# Non-Financial Corporate Bond Financing in Foreign Currency: Trends and Risks in ASEAN+3 Emerging Economies*

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## Acronyms and Abbreviations

| | |
|---|---|
| ABF | Asian Bond Fund |
| ABMF | ASEAN+3 Bond Market Forum |
| ABMI | Asian Bond Market Initiative |
| ADB | Asian Development Bank |
| AFC | Asian Financial Crisis |
| AMRO | ASEAN +3 Macroeconomic Research Office |
| BIS | Bank for International Settlements |
| BoFA | Bank of America |
| BPS | Basis Points |
| CAPEX | Capital Expenditure |
| CCS | Cross Currency Swap |
| CGIF | Credit Guarantee and Investment Facility |
| CHF | Swiss Franc |
| EBITDA | Earnings Before Interest Taxes Depreciation and Amortization |
| EM | Emerging Market |
| EUR | Euro |
| FCY | Foreign Currency |
| FED | US Federal Reserve |
| FSI | Financial Stress Indicators |
| GBP | British Pound |
| GDP | Gross Domestic Product |
| GFC | Global Financial Crisis |
| IIF | Institute of International Finance |
| IMF | International Monetary Fund |
| JPY | Japanese Yen |
| LCY | Local Currency |
| M&A | Merger and Acquisition |
| MNC | Multi National Corporation |
| NFC | Non-Financial Corporate |
| QE | Quantitative Easing |
| RMB | Renminbi |
| SPV | Special Purpose Vehicle |
| SYN | Syndicated |
| USD | US Dollar |

| | |
|---|---|
| mom | Month-on-month |
| qoq | Quarter-on-quarter |
| s.a. | Seasonally-adjusted |
| yoy | Year-on-year |

| | |
|---|---|
| ASEAN+3 | ASEAN, China, Japan and Korea |
| ASEAN-4 | Indonesia, Malaysia, Thailand, the Philippines |
| CN | China |
| HK or Hong Kong | Hong Kong, China |
| ID | Indonesia |
| KR | Korea |
| MY | Malaysia |
| PH | The Philippines |
| SG | Singapore |
| TH | Thailand |

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# Executive Summary

**The size of emerging market (EM) corporate bonds has been growing rapidly since the Global Financial Crisis (GFC).** The growth of total EM corporate bonds outstanding has outpaced the growth of bank credit.

**Such a strong rise in bonds outstanding points to the need to establish whether Non-Financial Corporates (NFCs) – especially those that issued foreign currency (FCY) bonds – could have over-leveraged, potentially putting them in a vulnerable position when the global financial cycle turns**. This report, therefore, attempts to answer three main questions: How has the NFC financing structure in this region evolved since the GFC?; How have the risks related to the shifting financing structure changed?; And what should the policy responses to mitigate these risks be?

**In this region, there have been three important developments since the GFC in the structure of regional NFC financing. First**, NFCs still rely mostly on domestic bank borrowing but there has been a gradual shift towards bond market financing. **Second**, unlike EMs in other regions, where the shift is more tilted toward FCY bond financing, the shift in this region is more tilted toward local currency (LCY) bond markets. **Third,** FCY bonds outstanding in the region have recently increased considerably from a low base, although the total level is still much lower than the amount of LCY. In particular, the issuance of FCY bonds through overseas affiliates/ subsidiaries has increased significantly in some regional economies, raising the outstanding level of bonds on the basis of firms' nationality above the level of outstanding bonds by firms' residency.

**The rise in bond market financing has been due to both global and domestic factors.** Global push factors, particularly the unprecedented accommodative monetary policies in advanced economies and the resulting ample global liquidity, have been documented as major drivers. On the other hand, the most important domestic pull factors include macro fundamentals in regional EMs; the cross-border expansion of firms, particularly multinational corporations (MNCs); and long-term market developments, particularly regional initiatives such as the Asian Bond Fund (ABF) and Asian Bond Market Initiative (ABMI).

**NFCs that are expanding overseas and issuing FCY bonds are faced with two key risks: rollover risk and interest rate risk.** These types of firms are exposed to rollover risk if they are not able to refinance their maturing bonds. They also face interest rate risk if they need to refinance their maturing bonds but have to pay a higher interest rate, as investors would demand a higher credit spread.

**NFCs that use FCY to fund local activities are additionally faced with currency mismatch risks.** We define currency risk as the mismatch between the foreign currencies that a corporate has borrowed compared to its stream of domestic currency income. If unhedged (without either natural hedging or financial hedging), FCY appreciation can immediately increase NFC liabilities.

**Overall, rollover risks have increased since the taper tantrum in May 2013.** Rollover risks declined after the GFC as NFCs took the opportunity to secure long-term stable funding in an environment of abundant global liquidity. They have, nonetheless, been increasing

since the taper tantrum as many NFCs have preferred to issue shorter-term bonds. This is because long-term bonds have become more costly as the US long-term interest rate has increased and investors have also demanded a higher credit spread for EM corporates.

