securities Commissions, April 2007, available at: <https://www.iosco.org/library/pubdocs/pdf/IOSCOPD243.pdf>.

<u>IFRS Financial Statement Disclosures – Debt</u>	<u>IFRS Financial Statement Disclosures - Equity</u>
Balance of total long-term and short-term debt outstanding at the end of each year there is a statement of position presented as part of the financial statements.	Balance of total share and share capital outstanding by class at the end of each year there is a statement of position presented as part of the financial statements.
Changes in the amount of debt outstanding during the year, noting issuances, payments, changes in fair value, and other changes.	Changes in the amount of share and share capital outstanding during the year by class of share, noting issuances, redemptions, and other changes. Details of any stock split or reverse stock split during the periods presented. Earnings per share for all periods presented.
Total amount of interest expense incurred and paid during each year presented.	Total amount of cash of stock dividends declared and paid during each year presented.
Total fees and gains and losses incurred during the year.	Fees will be disclosed as a component of the changes in share capital during the year.
Specific terms and provisions of the debt by class or instrument whereby details such as convertibility, term or due date, availability of unutilized lines of credit or other credit commitments, interest rates and whether they are fixed or variable, timing of required principal and interest payments, and terms of the most restrictive covenants.	Total number of shares authorized, issued and outstanding and the respective par value for each class of shares. Specific rights, privileges, and restrictions of the different share classes including a description of call and convertibility provisions, prices and dates, dividend and liquidity preferences, unusual voting rights, and other unique provisions for each class of shares.
If a right of set-off exists related to the debt, the details of such arrangement, and the gross amounts of items set-off.	Balances of treasury stock outstanding, including number of shares, and related activity during the periods presented.
Collateral pledged or held by the lender as security for the debt.	
Whether the debt has any embedded derivatives, whether such derivatives have been bifurcated, and, if so, how and why.	
Details of any guarantees of debt by third parties.	
Whether any defaults of debt or covenant violations exist at year end or have occurred during the year and if they have been cured, how and when.	
The fair value of outstanding debt and whether or not it is carried at fair value. If so, the methodology for computing fair value. A discussion regarding the effects of credit and market risk on the fair value and carrying value of debt.	

IV. Auditor Assurance

An audit firm's engagement to audit a set of issuer financial statements is geared toward expressing its opinion on whether the financial statements taken as a whole are presented in all material respects in accordance with the applicable accounting framework, such as national accounting standards or IFRS. Correspondingly, the audit firm's engagement is not geared toward expressing its opinion on any individual element of the issuer's financial statements, such as the amount of its reported debt or equity.

In light of this overall objective, auditing standards generally call for the audit firm to plan and conduct its work on the various aspects of a company's financial statements (such as its outstanding debt and equity) in accordance with the risks that the item could result in a potential material misstatement of the company's financial statements taken as a whole. In this sense the standards do not distinguish between auditing the financial statements of issuers financed largely with debt versus those financed largely with equity. To illustrate, consider International Auditing Standards (ISAs). IOSCO understands that the ISAs that would generally apply and encompass the audit risks presented by either an issuer's outstanding debt or equity include:

- ISA 315, *Identifying and Assessing the Risks of Material Misstatement through Understanding the Entity and Its Environment*, and ISA 330, *The Auditor's Responses to Assessed Risks*, which deal with identifying and assessing risks of material misstatement and responding to those risks.
- ISA 500, *Audit Evidence*, which explains what constitutes audit evidence and deals with the auditor's responsibility to design and perform audit procedures to obtain sufficient appropriate audit evidence to be able to draw reasonable conclusions on which to base the auditor's opinion.
- ISA 505, *External Confirmations*, which deals with the auditor's use of external confirmation procedures to obtain audit evidence in accordance with the requirements of ISA 330, *The Auditor's Responses to Assessed Risks*, and ISA 500.
- ISA 520, *Analytical Procedures*, which deals with the auditor's use of analytical procedures as substantive procedures and also the auditor's responsibility to perform analytical procedures near the end of the audit that assist the auditor when forming an overall conclusion on the financial statements.
- ISA 540, *Auditing Accounting Estimates, Including Fair Value Accounting Estimates, and Related Disclosures*, which deals with the auditor's responsibilities relating to auditing accounting estimates, including accounting estimates related to financial instruments measured at fair value.

In addition, International Auditing Practice Note 1000, *Special Considerations in Auditing Financial Instruments*, provides advisory guidance regarding audits of financial instruments, which includes a company's debt financing.

The ISAs do not specify an auditor's responsibilities, if any, with respect to the information that is contained in an issuer's offering or listing document but placed outside of the audited financial statements, their associated footnotes, and the auditor's report thereon. There may be national laws and regulations that address these auditor responsibilities, if any. ISAs do, however, address the auditor's involvement with financial and non-financial information (other than financial statements and the auditor's report thereon) that is contained within the issuer's annual report. Specifically, International Auditing Standard 720 (Revised), *The Auditor's Responsibilities Relating to Other Information*, (ISA 720) requires the auditor to read the information that is outside of the issuer's financial statements and:

- Consider whether there is a material inconsistency between this information and the financial statements; and
- Consider whether there is a material inconsistency between this information and the auditor's knowledge obtained in the audit, in the context of audit evidence obtained and conclusions reached in the audit.⁹

As the basis for making these considerations, the auditor is required to compare selected amounts or other items in the information outside of the financial statements with such amounts or other items within the financial statements. The auditor is also required, while reading the information outside of the financial statements, to remain alert for indications that such information appears to be materially misstated based on the auditor's knowledge obtained through their audit procedures applied in auditing the financial statements. These provisions do not distinguish between situations in which the issuer is financed with debt versus with equity.

Madrid, Spain.
6 May 2015.

⁹ For additional information about ISA 720, see <http://www2.ifac.org/publications-resources/international-standard-auditing-isa-720-revised-auditor-s-responsibilities--0>.

Secretariats

11 September 2014

Summary: Joint CGFS – FSB-SCAV workshop on risks from currency mismatches and leverage on corporate balance sheets

Hong Kong Monetary Authority (HKMA); Hong Kong SAR; Friday 20 June 2014

Outline

On 20 June 2014, the CGFS and FSB-SCAV co-organised a workshop with public and private sector participants at the Hong Kong Monetary Authority to gather views on current trends affecting corporate balance sheets in emerging market economies (EMEs).¹ Its main aim was to help CGFS and SCAV members develop a common understanding of the analytical needs for the assessment of related vulnerabilities. Specifically, the objectives were to: (1) explore the channels through which corporate balance sheets can pose financial stability risks; (2) provide an initial assessment of current vulnerabilities (based on the available data, eg using country case studies or similar analyses); and (3) gather ideas for ways to address data gaps, including enhanced disclosures, stress tests and other data-gathering efforts.

The workshop was organised in three sessions, followed by a final discussion to summarise the key observations. The first two sessions featured case studies (supplied by Brazil, China, India, Mexico, Turkey as well as the IMF), focusing on experiences gained with monitoring corporate balance sheet risks in individual jurisdictions. The third session involved private sector participants from both the buy and sell side of the market (such as credit and rating agency analysts, corporate bankers, asset managers and accountants, mostly covering the Asian region), providing a broader perspective. The discussions during the various sessions are summarised below; the last section reports the key findings and possible follow-up options identified during the final workshop session.

Summary of discussion

Case study sessions

All six case studies highlighted that borrowing by non-financial EME corporates (NFCs) is on the rise, both domestically and from foreign sources. Issuers generally benefited from a deepening of domestic financial markets, while channels for foreign funding differed across jurisdictions. In some countries, such as Mexico, corporates increasingly resorted to direct issuance of foreign debt. In other jurisdictions, where corporates do not have direct access to external bond markets (either due to prohibitive costs or regulation), foreign borrowing of NFCs is

¹ The workshop was co-chaired by Eddie Yue (HKMA) and Ismail Momoniat (South African Treasury).

intermediated mostly by banks. This is, for instance, the case in Turkey. In yet other jurisdictions, such as Brazil, China and India, corporates often draw on foreign bond market funds through offshore subsidiaries and special purpose vehicles.

Assessing broad trends. The average level of NFC debt in major EMEs is estimated at about half of GDP, with significant variation across jurisdictions. While this compares favourably with the levels observed in many advanced economies, growth rates are high and many borrowers have recently accessed bond markets for the first time. Several workshop participants pointed to record issuance of new corporate debt in their jurisdictions and, in some cases such as Turkey, to sizeable shares of corporate liabilities denominated in foreign currencies. Participants generally agreed that the combination of low yields in international debt markets with strong demand from international investors was the main driver behind the recent rapid growth in corporate borrowing, particularly in terms of foreign currency debt. For Mexican corporates, for example, the cost advantage relative to issuing domestic debt is apparently significant even when currency swap spreads are taken into account.

There was general agreement that an assessment of current trends using aggregate, macroeconomic data would tend to understate risks. For example, credit-to-GDP ratios are not particularly elevated for most EMEs, ratios of short-term to long-term debt seem relatively stable, and country fundamentals are often healthy, suggesting that risks at the aggregate level are limited. Yet, aggregate data can often mask risks accumulating at the sectoral level and are subject to known biases (eg due to their reliance on the residency principle; see below), necessitating the use of more granular data in coming to an overall assessment.

Therefore, most case studies focused on risk assessments using firm-level data combining different risk metrics (eg debt to GDP, debt-to-EBITDA, share of foreign currency liabilities, debt maturity structure), often supplementing basic statistics with scenario analyses of interest rate and foreign exchange risks.

Leverage-related risks. Higher indebtedness can raise rollover risks, debt service burdens, and balance sheet sensitivity to interest rate changes. Even though the recent increase in borrowings has meant that upcoming maturities have significantly increased in select jurisdictions, representatives broadly judged rollover risks to be limited at the current juncture. In many cases, the maturity of corporate liabilities has been lengthening, and the share of long-term debt is growing faster relative to earnings than that of short-term debt. Still, some parts of the corporate sector continue to have shorter-dated liability profiles, which may expose them to risks once the current funding environment changes. Longer debt maturities, in turn, translate into higher duration risks for investors, which were mentioned as a potent amplification mechanism in case of shocks.

There was greater degree of disagreement concerning corporate debt service ratios and exposure to interest rate risk. While, despite fast debt growth, risk assessments within a number of individual jurisdictions pointed at stable debt service ratios, one case study cited evidence that the debt service ratios of many EMEs have been deteriorating, judging by the rising net debt-to-EBITDA ratios. Similarly, while several representatives judged interest rate risk facing corporates in their jurisdictions as limited (referring, eg, to fixed rate coupons for the majority of outstanding foreign bonds), cross-country comparisons suggest that net interest

rate expenses have broadly gone up, despite the current low interest rate environment (Graph 1, left-hand and centre panels).

In general, the risks associated with corporate leverage were judged to be greater when the assessment relied on firm-level data, taking the distribution of losses and, hence, sectoral differences or other relevant dimensions into account. This is in line with broader evidence, suggesting that leverage may be concentrated in particular sectors (eg the more cyclical ones) and in the weaker part of the corporate spectrum (Graph 1, right-hand panel). Such concentrations can be an issue particularly in those sectors where corporate profitability may have peaked or which have been experiencing a sustained run-up in prices (eg real estate).

Leverage, interest rate expenses and distribution of debt at risk

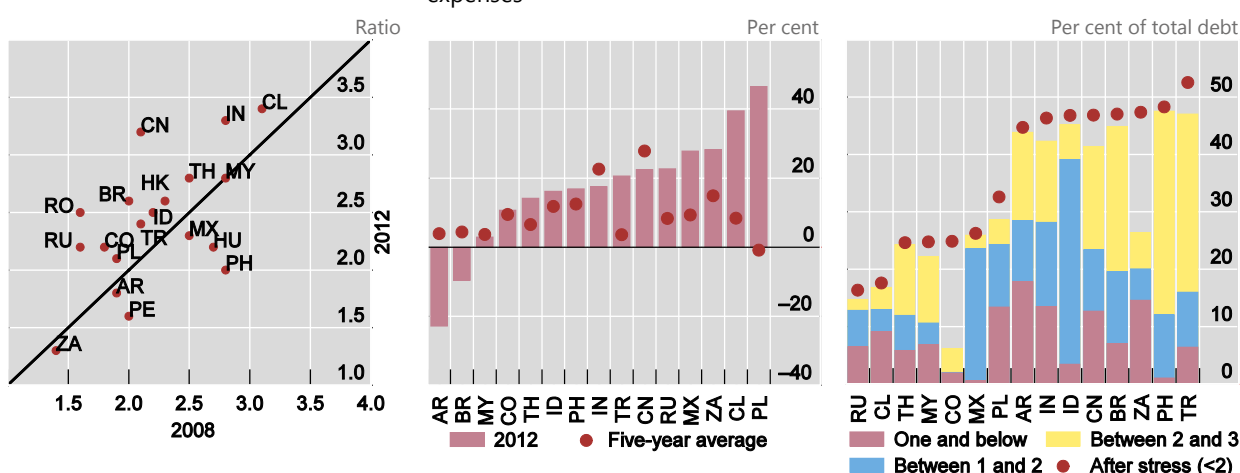
Cross-country comparison

Graph 1

Net debt-to-EBITDA ratio

Growth rates (yoy) of interest expenses

Distribution of debt-at-risk by ICR¹



¹ As a share of total debt; ICR = interest coverage ratio. The red dots indicate (as a share of total debt) the debt held by firms with ICR < 2 if interest service costs were to rise by 25%.

Source: IMF.

Currency mismatches. Workshop participants were less concerned about exchange rate risk, at least when taken in isolation. The development of local currency bond markets, particularly in Asia, reduces the need for foreign currency borrowing for many companies. Furthermore, while both domestically and internationally financed leverage seem to have risen (Graph 2, left-hand panel), in many jurisdictions foreign currency borrowing appears to be done in large part by firms from sectors with natural hedges (see, eg, Graph 2 centre and right-hand panels). In some cases, these appear to be supplemented with financial hedges, even though firm-level data on the use of these hedges are scarce (see below).

Some of the relatively benign country views on foreign exchange risks were corroborated by scenario analyses based on firm-level data. For example, using balance sheet information for listed companies, several countries reported analyses of projected losses (as a percentage of EBITDA or total equity) due to a given large-scale currency depreciation under alternative assumptions about natural and financial hedging ratios. A key result from these analyses is that the shocks needed

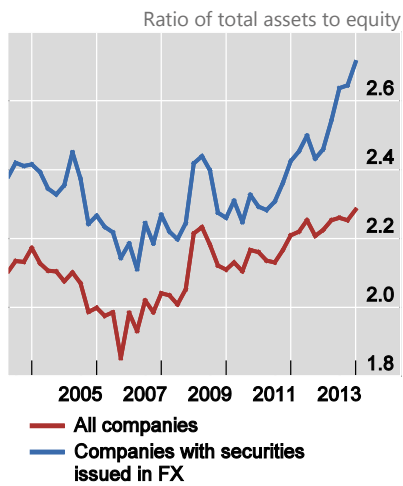
to generate significant projected losses appear to be relatively large.² Still, the impact of correlated shocks, such as the joint effect of interest rate changes and, exchange rate volatility, coupled with disruptions in bond market access, are more difficult to analyse, which may bias the results.

Overall, subject to data availability issues, country authorities typically found truly unhedged corporates to be a small part of their corporate universe (ie in terms of total corporate debt). Even so, they noted signs that unhedged borrowing is clustered in particular sectors, which may raise concentration concerns.³

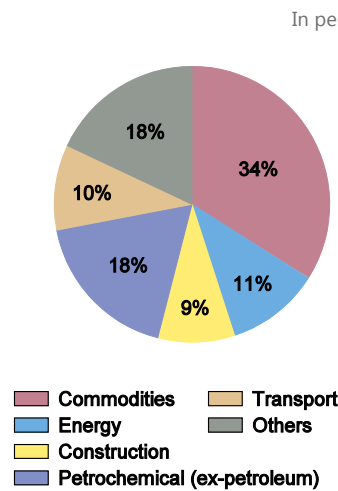
Leverage of corporates active in international capital markets and distribution of borrowers by sector in selected economies

Graph 2

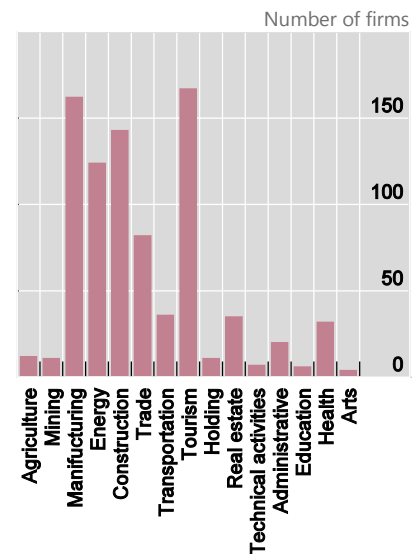
Leverage of publicly listed firms in Mexico



Sectoral distribution of unhedged FX debt in Brazil



Sectoral composition of high-risk firms in Turkey¹



¹ Firms that are categorised as having relatively low exports/high FX liabilities; size of FX revenues will differ according to sectors.

Source: Central Bank of Mexico; Central bank of Brazil; Central Bank of Turkey.

Sectoral interactions. Interactions between the corporate and other sectors of the economy received relatively little coverage during the discussions, in part because related risks are very difficult to analyse with the available data. Participants noted, however, that the degree of bank involvement in both domestic and external financing of EME NFCs remained large across jurisdictions. Domestic as well as foreign banks and their subsidiaries also remain key counterparties to EME corporates in derivatives markets, with some local banks depending on corporate deposits for part of their funding. Standard metrics suggest that EME banks tend to have relatively good loss-absorbing buffers, which may explain why workshop participants assessed the risks for their respective banking sectors to be rather contained. There was agreement, however, that weaker borrowers tend to interact with weaker banks, pointing to potential vulnerabilities at individual institutions.

² For example, a scenario analysis of Indonesian corporates estimated that only nine out of 85 assessed firms would face solvency issues if the rupiah was to depreciate by 41%.

³ In response, jurisdictions, such as India, have tightened their regulatory requirements on bank lending to unhedged corporate borrowers.

Finally, it was acknowledged that bond market financing has grown in size across EMEs, raising the importance of asset managers and other institutional investors in the transmission of shocks as well as related spillover risks.

Data availability. Workshop participants agreed that granular data on financial statements for listed corporates were generally available from a variety of commercial sources as well as public disclosures. Data gaps, therefore, affect predominantly unlisted firms, even though inconsistencies across data sources and a lack of standardisation in public disclosures can complicate analysis even for listed firms. Several participants pointed out that, although listed companies represent only a fraction of the firms in their jurisdictions, their share in cross-border business and foreign funding markets tends to be large.⁴ Yet, this does not exclude the possibility that the listed universe may represent only a very small share of estimated total domestic and international debt in some country cases.

In addition to public sources, some jurisdictions were able to obtain granular balance sheet information on NFCs from their own reporting systems (eg through the supervisory reporting of their banks), including for part of the unlisted sector. For example, the Central Bank of Turkey presented results based on corporate balance sheet data for more than 9,400 firms. However, some workshop participants noted that collection of NFC data can raise serious legal issues for central banks, as it may be outside their existing data-gathering mandates. Several participants also indicated that in their jurisdictions central banks would face restrictions on the scope of data collection as well as confidentiality issues; therefore, some form of collaboration with national statistical authorities or other agencies would be necessary to gather more granular data in practice.

Data availability is more problematic in the area of derivatives-related information, as public disclosures on hedging practices and the use of derivatives are not standardised, and therefore cannot be turned into quantifiable metrics for financial stability assessment purposes. Even so, individual jurisdictions have managed to generate useful information at the aggregate (ie via surveys) or micro levels (ie from derivatives exchanges). For example, the Reserve Bank of Australia (RBA) collaborates with the national statistical authorities to augment their quarterly balance of payments data collection (every four years) with quantitative questions on the foreign currency exposures and derivatives positions of financial and non-financial institutions. Based on the survey results, the RBA is able to monitor the aggregate currency composition of the country's external position and banks' hedging of foreign currency debt liabilities. However, several shortcomings of this approach were also discussed. These include a lack of consolidated information, because the data are collected on a residency basis, and restrictions on the use of the granular, firm-level survey responses (for confidentiality reasons).

Examples of jurisdictions with access to micro-level data through derivatives exchanges or dealer networks include Brazil and South Africa.⁵ In Brazil, two clearing houses handle derivatives transactions and provide derivatives registry services,

⁴ For example, while publicly listed firms in Turkey represented only about 3% of the number of firms for which the central bank has granular data, they accounted for about half of all assets and export volume. Similarly, listed firms in Mexico reportedly accounted for approximately 90% of international bond issuance by Mexican non-financials during the 2009–13 period.

⁵ Some jurisdictions also pointed out that data which used to be gathered for capital control purposes could also be useful to monitor corporate balance sheets; hence it may be worthwhile to keep such data collections in place even after the controls have been relaxed or dismantled.

which allow banks to collect information on the derivatives exposures of their clients. One shortcoming of the Brazilian registry is that data on offshore derivatives activity (ie derivatives with non-resident banks) are not or, at best, are only partially covered.

Overall, it was apparent that information from a variety sources can typically be combined to allow for basic sensitivity analyses, including those of interest or exchange rate shocks. Yet, participants also pointed to consistency issues across data sources, highlighting that data validation can be a challenge. In addition, a recurring theme was that aggregate data often suffer from residency bias in that they fail to capture the activities of offshore vehicles and subsidiaries.

Roundtable discussion

The views of market practitioners during the roundtable discussion broadly supported those from the country case studies. Overall, participants agreed that EME corporate leverage was growing to varying degrees across jurisdictions in Asia (just as in other regions). There was also agreement that borrowing had taken place predominantly in domestic currencies. Thus, interest rate and rollover risks were seen as the more relevant issues for EME corporates, with currency mismatch regarded as a lesser concern. In terms of outstanding currency exposures, while market practitioners acknowledged that shallow hedging markets tend to make financial hedges less attractive (as they will tend to eat up any foreign currency funding advantage), they also suggested that issuers typically have natural hedges in place, which would seem to mitigate any foreign exchange risk.

As already highlighted during the earlier sessions, market practitioners also acknowledged the importance of sectoral differences and the existence of “pockets of risk”, such as in property-related sectors and with regard to the use of derivatives. Overall, therefore, they felt that growing leverage as well as maturity and currency mismatches may cause EME corporates to be increasingly vulnerable to sharp (and correlated) adjustments in interest rates and exchange rates. The exact size and repercussions of these effects, however, remained hard to assess.

In terms of data availability, private sector participants underscored the lack of granular data, particularly for unlisted firms, and how this affects their ability to assess the full array of firms’ currency risks (unless a direct client relationship is in place). They also highlighted that national balance of payments data do not typically enable the identification of debt raised offshore, and that such offshore borrowing is important in jurisdictions such as Brazil, China, Russia, and Turkey.⁶

Corporate leverage. Market practitioners highlighted the significant growth in Asian corporate debt since the global financial crisis, spurred by very low interest rates and generally positive, though moderating, economic growth. While local currency debt markets have deepened in Asia, dollar-denominated borrowing has also increased, reflecting lower funding costs than in local markets and, in some jurisdictions, an expectation of currency appreciation on the part of corporate issuers (see below).

In terms of overall leverage trends, analysts noted that EME corporate leverage was on the rise in terms of a variety of balance sheet and income statement metrics

⁶ In addition, in making sectoral assessments, debt issued by SPVs and similar entities may have to be reclassified according to the sector of the ultimate issuer to avoid the associated leverage risk to be allocated to the non-bank financial sector.

(eg debt-to-assets, debt-to-equity, debt-to-earnings, and interest coverage ratios) as well as in broad economic terms (debt-to-GDP). However, in most jurisdictions, corporate leverage metrics remain below those of advanced economies, even though there are signs of weakness at the sectoral level (eg in Brazil, China, India and Indonesia). For example, the growing leverage of part of the Chinese corporate sector, in particular property developers, was mentioned by several workshop participants. It was noted that the lack of foreign currency revenues and the absence of hedging may leave such agents with large currency mismatches, while short maturities and less reliable sources of funding (eg via the shadow banking sector) may increase their vulnerability to rollover risks. Such risks would be highest for unlisted and unrated property developers that provide little financial information, do not have sophisticated risk management and suffer from concentration risk on property markets of third- or fourth-tier cities. (Yet, private sector participants also highlighted that they perceived high levels of foreign exchange reserves as an ultimate backstop for corporate sector risks at the aggregate level).