**Even though interest rate risks have declined as NFCs have been able to issue more fixed and longer term bonds, the credit spread could still rise and needs to be addressed.** As the proportion of floating rate bonds is small, the direct impact of the US interest rate hike in terms of additional coupon payable is low. Nonetheless, NFCs could still face a much higher interest rate when issuing new bonds as credit spreads can rise abruptly during a period of stress.

**The overall risks from currency mismatches are non-negligible for the majority of regional economies.** Although the degree of natural hedging may not appear to be low in most regional economies and sectors, and NFCs can also use financial hedging to mitigate currency mismatch risks, several factors could still give rise to NFC currency losses and an FCY funding crunch during a period of stress. First, potential fluctuations in overseas earnings could affect the ability to service debt in FCY. Second, the relatively high financing costs of hedging in some regional economies could deter NFCs from using hedging instruments at all. Third, liquidity in hedging markets can evaporate during times of market stress.

**Risk monitoring is the first step to deal with these risks.** It will be helpful for policy-makers to periodically check the rollover risk indicators and currency mismatches as well as to increase understanding about the behaviour of NFCs' overseas operations. It is also essential to keep an eye on global interest rate developments as well as EM spreads, both within and outside the region.

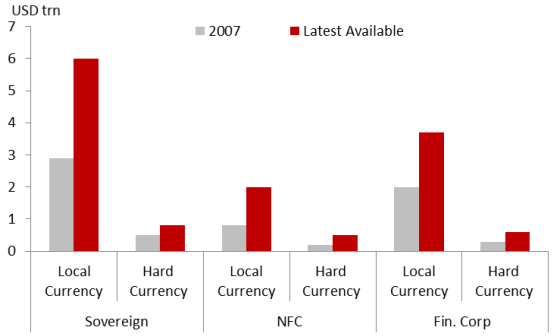
**There is a need for policymakers to monitor the financial health of their major NFCs, as their financial soundness can deteriorate if the global environment shifts abruptly.** In particular, leverage levels should be kept in check, especially if earnings potential slows in the period ahead. Prudential regulations can also help to address over-leverage in FCY bond financing.

**Fostering a favourable macroeconomic environment in order to deter NFCs from incurring imprudent maturity and currency exposure could also help mitigate risks.** Some market-driven volatility in long-term interest rates and some exchange rate flexibility could help discourage NFCs from mismatches in terms of maturity and currency.

**In the longer term, further domestic bond market deepening can help mitigate risks from debt market financing, including the provision of more hedging tools for NFCs.** In addition, the ASEAN+3 Credit Guarantee and Investment Facility (CGIF), as part of the Asian Bond Market Initiative (ABMI), could have an important role in mitigating NFC financial risks. These facilities allow firms to issue LCY bonds with long-term maturities more easily, consequently reducing their reliance on FCY bond issuance and helping to reduce both rollover and currency mismatch risks.

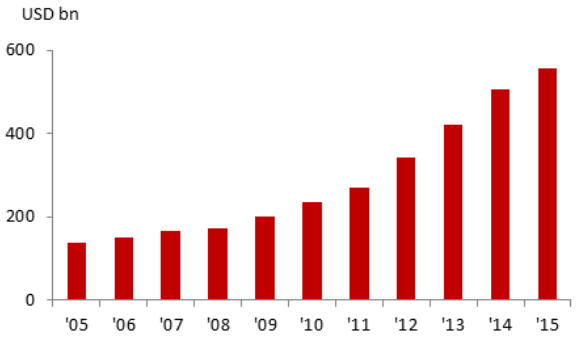
# 1. Introduction

**Figure 1.1: EM Corporate and Sovereign Bond Markets (Outstanding Amount)**




Notes: Hard currency refers to the USD, EUR, CHF and JPY. Data as of 2014.
Source: IIF

**Figure 1.2: Total Outstanding Non-financial Corporate (NFC) FCY Bonds in Regional EMs**




Source: BIS

**Since the end of the Global Financial Crisis (GFC), EM non-financial corporate (NFC)[1] bond issuance has been growing rapidly, including in this region.**[2] Since the early 1990s, EMs have become more integrated into global capital markets, a development that reflects rapid industrialization and the gradual removal of barriers to cross-border flows of capital and the liberalization of financial services. Domestic factors such as improving economic fundamentals, a better macroeconomic policy framework, and improving corporate balance sheets and governance structures have also contributed to the attractiveness of some EMs to foreign capital. The deepening of financial linkages also reflects active measures on the part of policymakers to promote domestic capital market development in order to diversify sources of funding and improve risk-sharing. NFCs headquartered in this region have also increased their international footprint, such as Korean auto subsidiaries in the US. According to the IMF (2015), the development of EM equity markets picked up strongly in the 1990s, while the growth of NFC bond markets was much slower. This changed immediately following the GFC in 2008/09 as NFC bond markets grew fast in an environment of ample global liquidity and low global interest rates post-crisis. Figure 1.1 shows that from 2007 onwards, there has been a substantial increase in all types of EM bonds. In particular, total EM NFC bonds outstanding (in both in local and hard currencies) have almost doubled since 2007. Correspondingly, the annual value of outstanding NFC bonds in regional EMs has also increased during the same period (Figure 1.2).[3]

[1] This refers to both private and public NFCs.
[2] Regional EMs in this report comprise China, Hong Kong, Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand.
[3] This development was also documented by the IMF (2015).

**The pattern of cross-border financial intermediation has increasingly shifted from bank-intermediated finance to direct financing via the capital markets (Box A).** According to Turner (2013), since the GFC, EM borrowers have relied more on international bond markets and less on international banks. It is noted that NFCs have increased their issuances of bonds at a faster pace as compared to their sovereign counterparts as many NFCs have ramped up their bond financing, encouraged by the notion of a global search for yield following easy global liquidity conditions. According to Chui (2014), NFCs across EMs globally issued a total of USD554.0 billion of international debt securities between 2009 and 2013, half of which was issued by their offshore affiliates.

**A strong increase in bond issuances in economies such as China has raised concerns that certain NFCs could be over-leveraged, potentially putting them in a vulnerable position when the global financial cycle turns.** As the US has entered an up-cycle of interest rates in the wake of the Fed's liftoff in December 2015, the build-up of exposures by some of these NFCs could leave them exposed to higher borrowing costs and financing constraints. Most importantly, some of the NFC bond issuances are FCY-denominated, with the majority in USD, and that creates an added risk of currency mismatch, potentially leading to corporate balance sheet stress.

**Against this backdrop, this report attempts to assess the risks and vulnerabilities related to rising NFC FCY-denominated corporate bonds.** Specifically, this study addresses three important questions: How has NFC bond financing evolved since the GFC, and what are the driving forces? How has the risk profile of NFCs changed corresponding to the changing financing structure, especially in terms of rollover risks, interest rate risks and exchange rate risks? And what policy measures should be introduced to mitigate these risks?

The report is organized as follows: Section 2 provides an overview of the evolution of NFC bond financing pre- and post-GFC, including a brief assessment of the drivers. Section 3 analyzes the changing financial risks that regional NFCs have been facing and briefly discusses the potential areas of stress. Section 4 then concludes with a policy discussion.

## Box A. NFC Financing since the Global Financial Crisis

While the main focus of this thematic paper is on NFC bond financing**, this box compares it with funding via the bank-intermediated channel to provide a broader picture of the structure of NFC financing.**

**Table A1: The Structure of NFC Financing by Residency**

| | Sources of Funding | |
|---|---|---|
| | **Domestic** | **External** |
| **Bank-Intermediated** | **Domestic Loans**<br>Data Source: National Authorities<br>USD13.4 trillion | **External Loans (Cross-border)**<br>Data Source: BIS International Locational Banking Statistics<br>USD0.7 trillion |
| **Debt Capital Market** | **Domestic Debt Securities**<br>Data Source: BIS Debt Securities Statistics<br>USD2.8 trillion | **International Debt Securities**[4]<br>Data Source: BIS Debt Securities Statistics<br>USD0.2 trillion |

Note: The figures above are as of September 2015 and based on a residency principle. Due to data limitations, external loans include those extended to financial corporates and NFCs, but domestic loans, domestic debt securities and international debt securities are for NFCs only.
Source: National Authorities, BIS

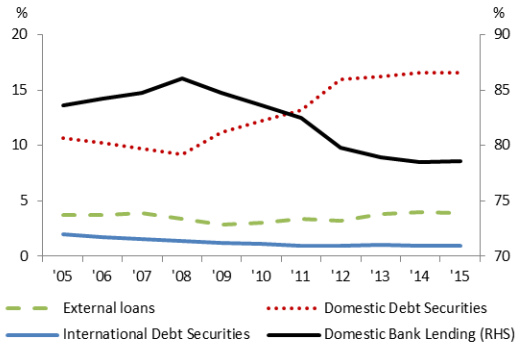
### The Size of NFC Financing: Bank-Intermediated versus Debt Capital Market

**In terms of size, domestic bank lending is the dominant source of funding for NFCs in the regional EMs (Table A1).** As of September 2015, aggregate data available on a residency principle suggests that NFCs have domestic loans amounting to USD13.4 trillion, followed by domestic bonds (USD2.8 trillion), external loans (USD0.7 trillion), and international debt securities (USD0.2 trillion).[5]

### Changes in NFC Financing

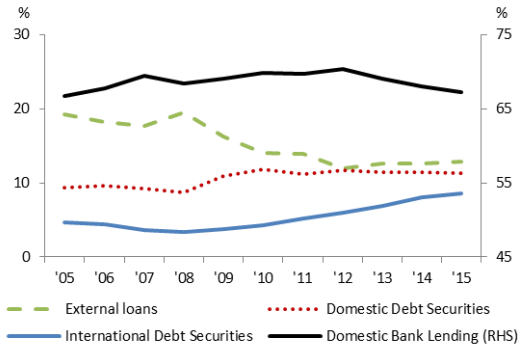
**Figure A1: EM NFC Debt Composition by Residency Over Time (% of total financing)**

(a) Regional EMs




Note: As data on domestic debt securities for Indonesia is available from 2008 onwards, data points in 2005, 2006 and 2007 are imputed with the assumption that yoy growth for Indonesian domestic debt securities is the same as growth for Indonesian local currency-denominated bonds (available as longer time series in the ADB database). Total financing is defined as the sum of the four sources of financing above. Data as of September 2015.
Source: BIS, National Authorities, ADB, CEIC