Instrument choice, in turn, has become more selective, amid signs that deal structures may be getting riskier. Hybrid equity/debt products (such as perpetuals), for example, are used to more actively manage leverage metrics, which may conceal the true extent of leverage in some sectors. At the same time, weaker loan covenants appear to be proliferating at a time when the sheer volume of issuance may be starting to stretch the due diligence capabilities of even the larger institutional investors. In this context, analysts highlighted the emergence of structures utilising “keep-well agreements” from the parent company to reassure holders of the structurally subordinated debt issued by offshore subsidiaries; such commitments remain essentially untested, as bankruptcy cases are rare. In addition, there was mention of guarantees or stand-by letters of credit provided by domestic banks to facilitate offshore borrowing through subsidiaries or special purpose vehicles.

Currency mismatches and hedging. Private sector participants generally suggested that they were less concerned over currency mismatches relative to leverage, while acknowledging that, at the firm level, they often had only limited information on actual currency exposures, terms of hedging, and counterparties. Still, overall, the more active foreign currency borrowers appeared to come from sectors generating foreign currency revenues (providing natural hedges), such as exporters and commodities firms. An exception is property-related sectors, where revenues are typically in local currency.

However, workshop participants also noted that shallow hedging markets and associated hedging costs as well as complicated hedge accounting rules can reduce corporates’ inclination to hedge. They also highlighted the role of currency regimes in setting borrowing incentives and noted that capital controls can raise the attractiveness of unhedged foreign currency funding (including for speculative purposes) for those corporates that are able to issue internationally (eg through offshore vehicles). In this context, recent cases of over-invoicing in Chinese trade finance markets were seen as evidence for speculative, carry trade-type corporate activities. There was also some disagreement over how far Asian corporates are

using the more exotic, structured hedging instruments (such as KIKO products),⁷ which have led to financial stability concerns in the past.

Data challenges. Market participants highlighted two key challenges with regard to data availability. The primary data gap arises from the significant lack of information on leverage and currency hedging of unlisted corporates. A second data challenge is the qualitative nature and inconsistency of public company disclosures of currency risks and hedging. While commercially available information was the primary source used to assess such risks, data on the nature and comprehensiveness of actual hedges were lacking. In Asia, for example, hedge accounting as such is not yet commonly adopted because corporates reportedly find the relevant rules complex and difficult to apply. However, the expected issuance of the new accounting standards on financial instruments by the end of 2014 should make it easier to apply hedge accounting and hence may help promote a wider adoption of hedge accounting and related disclosures in the region. More broadly, for the majority of corporates that have not adopted IFRS, hedging disclosure is generally weak. Any enhanced reporting, therefore, would need to include more detail on types and maturities of derivatives, counterparties, and the extent to which hedging aims to mitigate currency (and interest rate) risks.

Key messages

The key messages from the workshop can be summarised as follows:

Current assessment

- **Rising leverage.** Participants generally agreed that EME corporate leverage was on the rise, both through bank borrowing and debt issuance. Based on the available data, leverage (and associated interest rate and rollover risks) were assessed to be a more important issue than currency mismatches. Overall, EME authorities seemed to be largely aware of the relevant risks and had stepped up their monitoring activities, albeit to varying degrees in different countries.
- **Pockets of risk.** While the overall assessment was relatively benign, participants also acknowledged that this view may change if present trends toward increased leverage were to continue. They also noted that aggregate data can understate risks in particular sectors or at individual corporates. For example, firm-level data showed that, in some jurisdictions, growth in foreign currency borrowing has been concentrated among riskier firms and sectors, including property developers in countries such as China. Such “pockets of risk” put a premium on more granular analysis, but detailed data (eg from income statements) are often unavailable, particularly for non-listed firms.
- **Amplification effects.** In addition, while the recent increase in the maturity of corporate external liabilities was seen as a mitigant for rollover risks, there was less discussion concerning the flip-side implications for duration risk and the associated amplification effects from the behaviour of buy side investors. In this context, the recent shift in the composition of external funding from banks to

⁷ “Knock-in-knock-out” (KIKO) contracts use option features to insure their users against modest exchange rate movements, while exposing them to potentially large losses if the local currency depreciates sharply – a feature that reduces hedging expenses at the cost of retaining the tail risk of stronger currency depreciations.

bond market sources may have shifted duration risk to institutional investors, which may result in greater bond market volatility and amplify market reactions to any disruptions.

Data availability and gaps

- **Data availability.** There was agreement that granular data on corporate financial statements are available from a variety of sources, including commercial vendors. In addition, in some jurisdictions, balance sheet data can be obtained from countries' own reporting systems (eg banks' supervisory reporting), at least for listed firms. Combined with information from other sources, such information allows for basic sensitivity analysis, including that of interest or exchange rate shocks. Consistency across data sources, however, remains an issue, implying that data validation can be a challenge and that simplifying assumptions may be needed to cover for missing information.
- **Derivatives positions.** Data gaps were identified mainly in two areas. The first is corporate hedging activities and other derivatives-related positions. Three different approaches were suggested to improve data availability. The first would be enhanced disclosures of financial hedges via improved accounting standards (eg providing detailed currency and maturity information on financial hedges and their underlying positions, including those not qualifying for hedge accounting). The second approach would follow the Australian example and collect information on corporate hedges in the context of existing BOP data surveys, leveraging the existing statistical infrastructure and legal reporting requirements in this area (possibly based on a common template across countries). The third response, in turn, would follow the Brazilian example and seek to obtain information on outstanding derivatives positions directly from trade repositories and central counterparties (possibly also on a cross-border basis to capture off-shore derivative activities).⁸
- **Non-listed firms.** The second data gap is financial statements for non-listed companies. While some countries do have information on non-listed firms and standard databases tend to cover the sector at least to some extent (ie those companies that issue debt in public markets even though they are not listed on the stock market), coverage is much less complete than for larger, listed companies. Workshop participants proposed a variety of measures that could be taken to alleviate this problem. One is country-level surveys of consolidated corporate balance sheet positions, focusing specifically on the sectoral, currency and maturity breakdowns of external debt.⁹ In addition, given that unlisted firms are more likely than their listed peers to depend on bank financing, information obtained through banks (eg through supervisory channels) may be a viable way forward for some jurisdictions.

⁸ International workstreams exist in all three of these areas, suggesting that any follow-up work could possibly be addressed via BOPCOM (BOP surveys), standard setters such as IOSCO (enhanced disclosures), and the FSB AFSG initiative (options for aggregating trade repository data).

⁹ Such surveys would be implemented at the national level, but could benefit from international coordination (eg via the G20 data gaps initiative) to improve the consistency and comparability of the reporting templates.

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Risks related to EME corporate balance sheets: the role of leverage and currency mismatch¹

Corporates in many EMEs have taken advantage of unusually easy global financial conditions to ramp up their overseas borrowing and leverage. This could expose them to increased interest rate and currency risks unless these positions are adequately hedged. The key question is whether EME corporate balance sheets have become more susceptible to shocks. Greater corporate exposures could, in turn, spill over into vulnerabilities for both local banks and the financial system more broadly. Shocks to interest or exchange rates could generate damaging feedback loops if credit risk concerns were to prevent existing bank or bond market funding from being rolled over.

JEL classification: D21, F31, G32.

Very low yields in advanced countries post-crisis have triggered huge investment flows into emerging market economies (EMEs), thanks to their brighter growth prospects. While these capital inflows have brought economic benefits, they could make EMEs more vulnerable to external shocks if unchecked surges in credit and asset prices were to raise the spectre of renewed boom-bust cycles (BIS (2014), Chapter IV). Events in May 2013 and early 2014, for example, suggest that large cross-border capital movements could cause considerable volatility in EME asset prices and exchange rates, with implications for growth and financial stability (see eg Avdjiev and Takáts (2014)).

In this environment, the financial exposures of EME non-financial corporations, in particular, could have wider implications. Debt issuance in foreign currencies exposes these borrowers to rollover and foreign currency risks. If such risks materialise, the creditworthiness of some corporations could worsen, pushing up bond yields. Higher financing costs and tighter funding conditions for firms could then become a drag on economic growth. Higher bond yields would also inflict losses on holders of EME corporate debt, which include local banks and other investors, such as global asset managers. Balance sheet pressure on corporations could also subject banks and other intermediaries to funding stresses, as firms are forced to withdraw their deposits. All in all, such developments could generate

¹ The views expressed in this article are those of the authors and do not necessarily reflect those of the BIS or the CGFS. We are grateful to Claudio Borio, Dietrich Domanski, Mathias Drehmann, Masazumi Hattori, Ulf Lewrick, Hyun Song Shin, Philip Turner, Christian Upper and the participants of the Joint CGFS – FSB-SCAV workshop in Hong Kong SAR on risks from currency mismatches and leverage on corporate balance sheets for useful comments and discussions, and we thank Branimir Grujić, Mario Morelli and Jhuvesh Sobrun for their expert research assistance.

powerful feedback loops in response to exchange rate shocks if credit risk concerns mean that existing bank or bond market funding is not rolled over.

Against this background, this article examines the risks related to EME corporate balance sheets and their possible implications for the broader financial system. To set the scene, the first section below reviews recent patterns in corporate non-financial sector borrowing and the rising importance of cross-border financing flows for EME corporates. On this basis, the second section then asks whether corporate balance sheets have become more vulnerable. The third section discusses the possible financial stability implications, followed by a short conclusion.

Recent patterns in corporate non-financial sector borrowing

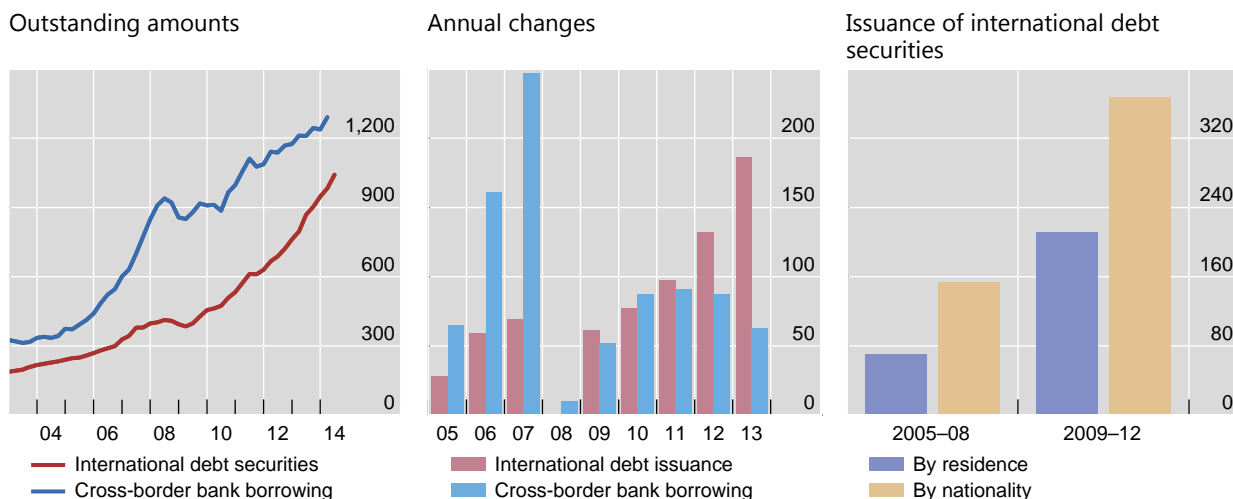
In recent years, EME non-financial corporations have seen growing incentives and opportunities to increase leverage, by borrowing in both foreign and domestic currencies. The drivers include low interest rates and compressed term premia, broad appreciation trends underpinning key emerging market currencies post-crisis, and better access for EME borrowers to international markets.²

Developments in cross-border credit are particularly noteworthy. Although bank claims still account for the largest share of outstanding cross-border credit for

EME private cross-border bank borrowing and international debt issuance¹

In billions of US dollars

Graph 1



¹ Private non-bank sector. Cross-border bank borrowing (by residence) also includes claims on the household sector and claims on portfolio debt investment (implying a degree of double-counting), while international debt issuance (by nationality) includes securities issued by non-bank financials and non-financial corporations; and these securities could be denominated in local or foreign currency.