(b) EMs in Other Regions




Note: EMs in other regions include Israel, South Africa, Croatia, Czech Republic, Estonia, Poland, Russia, Turkey, Argentina, Brazil, Mexico and Peru. For Czech Republic, Estonia, Poland, Turkey and Argentina, as their data on domestic debt securities is not available, figures are calculated as the difference between total debt securities and international debt securities both on a residency basis. Data as of June 2015.
Source: BIS, National Authorities, CEIC

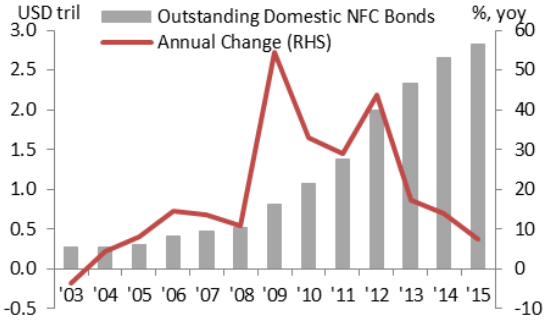
[4] According to the revisions to the Handbook of Securities Statistics, implemented in December 2012, international debt securities refer to those issued in a market other than the local market of the country in which the borrower resides. They encompass what market participants have traditionally referred to as foreign bonds and Eurobonds. As of 1998, about 70 percent of bonds issued in international markets were denominated in foreign currencies, i.e. in a currency different from that of the country in which the borrower resides. Notwithstanding, since the mid-2000s, borrowers from many countries have been able to borrow offshore in their own currencies. Notwithstanding these developments, bonds denominated in foreign currencies still accounted for about half of total outstanding international debt securities (BIS Quarterly Review, December 2012).

[5] The amount for NFC financing by type of funding should be used with caution as it could be subject to a margin of error. Data on domestic loans should be comprehensive, based on information from the national authorities, but data on cross-border loans could be underestimated to some extent due to the lack of BIS reporting economies. Similarly, data on debt securities issued both domestically and internationally is limited as some types of bonds, in particular for those for non-public offering, are not comprehensively covered, resulting in the smaller universe than total existing bonds.

**Despite the greater reliance on bank borrowing, NFCs in the region have gradually shifted towards greater bond market financing since the GFC, especially in domestic markets.** Figure A1 (a) shows that the share of local bond market financing in total debt financing of regional NFCs has increased, leading to a declining reliance on domestic bank borrowing. This shift is largely because regional NFCs were motivated to diversify their funding sources after the GFC. Meanwhile, the share of borrowing from foreign domiciled banks (external loans) in the BIS reporting countries has remained largely unchanged after the GFC. Since the GFC, the decline in loans from European banks has been made up for by other regional banks, particularly Japanese. In terms of their share of debt composition, international debt securities have remained relatively low.

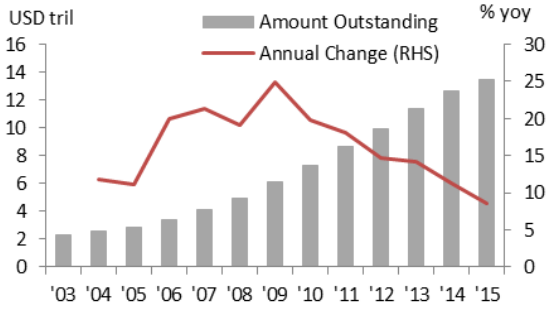
**This increasing dependence on domestic bond funding demonstrates a unique pattern in Asia, in contrast to EM economies in other regions that have been increasingly reliant on international bond issuance (Figure A1 (b)).**[6] Other than rising global liquidity, the increase in NFC domestic bonds in Asian EMs could be attributable to improved access, and lower financing costs on account of domestic and regional long-term policy arrangements such as the ABF and ABMI (see section 2).

**Figure A2: NFC Outstanding Domestic Bonds in the Regional EMs (by Residency)**




Note: Includes China, Korea, Hong Kong, Singapore, the Philippines and Thailand throughout the period. Malaysia is added in March 2006 and onwards, while Indonesia is included from March 2009 onwards. For Hong Kong and Singapore, as their data on domestic debt securities is not available, figures are calculated as difference between total debt securities and international debt securities, both on a residency basis. Data as of September 2015.
Source: BIS

**Figure A3: Outstanding Domestic Bank Lending to NFCs in the Regional EMs (by Residency)**



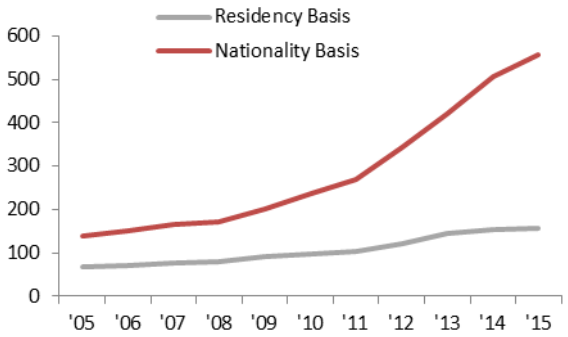

Note: Refers to lending to NFCs in the domestic economy. Data for Malaysia refers to total private non-financial sector, which includes both households and NFCs. Data as of September 2015.
Source: National Authorities.

**More recently, the trend of a shift to domestic debt securities has been somewhat moderated.** Over the last few years, the growth of both domestic debt securities and domestic bank borrowings has decelerated with the former slowing more quickly (Figures A2, A3). After the rapid growth following the GFC, the growth of domestic bonds has moderated partly because investor appetite for EM bonds has been weaker since the taper tantrum post-22 May 2013. On the bank borrowing side, amid the heightened leverage in the non-financial corporate sector, the authorities in the region responded with macro-prudential measures leading to more cautious behavior by domestic banks and slower credit expansion to NFCs The moderating growth of domestic bank borrowing could also reflect slower economic growth in the region.

[6] Using bond data by currency from Dealogic with India in the country coverage, Ayala et al. (2015) also found that, whereas other EMs relied more on FCY bond financing, NFCs in Asian EMs increasingly depended more on LCY bond financing. Taken together with Figure A1, NFCs in the regional EMs may have shifted towards LCY-denominated bond financing in the domestic markets.

# 2. Post-GFC Bond Financing: Trends and Drivers

**Figure 2.1: Outstanding NFC International Debt Securities in the Regional EMs By Residency and Nationality (USD bn)**




Note: Issuance based on nationality captures those for offshore affiliates/ subsidiaries of corporates in regional economies. Issuance based on residency follows the usual balance of payments convention of data reporting. Data as of September 2015.
Source: BIS

**The issuance of international debt securities by NFCs in the region on a nationality basis has risen much more rapidly than the issuance of international securities on a residency basis.** Using BIS data, Figure 2.1 shows that post-GFC, the gap between outstanding NFC international debt securities in the region reported on the basis of nationality and those reported on a residency basis has increased noticeably. This could be attributed to the fact that some regional NFCs may have borrowed overseas through the issuance of FCY-denominated debt securities by their offshore affiliates/ subsidiaries, such as in the case of some NFCs in China. Accordingly, these transactions are not recorded in the usual external debt statistics that are compiled on a residency basis (such as BoP statistics).

**Table 2.1: Debt Securities on a Nationality Basis**

| | Bonds Issued Domestically | Bonds Issued Overseas |
|---|---|---|
| LCY-denominated | A | B |
| FCY-denominated | C | D |

Source: AMRO

The following sections will focus on NFC bond financing on a nationality basis to capture the financing and risks related to their overseas operations. For example, bonds issued in Singapore by corporates whose headquarters are domiciled in China (Chinese corporates) are categorized as bonds of Chinese corporates under the nationality principle in B or D in Table 2.1, depending on currency denomination.[7] The following sub-section examines domestic debt securities versus international debt securities (Table 2.1, A + C vs B + D)[8],

[7] Bonds issued in regional economies by corporates whose headquarters are domiciled in the US (US corporates) are categorized as bonds of US corporates. This is not covered in this thematic study as the US is outside the region.

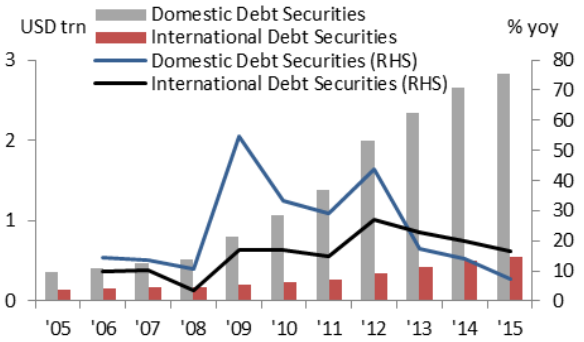
[8] In Section 2.1.1, due to data availability, domestic debt security data from BIS is based on the residency principle. This implies that bonds issued in the regional EMs by NFCs whose headquarters are domiciled in economies outside regional EMs are not excluded from domestic debt securities.

and sub-section 2.1.2 elaborates on recent developments in the area of FCY-denominated bonds (Table 2.1, C + D).

## 2.1 Recent Trends in NFC Corporate Bonds Outstanding

### 2.1.1 Domestic versus International Debt Securities

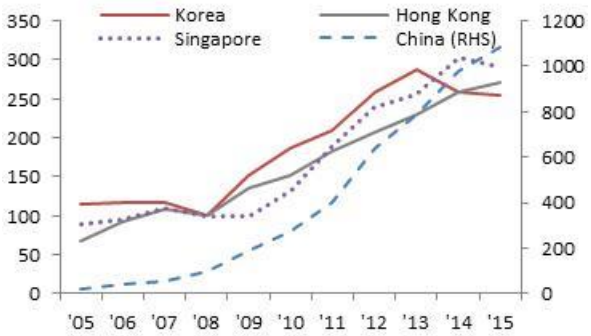
**Figure 2.2: Outstanding NFC International Debt Securities By Nationality vs Domestic Debt Securities**




Note: As data on domestic debt securities for Indonesia is available only from 2008 onwards, data for 2005, 2006 and 2007 are imputed on the assumption that year on year growth for Indonesian domestic debt securities is the same as growth for Indonesian local currency denominated bonds available for longer time series in the ADB database. Data as of September 2015.
Source: BIS