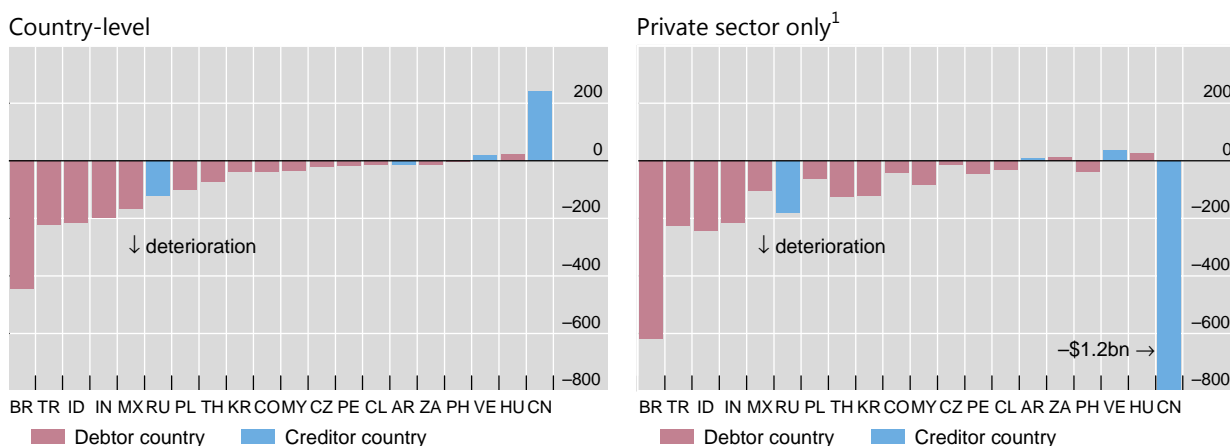
Source: BIS consolidated banking statistics and international debt securities statistics.

² In this article, unless otherwise stated, the term “EME” is to be read as referring to the following 21 major emerging market economies: Argentina, Brazil, Chile, China, Chinese Taipei, Colombia, the Czech Republic, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, Russia, Turkey, South Africa, Thailand and Venezuela. Note that Hong Kong SAR and Singapore are excluded from this group of EMEs, as many corporates headquartered in developed and other emerging countries have raised funds there, which could blur the analysis of debt issuance by residence and nationality in our study.

Changes in net international investment positions

Between end-2008 and end-2012, in billions of US dollars

Graph 2



AR = Argentina; BR = Brazil; CL = Chile; CN = China; CO = Colombia; CZ = Czech Republic; HU = Hungary; ID = Indonesia; IN = India; KR = Korea; MX = Mexico; MY = Malaysia; PE = Peru; PH = Philippines; PL = Poland; RU = Russia; TH = Thailand; TR = Turkey; VE = Venezuela; ZA = South Africa.

¹ Derived by excluding all official sector (government and central bank) components from the total net international investment position.

Source: IMF, Balance of Payments Statistics.

the private non-bank sector (Graph 1, left-hand panel), a key feature of the past few years has been the strong growth of international debt issuance by non-financial sector corporates (Graph 1, centre panel). This stands in contrast to the pre-crisis period (see eg Shin (2013)).

In aggregate, a significant part of the international debt of these EME corporates is issued through their overseas subsidiaries (Graph 1, right-hand panel). Issuance data based on issuer nationality (including issuance by the overseas subsidiaries of the corporations headquartered in a given country) indicate that private sector borrowers (other than banks) in major EMEs issued international debt securities worth almost \$375 billion in 2009–12, more than double their issuance in the four-year period prior to the crisis.³ Issuance in 2013 was also strong, even though there were signs late in the year that global bank claims were recovering too.

The scale and overall importance of recent developments in EME corporate and wider private sector financing are also apparent from broader indicators of external financing, such as international investment positions (IIPs). Many EMEs have seen their net external positions shift considerably since 2008 (Graph 2, left-hand panel). Comparison of the private sector contributions (Graph 2 right-hand panel) with country-level IIP changes reveals that the observed decline in net IIP balances was primarily driven by rising private sector liabilities (including those of corporates), whereas official sector balances have been stable or rising. Note, however, that IIP

³ The issuer by nationality concept is similar to the consolidated claims concept in the BIS international banking statistics. It is especially important in the case of EMEs such as Brazil and China where local corporates have increased their issuance of international debt via overseas subsidiaries – including non-bank financing vehicles. By contrast, the issuer by residence concept does not include issuance by these overseas subsidiaries, but it does include international debt issues by other nations' subsidiaries residing in the respective country.

data are derived from residence-based statistics and usually do not include the gross positions of overseas subsidiaries; nor do they cover domestic positions.⁴

Potential risks to the corporate sector

A key question is whether these developments have made EME corporates more vulnerable – for example, to the combined effects of a slowdown in the domestic economy, currency depreciation and rising interest rates globally. Such risks are accentuated when leverage starts to loom too large relative to borrowers' debt servicing capacity or when foreign currency assets or revenues are insufficient to match large foreign currency liabilities. Rising interest rates and depreciating exchange rates will tend to raise the cost of servicing these debts, denting profits or depleting capital cushions, unless appropriate hedges are in place.

Unfortunately, data limitations mean that such vulnerabilities are notoriously hard to assess, especially in a cross-country context. For many EMEs, the lack of financial accounts data at the national level means that internationally comparable measures of corporate sector leverage are difficult to obtain. In what follows, selected metrics are used to provide at least a partial picture.

Corporate leverage

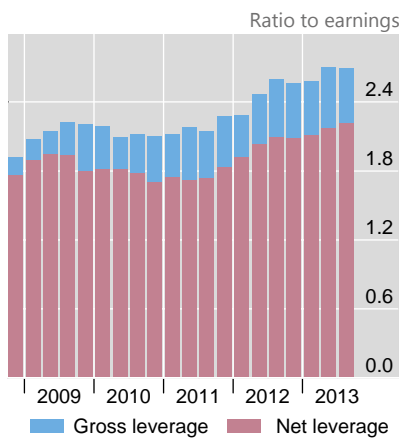
Various measures point to rising leverage on corporate balance sheets. One such indicator is the debt/earnings ratio as disclosed by individual firms. A recent study, based on a sample of non-financial corporations from seven large EMEs, suggests a more or less steady increase in corporate leverage over the last few years (Graph 3, left-hand panel).⁵ Country-level data (based on residence) on corporate debt-to-GDP ratios appear to confirm this trend, while providing a perspective on broad leverage levels across jurisdictions. According to this metric, corporate indebtedness now hovers at around 100% of GDP for some EMEs (Graph 3, centre panel). Yet, despite recent trend growth, levels vary considerably between countries and remain modest by international standards.

Borrowing patterns have differed across countries in recent years. While developments in some economies (eg for corporates in Latin America) appear to reflect a more general shift from primarily domestic to more internationally diversified funding sources (Powell (2014)), in others domestic debt rose in tandem with external borrowing. For example, Chinese corporates (especially property developers) now appear to be quite highly leveraged, at least in comparison with their EME peers, and may find it challenging to manage these debt levels in an environment of slowing growth and tightening profit margins (Bank of America Merrill Lynch (2014)).

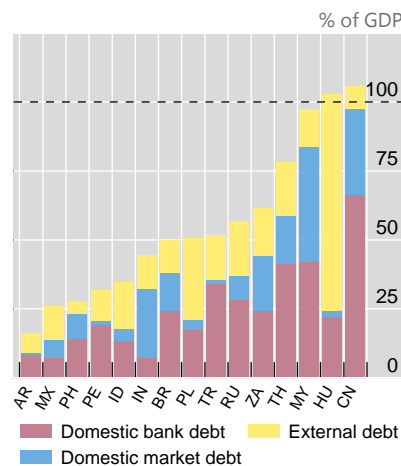
⁴ Over the past few decades, many Chinese companies have opted for a listing in overseas stock markets (Hong Kong SAR in particular) to raise capital and hone their corporate governance. As of end-June 2014, nearly 300 Chinese-owned or affiliated companies were listed on the main board of the Hong Kong stock exchange with an aggregate market capitalisation of \$660 billion.

⁵ See Bank of America Merrill Lynch (2014). BIS (2014), Chapter VI, provides additional information based on capitalisation ratios.

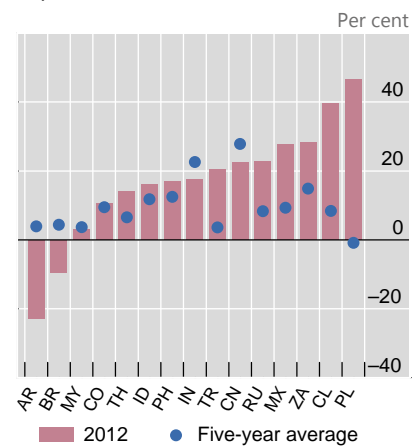
Leverage ratio of EME corporations¹



Corporate sector debt in 2013²



Annual growth rates of interest expenses



AR = Argentina; BR = Brazil; CL = Chile; CN = China; CO = Colombia; HU = Hungary; ID = Indonesia; IN = India; MX = Mexico; MY = Malaysia; PE = Peru; PH = Philippines; PL = Poland; RU = Russia; TH = Thailand; TR = Turkey; ZA = South Africa.

¹ Firm-level data from S&P Capital IQ for 900 companies in seven EMEs; simple average across countries; gross leverage = total debt/earnings; net leverage = (total debt – cash)/earnings. ² External debt includes liabilities from affiliates, direct investments and other sources.

Sources: IMF, *Global Financial Stability Report*, April 2014; Morgan Stanley; BIS calculations.

Debt/earnings ratios can also reveal how rising leverage may be affecting the capacity of firms to service their debts. A recent analysis based on firm-level data finds that corporate debt grew faster than earnings in one third of the sample economies between 2008 and 2012.⁶ For Brazil, China and India, the average firm required 2.5 to three years of current annual gross earnings to repay its debt in 2012, compared with two to 2.8 years in 2008. In many cases, the deterioration in debt servicing capacity reflects a combination of rising debt loads and slowing earnings growth. Furthermore, despite broadly stable and low interest rates over the past five years, many EMEs have encountered a sharp increase in interest expenses because of the larger debt loads (Graph 3, right-hand panel).

Asset composition

The nature or quality of assets acquired using the newly borrowed funds may either strengthen or weaken a firm’s resilience against external shocks. Evidence on the use of newly raised corporate funds is mixed. On the one hand, there are signs that capital expenditure (capex) has been on the rise. Analyst estimates suggest that the average capex of EME corporates (which includes funds used to upgrade production capacity and acquire physical assets) has increased by almost one third over the past few years, based on a sample of 120 EME corporate issuers.⁷ In this context, the stronger earnings prospects associated with capital spending would tend to offset at least part of the risks associated with rising leverage.

⁶ See IMF (2014), which compares median corporate debt loads with earnings across 18 EMEs to gauge the corporate sector’s debt servicing capacity.

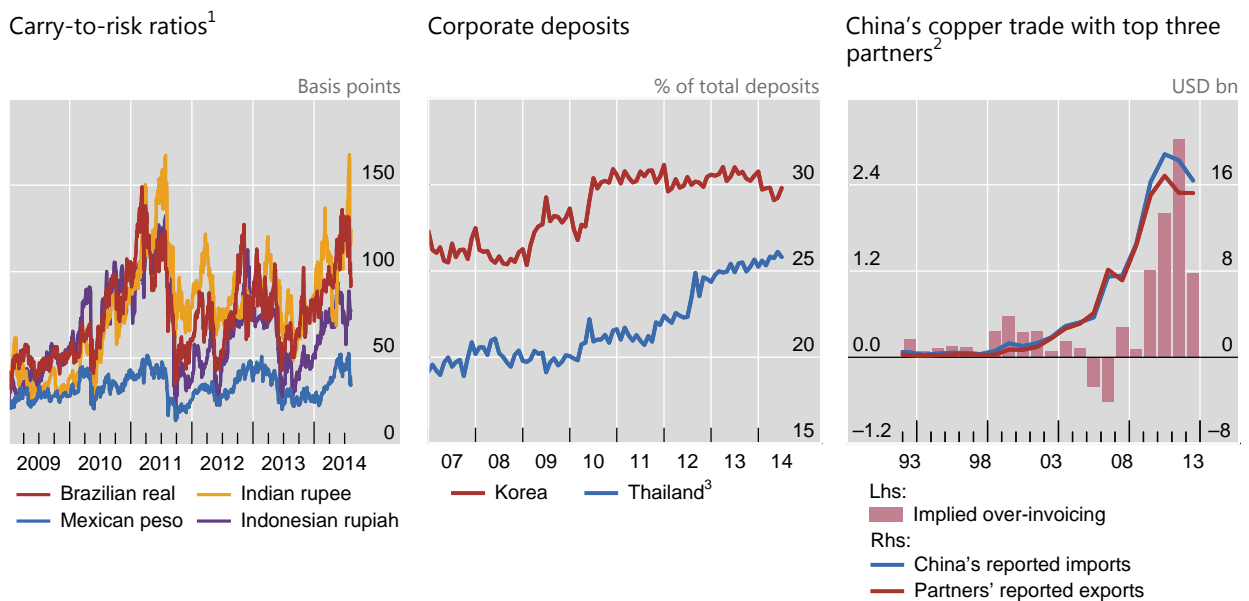
⁷ See Bank of America Merrill Lynch (2014).