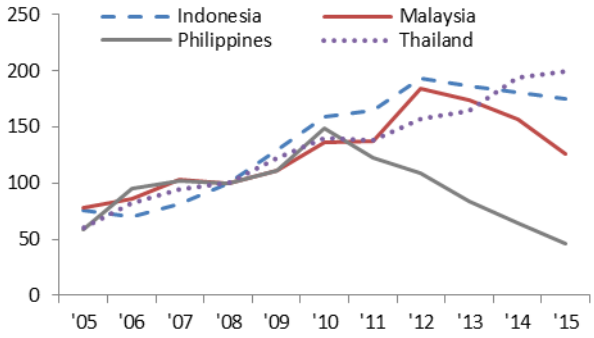
**Figure 2.3: Domestic Debt Securities of NFCs by Economy (Dec 2008 = 100)**

(a) China, Korea, Hong Kong and Singapore




Note: Data as of September 2015.
Source: BIS

(b) ASEAN-4




Note: Data as of September 2015.
Source: BIS

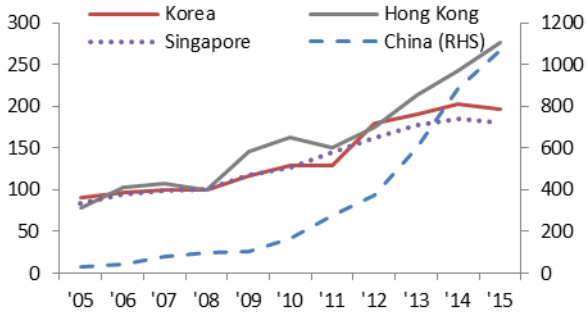
**After the GFC, domestic debt securities by NFCs in the region increased faster than international debt securities until 2012, driven largely by those in China (Figure 2.2).**[9] Looking at individual economies, the corporate bond market in China, in particular, has grown fast (Figure 2.3 (a)). After some stagnation during the GFC, other economies have also experienced an increase in bond issuance, albeit at a slower rate in some ASEAN economies. The Philippines show a declining trend since 2010, possibly because major NFCs have shifted towards international markets on the back of the improved country risk

[9] This sub-section uses BIS data. Whereas the ADB provides data on corporate bonds outstanding by currency, financial corporates cannot be separated from the corporate sector. Despite the different data compilation, the ADB data also suggests similar results which point that growth of the LCY-denominated corporate bond market has outpaced the growth of the FCY-denominated bond market since the GFC.

profile[10] (Figure 2.3 (b)). As far as the boom in domestic debt securities is concerned, Hale et al. (2014) point out that higher funding costs due to tightened USD liquidity after the GFC made LCY-denominated bond issuance relatively cheaper, and this could have encouraged more local issuance.

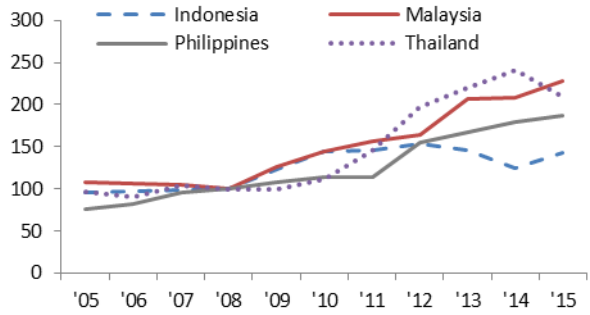
**Figure 2.4: International Debt Securities of NFCs by Economy (Nationality Basis) (Dec 2008 = 100)**

(a) China, Korea, Hong Kong and Singapore




Note: Data as of September 2015.
Source: BIS

(b) ASEAN-4




Note: Data as of September 2015.
Source: BIS

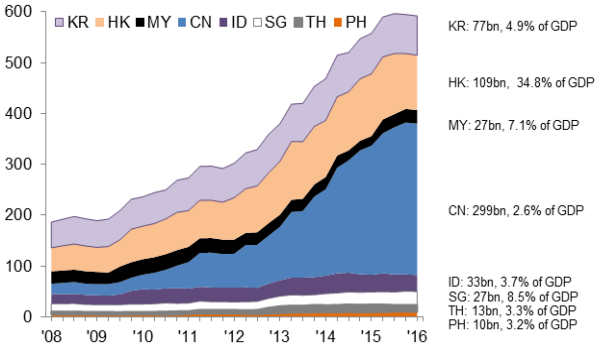
**International debt securities on a nationality basis, while smaller in size when compared to domestic debt securities, have grown faster in the past few years.** The rate of growth of international debt securities has outpaced the rate of growth of domestic debt securities since 2013, particularly for China. While the rate of growth of domestic debt securities has been similar across the region, growth in international debt securities has been more varied (Figure 2.4). This may reflect different levels of bond market development (slower growth in the more developed markets), policies to develop domestic markets and different financing operations of NFCs in different countries. For example, Shin (2013) points out that corporate treasuries – including in EMs – have been financing their activities more globally, taking into account their consolidated balance sheets, leading to widespread growth in NFCs' overseas financial operations.

[10] ADB (2011) suggests that both FCY and LCY bond ratings issued by the Government of the Philippines were better in 2011 on the back of positive economic developments, including a stronger external position. This may have enabled these NFCs to have better access to international markets on the back of improved credit ratings of the Philippines and lower funding costs associated with ample global liquidity, in line with the increasing bond issuance in international debt securities in the Philippines. Also, the size of the NFC domestic bond market in the Philippines, as of December 2014, was USD1.0 billion, compared to USD6.8 billion in Indonesia, USD110.3 billion in Malaysia and USD56.2 billion in Thailand, according to the BIS. Anecdotally, only large conglomerates are bond issuers in the Philippines, and so, even if only a few NFCs are shifting overseas, it may have a significant impact on the growth in domestic debt securities.

### 2.1.2 Foreign Currency Bonds in the Region

**Foreign currency bonds, including those issued by residents in domestic and overseas markets, are the focus of the remaining sections.**[11] We start by examining the characteristics of FCY bonds in terms of issuer, maturity and sector. This is based on the bond information we collected from Bloomberg, including 4,565 bonds from 508 companies in eight emerging East Asian economies (China, Hong Kong, Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand) during 1Q 2008 - 1Q 2016.

**Figure 2.5: Outstanding Regional FCY Bonds By Economy (USD bn)**




Source: Bloomberg, AMRO staff calculations

**Figure 2.6: Regional Currencies Against the USD (1 Jul 2015 = 100)**

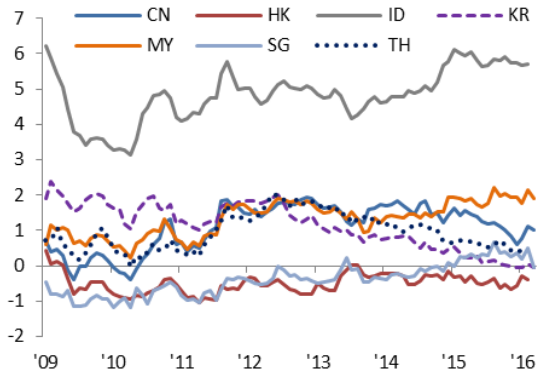

Source: National Authorities

**Outstanding FCY bonds have grown rapidly in the region since 2009, although the share in terms of GDP is not large, except in the case of regional financial centers**. FCY bonds issued by regional EMs have increased since mid-2009, with the total amount reaching USD592.0 billion as of March 2016, up from USD193.0 billion in 2009 (Figure 2.5). The average annual growth in FCY bond issuance over the last six years has been 20 percent. Its share as a percentage of GDP was the highest in Hong Kong at 35 percent, followed by Singapore at 9 percent. For the rest of the economies, it is in the range of 2 percent to 8 percent, implying that the potential risks to the overall economy from NFC bond financing in FCY may not be considerable. The rapid rise in the issuance of FCY bonds, particularly those in USD, was partly driven by the weak USD (reflected by LCY appreciation in Figure 2.6). In addition, NFCs in regional EMs have faced a higher funding cost in LCY (Figure 2.7), compared to the relatively low USD bond yields as a result of US monetary easing during and after the GFC. This has encouraged more USD borrowing in the region. That said, the pace of FCY bond expansion has moderated since mid-2014 across regional EMs due to the highly anticipated Fed rate hike and associated USD strength as well as the

[11] As USD bonds account for around 95 percent of all FCY bonds, we assume, for simplicity, from this point onward that FCY bonds are USD bonds.

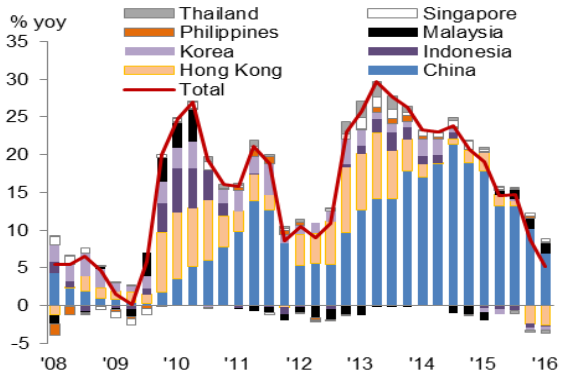
EM bond market sell-off during that period.[12] On the domestic side, initiatives to encourage LCY funding and ongoing efforts to deepen the financial markets could also have played a role.[13]