On the other hand, due to low volatilities, Sharpe ratio-type risk-adjusted return metrics (eg interest rate differentials adjusted for exchange rate volatility) suggest that carry trade incentives are also strong (Graph 4, left-hand panel), which may have tempted some corporate treasurers into more speculative activities.

One indicator of such activities may be corporate cash holdings, as measured by the difference between gross and net leverage ratios, which have increased markedly since 2009 (Graph 3, left-hand panel). Similarly, corporate bank deposits have grown in a number of banking systems during this period (Graph 4, centre panel). The fact that the trend has not abated more recently suggests that post-crisis caution may not be the only reason why firms have increased their cash holdings. This is in line with reports that corporates in some jurisdictions were seeking to take advantage of international interest rate differentials by borrowing overseas and depositing the proceeds in local banks, subscribing to money market mutual funds or purchasing high-yielding wealth management products.⁸ In Korea, for example, deposits by private non-financial companies in trust companies and their shares in investment funds rose by a respective 36% and 45% in the two years to end-2013. In China, reports of over-invoicing by Chinese importers have emerged, especially for metals and other high value-to-density articles (Graph 4, right-hand panel). The low-cost funds raised through trade financing for these imported articles are reportedly being used for both business investment and

Carry trade incentives, corporate deposits and over-invoicing

Graph 4



¹ One-month interest rate differentials, adjusted for implied volatility of the respective currency pairs; base currency: US dollar.

² Bilateral trade of copper and articles thereof (international code: HS74) between China and the world's top three copper producers: Australia, Chile and the United States; over-invoicing is defined as the difference between imports and corresponding bilateral exports. ³ For corporate deposits, business deposits.

Sources: IMF, *Balance of Payments Statistics*; UN Comtrade database; Bank of America Merrill Lynch; Bloomberg; JPMorgan Chase; BIS calculations.

⁸ According to official data, the total balance of banks' wealth management products in China rose from CNY 2.3 trillion in late 2009 to almost CNY 10 trillion in late 2013; see *Financial Times* (2014).

speculation.⁹ Yet the overall scale of these activities is difficult to judge, and even normal treasury operations could well lead to a substantial rise in local currency deposits at the local banks (eg due to time-to-build and similar constraints).

Increased bond market financing

A related issue concerns the composition of funding sources and, in particular, the rising share of bond market financing. As highlighted above, strong investor interest has underpinned EME corporate bond markets in recent years. If investors were to suffer a significant loss of appetite, issuing firms might face difficulty in rolling over their outstanding debts, particularly if shifts in risk appetite coincide with a fall-off in projected earnings.

Many of the recent EME corporate borrowers have gained access to the debt markets, both domestic and international, for the first time. The willingness of investors to let these issuers roll over their debt in adverse circumstances is thus untested. BIS international debt securities data, which exclude domestic as well as short-term issuance, suggest that the rollover needs of corporates from major EMEs and their overseas subsidiaries will rise from around \$90 billion in 2015 to a peak of \$130 billion in 2017–18 (Gruić et al (2014)).¹⁰ Note that these figures may underestimate the risk of a sudden retreat by global investors, who may also hold the domestic debt of EME corporates. For some corporations, rising debt repayments will be particularly taxing in an environment of US dollar strengthening (see below) and slowing domestic activity. Also, while domestic banks continue to be the dominant source of funding for EME corporates, their ability and willingness to help refinance market debt may be limited, particularly if risk appetite is on the wane.

Currency mismatch

Given the elevated levels of foreign currency borrowing, currency mismatches represent another possible source of vulnerability. Recent developments in Ukraine are a reminder of how abruptly debt sustainability metrics can deteriorate when (in this case, geopolitical) risks undercut the exchange rate, thus inflating the local currency value of foreign currency liabilities. This raises the question of how far the foreign exchange risks of rising foreign currency liabilities at EME corporates are either financially hedged or naturally matched by foreign currency asset returns and revenues.¹¹

⁹ For example, the World Gold Council (2014) estimates that, by the end of 2013, “surplus” gold linked to financial operations in the Chinese shadow banking system could have reached a nominal value of nearly \$40 billion. See also Goldman Sachs (2013) for a detailed exposition of the mechanics involved in the copper “carry trade”.

¹⁰ International issuance, which is dominated by US dollar-denominated debt, makes up about one fifth of total debt issuance, with domestic debt accounting for the remainder. Domestic debt will add to interest rate and rollover risks, but does not usually incur a currency mismatch risk (as covered in more detail below).

¹¹ Data on country-level foreign currency exposures and on how far they are hedged are generally unavailable. Australia is an exception in that the Australian Bureau of Statistics conducts a Foreign Currency Exposure Survey to gauge the country’s net foreign asset position (ie after taking into account the hedging of foreign currency exposures using financial derivatives) (see Rush et

In the absence of more specific information on natural hedges, issuer sectors may serve as an important proxy indicator. Commodity producers and manufactures exporters, for example, earn much of their revenues in foreign currencies and are thus likely to weather the rising debt service costs associated with currency depreciation better than would issuers with mostly domestic incomes (eg domestic telecoms, construction companies and utilities).

On this basis, a cursory examination of firm-level issuance data suggests that non-financial borrowers from countries such as Brazil, Mexico, Russia and South Africa would be more likely to have at least partially matching foreign currency assets and liabilities, given the predominance of commodities producers and exporters among the largest issuers. In contrast, assets and liabilities are less likely to be matched at property developers in China or energy and utilities firms in India, which have been among the more active international debt issuers in recent years, pointing to possible “pockets of risk” in these sectors.

Companies can also manage their foreign currency exposures via derivatives. Again, reliable data on corporate hedging activities are generally scarce, while incentives to take open interest rate and foreign currency hedging positions have been relatively strong recently. One issue is hedging cost and, hence, the depth of the relevant hedging market. This might suggest that corporates from countries such as Brazil, Korea or Mexico (which are known to have access to liquid domestic or offshore markets that support financial hedging strategies for both currency and interest rate risk exposures) are more likely to be hedged than their peers in, say, China or Indonesia. Indeed, data for Mexico indicate that the volume of exchange rate derivatives transactions picked up sharply from a monthly average of around \$12 billion in 2007–08 to more than \$25 billion in late 2013, in line with the observed increase in local corporates’ international issuance. In countries with less developed markets, however, mismatches will often go unhedged because markets may not be deep enough to provide appropriate and cost-effective hedging.¹²

The flip side of this argument is that derivatives-related financial exposures can change the sensitivity of corporate balance sheets in ways that may be unrelated to what is suggested, say, by the issuer’s sector. In the early stages of the global financial crisis, for example, some large corporates in Brazil, Korea and Mexico experienced significant losses because of largely speculative positions in foreign exchange derivatives contracts (see box). This experience shows that an abrupt change in the exchange rate trend can conspire with complex financial exposures to wreak significant damage on corporate balance sheets even when a firm’s foreign exchange liabilities are deemed to be adequately hedged during normal times.

An additional concern is that liquidity in hedging markets can evaporate during times of market stress. Even longer-term exposures are often hedged with more liquid short-term contracts with the aim of reducing hedging costs. As the respective contracts have to be rolled over regularly, this could significantly reduce the value of financial hedges against large exchange rate fluctuations, since markets are bound to be at their shallowest when hedging needs are greatest. In this

al (2013)). Yet the Survey is conducted infrequently (once every four years) and is residence-based (as opposed to nationality-based).

¹² For illustration, the 2013 annual report of one large Chinese property developer states: “The Group manages its currency risk by closely monitoring the movements of currency exchange rates. The Group currently does not have a currency hedging policy [...] but will consider hedging significant currency exposure should the need arise.”

Currency derivatives and corporate losses: this time is different?

The Lehman bankruptcy in September 2008 triggered a global shortage of US dollar funding, lifting the US currency. According to one estimate, the ensuing sharp depreciation of local currencies against the dollar hit 50,000 or more non-financial corporations with total losses of at least \$30 billion, via positions on foreign exchange (FX) derivatives contracts.^① This added to the uncertainty in those corporates' domestic financial markets, worsening the impact of the crisis still further. Given that many EME corporations are said to have increased their foreign exchange exposures significantly in recent years, a key question is how vulnerable such firms are to, possibly abrupt, exchange rate movements. This box reviews some key features of the derivatives activities of EME corporations in 2008, and highlights differences between then and now.

One factor behind EME corporates' foreign exchange losses in 2008 was the popularity of contracts with a "knock-in, knock-out" (KIKO) feature. Heavy use of such contracts meant that many exporters, while insured against modest exchange rate movements, were exposed to possibly large losses if the local currency depreciated sharply.

In a standard FX option transaction, a company (eg an exporter) with revenues mostly in foreign currency (eg in US dollars) but with production costs in local currency buys, for a small fee (premium), a put option from a counterparty (eg a local bank) that gives the exporter the right but not the obligation to sell its dollar income at a specific strike price at a future time. If the domestic currency spot exchange rate at maturity is stronger than the agreed rate, the exporter exercises the option and gets a higher income in local currency terms than it would otherwise get at the spot rate.

Compared with this basic setup, KIKO contracts have two additional features. The first is a call option (knock-in) held by the bank. If the reference currency (eg the US dollar) strengthens beyond a certain threshold, the knock-in requires the exporter to sell its dollars at the strike price (ie below market rates). The second, so-called knock-out, feature dictates that no option can be exercised by either the exporter or the bank if the dollar weakens below a certain threshold. Both features serve to reduce hedging expenses, albeit at the cost of retaining the tail risk of stronger currency depreciations.

A third feature is possible acceleration effects. KIKO contracts were quite often leveraged (at, say, 1:2), resulting in payments that would double the contractual amounts. This resulted in open speculative positions on relatively stable exchange rates. Furthermore, some EME corporations apparently purchased multiple KIKO contracts with different banks to bypass each individual bank's counterparty limit. As a result, when the US dollar rose sharply against almost all currencies in late 2008, these corporations suffered "unexpected" losses owing to the knock-in feature in their hedging operations.

Given the risk of high potential losses, a key question is why so many EME corporations used KIKO or similar contracts to hedge their FX exposures prior to 2008. There are a number of possible explanations. By design, KIKO features lower the premium charged by the contract seller. In that sense, many EME corporations were attracted by the low hedging costs. This feature was particularly attractive at the time, as the major EME currencies had experienced a long period of slow but steady appreciation against the US dollar. The resulting false sense of security was reinforced by most commercial and official forecasts, which, up until 2007, called for this trend to continue in the near term. Furthermore, local banks were often not the actual seller of the KIKO contracts, but merely acted as intermediaries for foreign banks and ultimate investors, such as hedge funds. In doing so, banks earned a fee while passing the exchange rate risk on to the ultimate contract sellers. Under such circumstances, banks may have had an incentive to sell more contracts to increase their fee income, at least insofar as their client relationships with their corporate customers were not jeopardised by any losses that their clients might incur.

Against this background, an important difference between now and then is that the recent prolonged period of relatively low volatility in foreign exchange markets has been punctuated by the two "tapering" events, in May 2013 and January/February 2014. No major losses from corporate exposures in derivatives markets were revealed in the aftermath of these episodes. That said, carry trade incentives have since strengthened again, and certain EME corporations may have incurred exposures via contracts that will generate losses only at a later stage. For example, there is anecdotal evidence of increased interest from Asian corporates in structured foreign exchange products with KIKO-like features. In addition, for some EME hedging markets, the sellers of hedging products are often concentrated and the markets themselves are not very liquid. Again, this tendency could exacerbate any market reaction once the market changes direction.

^① See eg Sidaoui et al (2010) and Lee (2009).

context, the May 2013 and early 2014 episodes of sharp currency depreciation in many EMEs may have served as wake-up calls, by inducing corporate treasurers to review and trim any open currency exposures. Recent attempts by the Chinese authorities to introduce more two-way risk into renminbi exchange rates would seem work in the same direction.

Implications for local banks and the financial system

What are the implications of more vulnerable EME corporate sector balance sheets for the financial system? Scope for spillovers arises from at least two channels, as detailed below.

Liability-side exposures

One channel works through the liabilities of banks and, possibly, other financial institutions.¹³ Among these, local institutions are likely to be particularly exposed, especially if they have come to rely on corporate deposits for part of their wholesale funding. For deposits that are associated with corporates exploiting the “carry” between local and foreign currency interest rates, the unwinding of such positions when interest rate differentials narrow or volatilities increase will reduce these funds. Deposits that are denominated in foreign currencies, in turn, are known to be more procyclical than other types of deposits and may thus be subject to sudden withdrawals by corporates facing rollover risks (Turner (2014)).

A key factor in the transmission of such effects is the shadow banking system. In Korea, for example, assets held by non-bank financial institutions have grown at an annual average rate of 10% since the global financial crisis. Securities companies, in particular, have seen their assets increase more than twofold during that period. In this context, it appears that the securities sector in Korea has accumulated substantial claims on banks and other depository institutions. Securities firms, in turn, finance themselves with short-term money market instruments held by the non-financial corporate sector. To the extent that non-financial corporates issue debt but hold the proceeds as liquid claims, they behave as surrogate intermediaries channelling funding from global capital markets into the domestic financial system (Bank of Korea (2014)).

Asset-side exposures

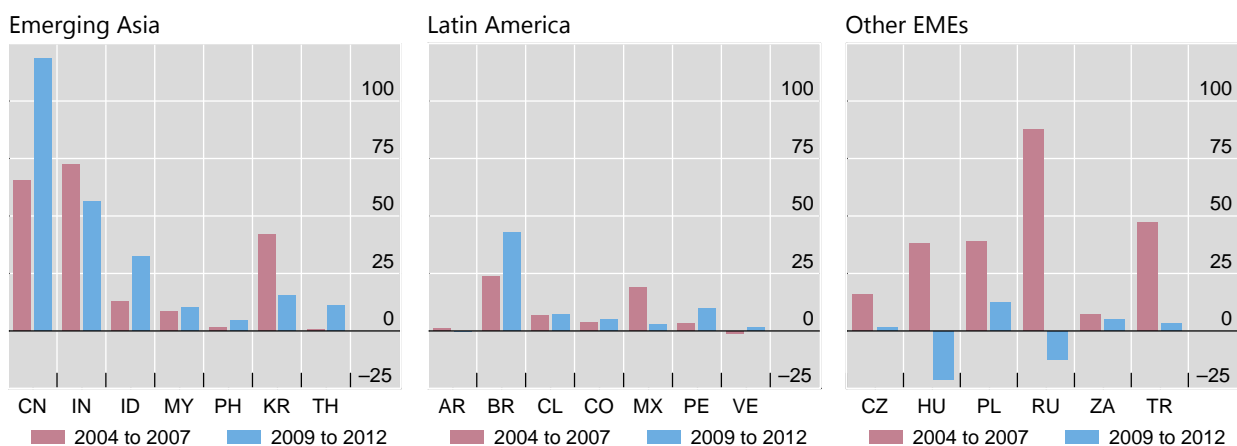
Another, more conventional, channel is the risks embodied in asset-side exposures. Banks tend to have direct credit exposures to corporates via lending and through counterparty risk from any derivative positions. While these exposures can be important internationally, for example vis-à-vis Asia (Graph 5), local banks, again, tend to be particularly exposed, with loans to non-banks still accounting for a large part of domestic loans in many jurisdictions. Furthermore, since larger and more creditworthy corporates have better access to cross-border borrowing, higher foreign bank penetration could end up increasing the exposure of local lenders to

¹³ See Chung et al (2014) for a discussion of how the financial activities of non-financial corporates in international markets could affect funding conditions and credit availability in home markets.

Changes in global banks' foreign claims on EME non-bank private sector¹

In billions of US dollars

Graph 5



AR = Argentina; BR = Brazil; CL = Chile; CN = China; CO = Colombia; CZ = Czech Republic; HU = Hungary; ID = Indonesia; IN = India; KR = Korea; MX = Mexico; MY = Malaysia; PE = Peru; PH = Philippines; PL = Poland; RU = Russia; TH = Thailand; TR = Turkey; VE = Venezuela; ZA = South Africa.

¹ Not adjusted for exchange rate movements.

Source: BIS consolidated banking statistics.

smaller, possibly less creditworthy, firms. That said, a mitigating factor is that standard on-balance sheet leverage and capitalisation metrics for EME banks tend to be rather favourable in the aggregate, which may help to reduce such risks at the banking system level.¹⁴

Another, less direct, source of credit risk for banks comes from broader exposure to debt markets, eg via bond holdings. Recently, however, there have been signs that asset managers and other buy-side investors have increasingly displaced bank investors in corporate bond markets. This raises questions about feedback effects if existing positions are not rolled over (see below).

Feedback effects

Working together, both types of channel can give rise to potentially powerful feedback effects. Currency mismatches, for example, will tend to amplify both default risk and pressure to deleverage if borrowers are hit by a depreciating local currency. Combined with uncertainties about the true extent of such mismatches, concerns about rising default risk could then result in a more widespread rout of international investors, loss of market access and spillovers into domestic interbank markets – exacerbating the financial and macroeconomic impact of the initial interest rate or foreign exchange shock.

The duration risk exposures of asset managers and other institutional investors (the flip side of corporates' attempts to issue new debt and term out existing borrowings) are another potential source of adverse price dynamics. These might be further amplified by the correlated behaviour of asset managers. Such herding in bond markets can arise from the reliance on common risk management

¹⁴ A possible caveat is that EME and advanced country bank balance sheet metrics may, in fact, be converging; see CGFS (2014) and BIS (2014), Chapter VI, for details.

technologies, from simultaneous buy and sell decisions due to index tracking, and from a rush to exit due to concerns about market liquidity.¹⁵

Conclusions

Unusually easy global financial conditions post-crisis and the ubiquitous quest for yield have encouraged EME non-financial corporations to increase leverage and overseas borrowing. In many jurisdictions, corporates have opted to lock in low global interest rates and to sharply increase their international debt issuance. While cheap funding could boost economic performance if it supports viable investment projects, it inevitably increases the borrower's interest rate, rollover and currency risks. Furthermore, some EME corporations may have used borrowed funds for purely financial (ie speculative) purposes. In other cases, these external positions may be inadequately hedged, whether through natural offsets or by the use of financial instruments.

Overall, these factors have increased the risks facing these companies, implying the existence of "pockets of risk" in particular sectors and jurisdictions. If these risks were to materialise, adding to broader EME vulnerabilities (BIS (2014)), stress on corporate balance sheets could rapidly spill over into other sectors, inflicting losses on the corporate debt holdings of global asset managers, banks and other financial institutions. This could be a source of powerful feedback loops in response to exchange rate and/or interest rate shocks, especially if credit risk concerns prevented the rollover of existing bank or bond market funding.

¹⁵ For a more detailed exploration of the risks arising from the increased participation of global asset management companies in emerging markets, see Miyajima and Shim (2014). Kamada and Miura (2014) provide a model and empirical evidence of herding by bond market investors in Japan due to some of the same factors.

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Non-financial corporations from emerging market economies and capital flows¹

Non-financial corporations from emerging market economies (EMEs) have increased their external borrowing significantly through the offshore issuance of debt securities. Having obtained funds abroad, the foreign affiliate of a non-financial corporation could transfer funds to its home country via three channels: it could lend directly to its headquarters (within-company flows), extend credit to unrelated companies (between-company flows) or make a cross-border deposit in a bank (corporate deposit flows). Cross-border capital flows to EMEs associated with all three of the above channels have grown considerably over the past few years, as balance of payments data reveal. To the extent that these flows are driven by financial operations rather than real activities, they could give rise to financial stability concerns.

JEL classification: D21, F31, G32.

The pattern of cross-border financial intermediation has undergone far-reaching changes in recent years, from one that relied overwhelmingly on bank-intermediated finance to one that places a greater weight on direct financing through the bond market. In the process, non-financial firms have taken on a prominent role in cross-border financial flows. They have increased their external borrowing significantly through the issuance of debt securities, with a significant part of the issuance taking place offshore. Between 2009 and 2013, emerging market non-bank private corporations issued \$554 billion of international debt securities. Nearly half of that amount (\$252 billion) was issued by their offshore affiliates (Chui et al (2014)).² An important question is whether this increased corporate external borrowing can be a source of wider financial instability for emerging market economies and, if so, which channels of financing flows give rise to concerns.³

The large increase in issuance by their overseas affiliates shows that EME firms' financing activities straddle national borders. Hence, measurement of external debts

¹ The authors would like to thank Claudio Borio, Dietrich Domanski, Branimir Gruić, Pablo García-Luna, Robert McCauley, Patrick McGuire, Christian Upper and Philip Wooldridge for their discussions. Deimantė Kupčiūnienė provided excellent research assistance. The views expressed are those of the authors and do not necessarily reflect those of the BIS.

² For further evidence of increased offshore bond issuance by EME non-financial corporations, see Gruić et al (2014b).

³ Chui et al (2014) outline the potential risks related to EME corporate balance sheets, focusing on the role of leverage and currency mismatch.

based on the residence principle can be problematic.⁴ In particular, external debt based on the residence principle may understate the true economic exposures of a firm that has borrowed through its affiliates abroad. If the firm's headquarters has guaranteed the debt taken on by its affiliate, then the affiliate's debt should rightly be seen as part of the firm's overall debt exposure. Even in the absence of an explicit guarantee, the firm's consolidated balance sheet will be of relevance in understanding the firm's actions. While this point has been well recognised in the realm of international banking (Cecchetti et al (2010)), it had not received much attention in the context of non-financial corporates until recently (Gruić et al (2014a)).

The practice of using overseas affiliates as financing vehicles has a long history. Borio et al (2014) describe how in the 1920s German industrial companies used their Swiss and Dutch subsidiaries as financing arms of the firm to borrow in local markets and then repatriate the funds to Germany.⁵ As old as such practices are, they have become the centre of attention again in recent years due to the increasingly common practice of EME non-financial corporates borrowing abroad through debt securities issued by their affiliates abroad. If the proceeds of the bond issuance are used for acquiring foreign assets, the money stays outside and there are no cross-border capital movements. However, we will be focusing on the case where the firm transfers the proceeds of the bond issuance back to its home country, either to finance a local (headquarters) project, or to be held as a financial claim on an unrelated home resident – say, by being deposited in a bank or by being lent to another non-bank entity. If the overseas bond proceeds are repatriated onshore to invest in domestic projects with little foreign currency revenue, the firm will face currency risk. If the proceeds are first swapped into local currency, then the firm's activities are likely to have an impact on financial conditions (Box 1). In either case, the economic risks may be underestimated if external exposures are measured according to the conventional residence basis.

Having obtained funds abroad (by issuing bonds offshore), the foreign affiliate of a non-financial corporation could act as a surrogate intermediary by repatriating funds (Chung et al (2014), Shin and Zhao (2013)). It can do that via three main channels (Graph 1). First, it could lend directly to its headquarters (*within*-company flows). Second, it could extend credit to unrelated companies (*between*-company flows). Finally, it could make a cross-border deposit in a bank (corporate deposit flows).

A practical question is how best to monitor these non-bank capital flows under the existing measurement framework organised according to the residence principle. The balance of payments (BoP) accounting framework lists broad categories such as foreign direct investment (FDI) and portfolio flows, but it does not separate out the

⁴ In international finance, the statistical convention is to identify the border as the boundary of the national income area, so that what is "external" or "internal" is defined by reference to that boundary. This statistical convention gives rise to the *residence principle*. A firm is resident in a particular national income area (or "economic territory") if it conducts its business activities mostly within the boundaries of that economic territory.

⁵ Even to this day, Germany is one of the few developed countries where non-financial firms are still generating large within-company capital flows across borders. During the past five years, gross direct investment flows to Germany totalled \$185 billion, \$73 billion of which were for equity acquisitions and the rest were debt transfers between a firm's headquarters and its affiliates.

International bond issuance, cross-currency swaps and capital flows

When an EME company issues a US dollar-denominated bond in overseas capital markets and then repatriates the proceeds, one would expect that to show up as capital inflows in US dollars. However, this need not always be the case. The company or its overseas subsidiary can issue the bond and swap the proceeds into domestic currency before transferring the funds back to the headquarters. Obviously, there will be a similar increase in the headquarters' liabilities, but only the company's consolidated balance sheet would show an increase in foreign currency liabilities.

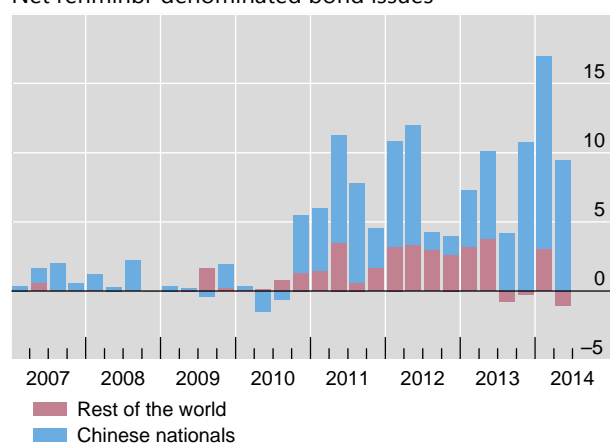
For instance, Chinese firms have primarily issued US dollar-denominated bonds abroad, whereas non-Chinese companies account for a sizeable proportion of offshore renminbi bond (CNH) issuance (Graph A). Very often, these non-Chinese entities will swap their CNH proceeds into US dollars. In doing so, they are taking advantage of the cross-currency swap markets to obtain US dollar funding at lower costs than by issuing US dollar bonds (HKMA (2014)). Similarly, cross-currency swaps offer Chinese firms a channel to get around the tight liquidity conditions in China by swapping their US dollar proceeds from bond issuance into renminbi and remitting to their headquarters.

International debt securities issuance

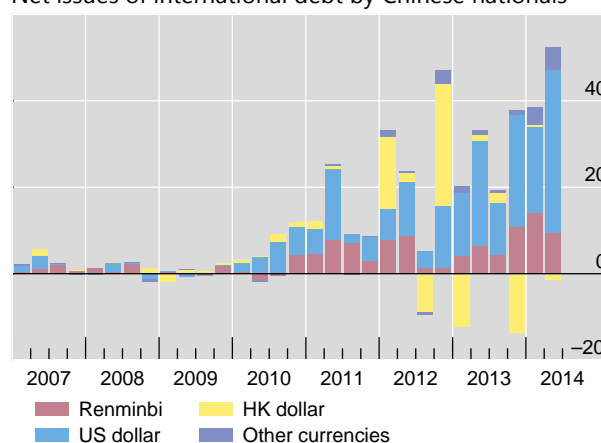
In billions of US dollars

Graph A

Net renminbi-denominated bond issues



Net issues of international debt by Chinese nationals

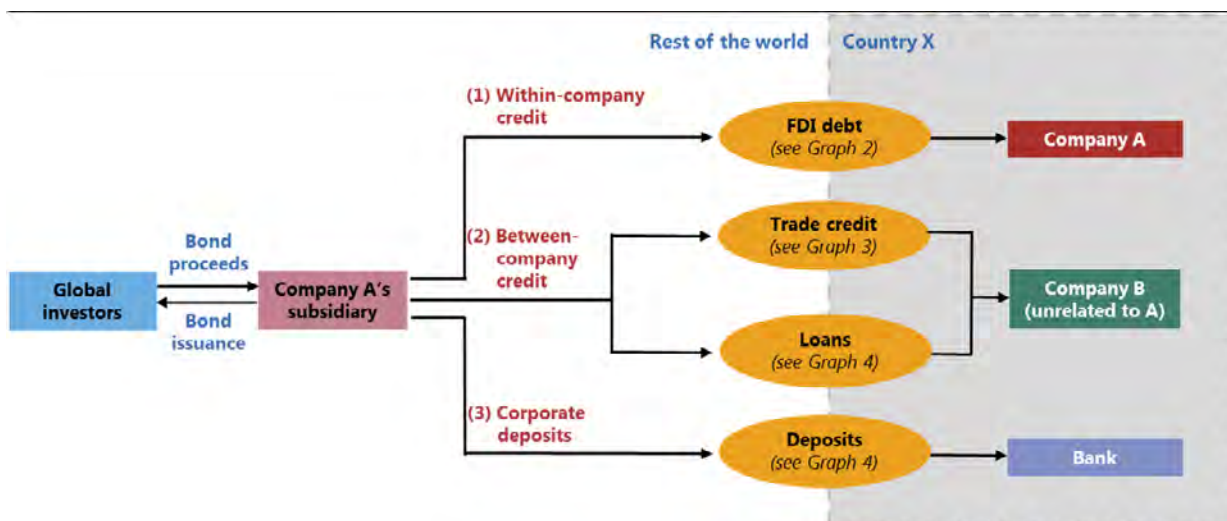


Source: BIS international securities statistics.

flows associated with corporate activity from those of the financial sector.⁶ However, a little detective work can reveal a wealth of information. This article explores how the BoP data and some key items buried deep within the broad categories of direct investment and other investment can be used to shed light on cross-border capital flows through non-financial corporate activities (Table 1).

In the rest of this article, we present evidence that capital flows to EMEs associated with non-financial corporations have indeed increased markedly over the

⁶ Reporting of sectoral data, however, is included in the sixth edition of the IMF's *Balance of Payments and International Investment Position Manual* (BPM6) published in 2009 and last updated in November 2013. The IMF will only accept data submitted under this new template from January 2015 (Box 2). However, only a small number of EMEs are expected to submit granular sectoral data in the near term.



Source: BIS.

past few years through three different channels. First, we demonstrate that transfers between firms’ headquarters and their offshore affiliates have surged. Next, we show that “non-bank” trade credit flows to EMEs have increased significantly. Finally, we demonstrate that the amount of external loan and deposit financing to EMEs provided by non-banks has grown considerably.

Within-company credit

An accounting convention in the balance of payments deems borrowing and lending between affiliated entities of the same non-financial corporate to be “direct investment”. Specifically, such transactions are classified under the “debt instruments” sub-item of direct investment. In contrast, borrowing and lending between unrelated parties are classified as either a portfolio investment or under the “other” category.⁷ The rationale behind treating within-firm transactions as direct investment is that the overall profitability of a multinational corporation depends on advantages gained by deploying available resources efficiently to each unit in the group. For example, tax considerations could drive the choice between equity and within-company debt, and behaviourally such debt can be, and often is, written down in adverse circumstances.

Classifying the transfer onshore of funds obtained offshore as FDI raises questions about the traditional view that FDI is a stable or “good” form of capital flow (CGFS (2009)). This may be true for FDI in the form of large equity stakes associated with greenfield investment or foreign acquisitions. But within-company loans, especially if invested in the domestic financial sector, could turn out to be “hot money”, which can be withdrawn at short notice. Thus, to the extent that

⁷ Lending and borrowing between affiliated deposit-taking corporations (ie intrabank flows) are an exception to the above rule. They are classified not as FDI (debt), but as “other investment” (loans and deposits, respectively).

Balance of payments financial accounts¹

Table 1

Gross inflows

Direct investment

Equity

Debt instruments (**within-company credit**)

Portfolio investment

Equity

Debt

Financial derivatives

Other investments

Currency and deposits (**corporate deposits**)

Loans (**between-company credit**)

Trade credit (**between-company credit**)

Other payables (**between-company credit**)

¹ Possible modes of capital flow generated by non-financial companies are in bold.

Source: IMF, *Balance of Payments Manual*.

within-company loans are financed through the offshore issuance of debt securities, they could be viewed as portfolio flows masked as FDI.

Quantitatively, for most EMEs, within-company lending has been modest when compared with purchases of stakes in other companies (Graph 2, left-hand panel). However, there have been sizeable increases in within-company flows in Brazil, China and Russia, amounting to more than \$20 billion per quarter for these three countries combined (Graph 2, right-hand panel), which was broadly similar to the size of total portfolio inflows to the three countries during this period.

Between-company trade credit

The second mode of capital flow generated by non-financial firms' activities is through trade credit. The term "trade credit" has a narrower meaning in the balance of payments than in everyday use. Instead of encompassing trade financing more broadly such as guarantees through banks and letters of credit, the trade credit category under the BoP accounts refers only to claims or liabilities arising from the direct extension of credit by suppliers for transactions in goods and services, under a residual item known as "other investment". Bank-provided trade financing, such as letters of credit, is recorded separately under "loans".⁸

Typically, trade credit flows between companies are small and account for a small proportion of total other investment flows in most instances. Direct credit extension between exporters and importers could be seen as much riskier than arranging trade financing through banks. However, trade credit flows to EMEs have increased since the global financial crisis (Graph 3, left-hand panel), and the increase

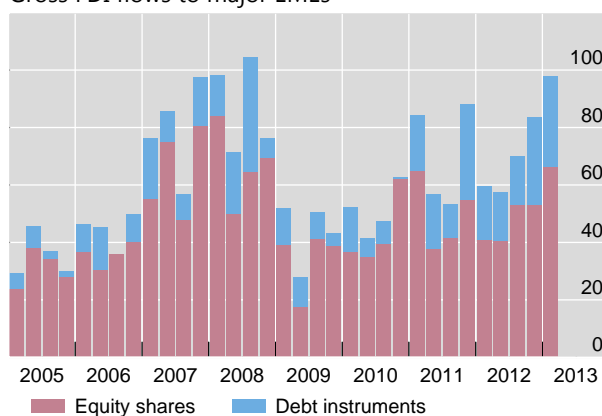
⁸ Other firm-to-firm cross-border transactions such as account payables/receivables are simply recorded under "other" in "other investment".

FDI: equity and debt flows to major EMEs

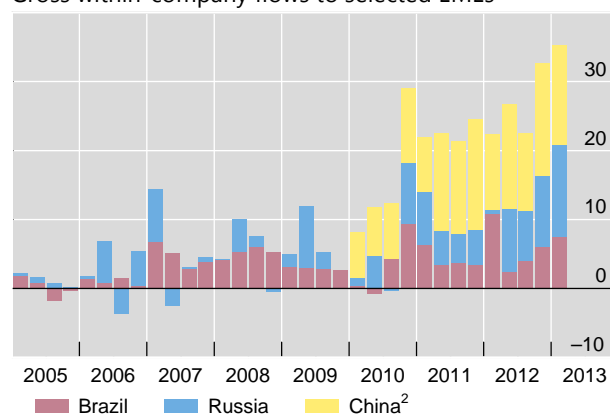
In billions of US dollars

Graph 2

Gross FDI flows to major EMEs¹



Gross within-company flows to selected EMEs



¹ Brazil, Chile, the Czech Republic, Hungary, India, Indonesia, Korea, Mexico, the Philippines, Poland, Russia, South Africa, Thailand and Venezuela. ² Data for China start from 2010.

Source: IMF.

was driven, to a certain extent, by China (Graph 3, right-hand panel). In fact, the share of trade credit inflows in total other investment in China in recent years has been much larger than that in other EMEs. While these trade credit flows to China may reflect Chinese companies' growing importance and credibility in world trade, trade credit could be another route through which the proceeds of offshore funding can be transferred to headquarters and/or unrelated companies onshore.

Between-company loans and corporate deposits

Despite the limitations of the existing data frameworks discussed above, it is possible to combine BoP statistics with the BIS international banking statistics (IBS) to shed some light on the growing importance of non-bank corporates in providing cross-border loans and deposits to EMEs.

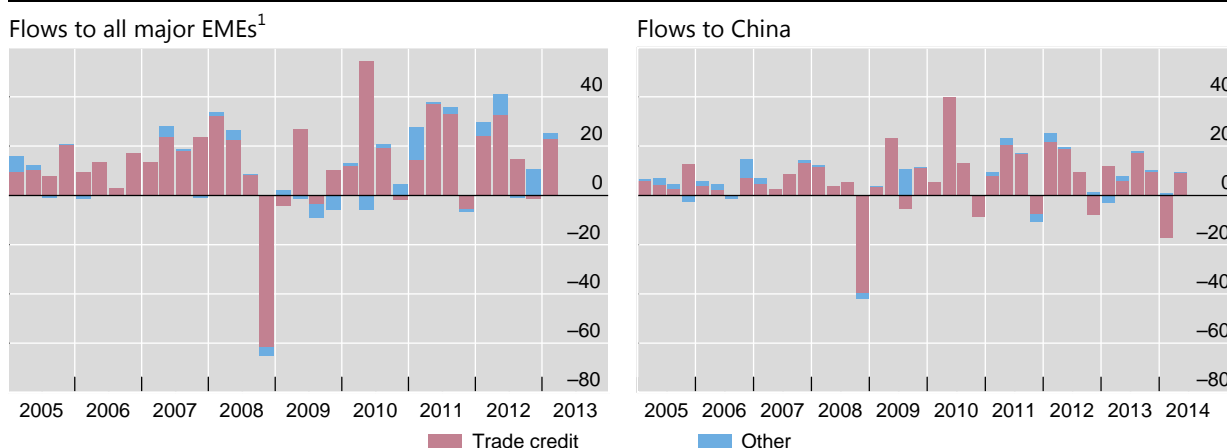
From the *lender* perspective, the IBS capture the cross-border positions of internationally active banks. As a consequence, the IBS could be used to measure the amount of cross-border loans that banks provide to residents (both banks and non-banks) of a given country.

From the *borrower* perspective, a couple of (liability) categories in the BoP data provide information on the amount of cross-border financing that the residents of a given country obtain in the form of deposits and loans. More specifically, "deposit liabilities" capture the standard contract liabilities of all deposit-taking institutions in a given reporting jurisdiction to both banks (interbank positions) and non-banks (transferable accounts and deposits). Meanwhile, "loan liabilities" cover liabilities that are created when a creditor lends funds directly to a debtor, and are documented by claims that are not negotiable.

Between-company flows to EMEs

Inflows of trade credit and other account payables, in billions of US dollars

Graph 3



¹ Includes Argentina, Brazil, Chile, China, Colombia, the Czech Republic, Hungary, India, Indonesia, Korea, Peru, the Philippines, Poland, Russia, South Africa, Thailand, Turkey and Venezuela; Malaysia and Mexico are excluded due to data availability.

Sources: IMF; State Administration of Foreign Exchange, China.

Table 2 illustrates how BoP and IBS can be brought together to estimate the amount of non-bank finance to EME residents.⁹ The two BoP categories discussed above capture the cross-border liabilities of (bank and non-bank) residents of a given country to all (bank and non-bank) creditors (represented by cells A, B, C and D).¹⁰ By contrast, the IBS capture solely the cross-border liabilities to offshore banks (cells A and B).¹¹ Thus, in principle, the difference between the two series could be used as a rough proxy for the amount of non-bank external financing to the residents of a country (cells C and D).¹²

This difference used to be small but has been increasing rapidly in recent years (Graph 4, left-hand panel).¹³ Up until 2007, the two series moved fairly in sync, suggesting that BoP deposits and loan flows were dominated by banks. However, the gap between the two series has been steadily growing and currently stands at approximately \$270 billion (which amounts to 17% of cumulative BoP flows since Q1 2005). The growing gap between the BoP and IBS series could be interpreted as evidence of the increasing weight of non-banks in providing external loan and deposit financing to residents of emerging market economies.

⁹ Using a slightly different approach, Domanski et al (2011) decompose total (domestic and cross-border) credit to a number of advanced economies by creditor sector (bank and non-bank).

¹⁰ In the context of our discussion, the category "non-banks" includes both non-financial firms and non-bank financial firms. That said, in the case of EMEs, a large part of the latter group is accounted for by the non-bank financial vehicles of non-financial corporates.

¹¹ Note that intrabank flows are included in both the IBS series on cross-border bank lending and the BoP series on external deposit liabilities (see footnote 7 for additional details).

¹² In theory, the variation between the BIS and the BoP data could also be due to residents' cross-border liabilities to banks located in countries which do not report data for the IBS. In practice, given the fairly comprehensive coverage of the IBS (which captures approximately \$30 trillion worth of cross-border claims that belong to banks located in 44 jurisdictions), it is reasonable to assume that the above accounts for a negligible part of the overall wedge between the two series.

¹³ The data used to construct the IBS series are available in [BIS Statistical Table 7A](#).

Coverage of external loans and deposits in the BoP and IBS data

Table 2

		Borrowing country	
		Banks	Non-banks
Lending country	Banks	A	B
	Non-banks	C	D

■ Captured by both BoP and IBS data. ■ Captured solely by BoP data.

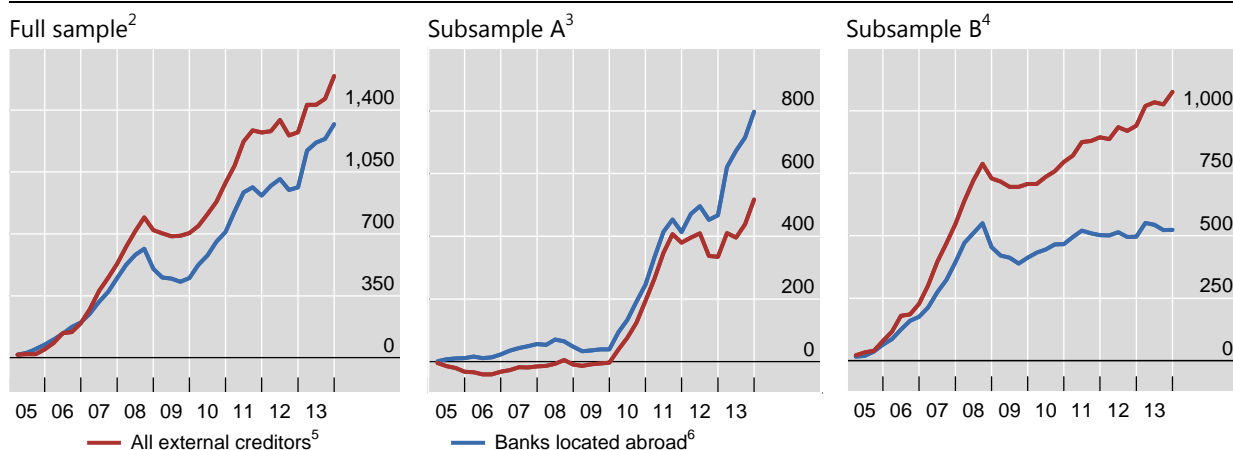
Sources: IMF, *Balance of Payments Manual*; BIS, *Guidelines for reporting the BIS international banking statistics*.

A more detailed examination of the data suggests that the role of non-banks might be even greater than the above estimates imply. Assuming positive gross inflows from non-banks, the BoP external loan and deposit estimates should exceed the respective IBS estimates for each country in our sample (since, as discussed above, the former include external lending by non-banks, whereas the latter do not). However, we find that the exact opposite is true for several EMEs, such as Brazil, China, Indonesia, the Philippines and Thailand (Graph 4, centre panel).¹⁴ In theory, this finding could be explained by negative cumulative non-bank flows to each of those countries. In practice, it is highly unlikely that this was the case during

Cumulative cross-border deposit and loan gross flows to major EMEs¹

By creditor sector, in billions of US dollars

Graph 4



¹ Cumulative flows starting from Q1 2005. Data for China start from Q1 2010. ² Full sample = subsample A + subsample B. ³ Brazil, China, Indonesia, the Philippines and Thailand. ⁴ Chile, the Czech Republic, Hungary, India, Korea, Mexico, Poland, Russia, South Africa and Turkey. ⁵ Sum of “BoP other liabilities: currency and deposits” and “BoP other liabilities: loans” for each listed country. ⁶ Cross-border claims of BIS reporting banks on each listed country.

Sources: IMF; BIS locational banking statistics by residence (Table 7A).

¹⁴ McCauley and Seth (1992) and Borio et al (2013) find that, for the United States, figures from the IBS data on external bank loans considerably exceed those based on the respective flow of funds data.

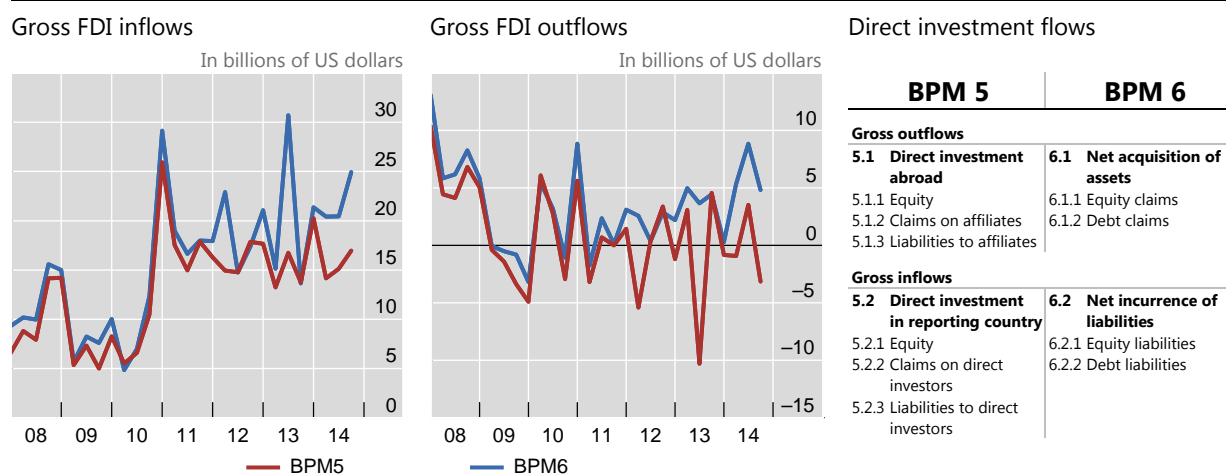
Interpreting FDI flows under the new balance of payments template

The rapid pace of financial globalisation over the past few decades has changed many aspects of international capital flows. To improve the understanding of these capital movements, in 2009 the IMF and its members agreed on a new template for collecting international financial transactions data: the sixth edition of the IMF's *Balance of Payments and International Investment Position Manual* (BPM6). From January 2015, the IMF will only accept data submissions under BPM6. In the transition period, some countries will still be publishing their BoP data under the previous template (BPM5, introduced in 1993) and the IMF will simply convert those "old" data to the new standard. Using Brazil as an example, this box illustrates how the conversion between BPM5 and BPM6 affects the interpretation of FDI flows.

Data published under the two formats reflect somewhat different treatments of within-company loans, resulting in differences in reported gross FDI inflows and outflows (Graph B, left-hand and centre panels), even though net FDI flows remain unchanged. This is because, under BPM5, FDI transactions between affiliates are recorded on a residence versus non-residence basis, whereas BPM6 differentiates between the net acquisition of assets and the net incurrence of liabilities. Simply put, under BPM5, both headquarter lending to affiliates (which increases claims) and borrowing from affiliates (which increases liabilities) are counted as gross outflows, albeit with opposite signs. Under BPM6, by contrast, the two activities will fall into different categories. While headquarter lending to affiliates will continue to count as capital outflow, borrowing from affiliates will be counted as net incurrence of liabilities (capital inflow). Using the notation in Graph B (right-hand panel), net acquisition of debt claims under BPM6 (item 6.1.2) will be the sum of items 5.1.2 and 5.2.2 under BPM5.

Brazilian FDI flows

Graph B



Sources: Central Bank of Brazil; IMF; BIS calculations.

the time period we examine. A much more plausible explanation could be related to inconsistencies in the reporting of external liabilities.¹⁵

While the above finding is intriguing in its own right, it also has important implications for the main question that we examine in this article. Namely, it suggests that, for the remaining EMEs in our sample, the aggregate size of the gap between the BoP and IBS series is considerably larger than the one implied by the

¹⁵ Potential data reporting-related sources of discrepancy include the coverage of the reporting population, the treatment of bank-supported trade credit and the exchange rate valuation adjustment methodology.

estimates for the full sample. Indeed, as the right-hand panel of Graph 4 illustrates, the wedge between the BoP and IBS series is considerably larger for the latter set of EMEs (ie Chile, the Czech Republic, Hungary, India, Korea, Mexico, Poland, Russia, South Africa and Turkey). At the end of 2013, the BoP-implied external loan and deposit series for that group of countries exceeded its IBS counterpart by over \$550 billion (51% of cumulative BoP flows since Q1 2005). This presents further evidence of the importance of non-banks in providing external loan and deposit financing to EMEs.

Conclusion

The shift away from bank-intermediated financing to market financing over the past few years has coincided with a sharp increase in international bond issuance by EME non-financial corporations. This trend could have important financial stability implications. Yet, analysis of it is hindered by conceptual difficulties associated with statistical conventions on the measurement of cross-border flows.

In this article, we utilise several key BoP data items to shed light on cross-border capital flows through non-financial corporate activities. We find that capital flows associated with non-financial corporations have indeed increased markedly over the past few years through three different channels. First, within-firm transfers have surged. Second, trade credit flows to EMEs have increased significantly. Finally, the amount of external loan and deposit financing to EMEs provided by non-banks has grown considerably. We interpret those findings as evidence that the offshore subsidiaries of EME non-financial corporates are increasingly acting as surrogate intermediaries, obtaining funds from global investors through bond issuance and repatriating the proceeds to their home country through the above three channels.

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