**Figure 2.7: Bond Yield Spread (10-Year Government Bond Yield in LCY less the US Treasury Bond Yield in USD), (%)**




Source: CEIC

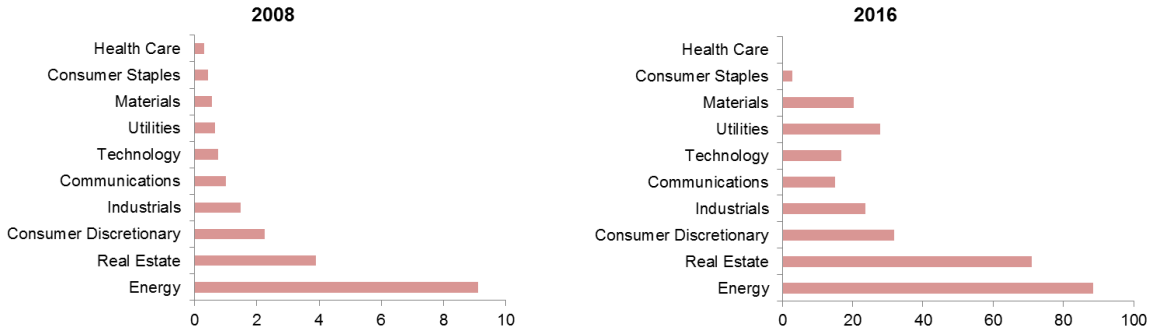
**Figure 2.8: YoY Growth of Regional FCY Bonds outstanding (% yoy)**




Source: Bloomberg, AMRO staff calculations

**China is the biggest contributor to the increase in FCY bonds issued by NFCs (Figures 2.8) and has become the largest FCY bond issuer in the region**. China's share has increased to 56 percent of total outstanding FCY bonds in the region as of March 2016, up from 14 percent six years ago. This can be partly attributed to RMB appreciation against the USD prior to 2014 and higher borrowing costs in China (prior to 2014). In addition, continued overseas M&A by Chinese companies[14] encouraged more FCY bond issuance for the financing of such activities. In terms of sector, FCY bonds in China have increased markedly in the real estate and the energy sectors since 2008 (Figure 2.9).

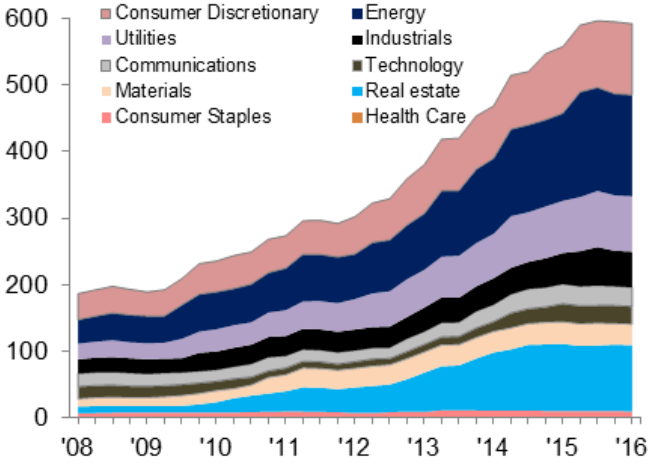
**Figure 2.9: China's FCY Bonds Outstanding by Sector in 2008 and 2016 (USD bn)**




Note: Data as of March 2008 and March 2016 respectively.
Source: Bloomberg , AMRO's estimates

[12] The push factor is that funding in USD (typically but not limited to, via swaps) has become more costly as the Fed was about to hike its benchmark rate and also risks associated with stronger USD that would result into currency mismatches risk, if not properly hedged (a risk that LCY issuance does not carry).
[13] For example, guarantee schemes such as CGIF and ABMF initiatives (more details in Section 4).
[14] Going forward, the "One Belt One Road" initiative may provide an additional boost to overseas M&A by Chinese corporates.

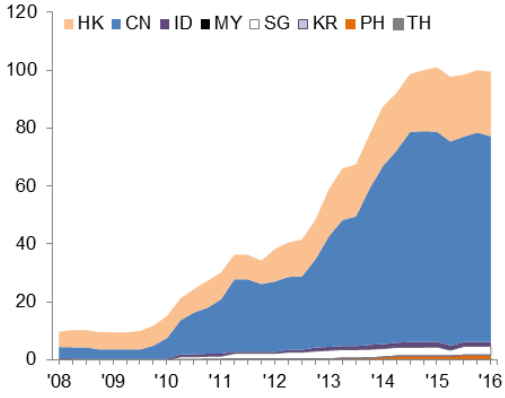
**Figure 2.10: Outstanding Regional FCY Bonds by Sector (USD bn)**




Source: Bloomberg , AMRO staff calculations

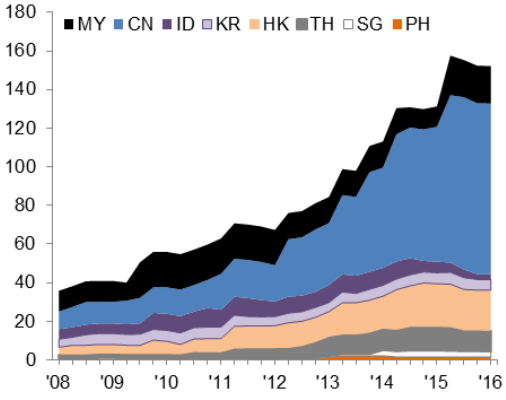
**The energy sector has become the largest FCY bond issuer in the region by sector, mainly on account of Chinese companies**. The outstanding FCY bonds of the energy sector rose to USD151.0 billion as of March 2016, or 27 percent of total FCY bonds, up from USD41.0 billion or 21 percent eight years ago (Figures 2.10). As of March 2016, the outstanding energy bonds issued by Chinese companies stood at USD88.0 billion, or 57 percent of total regional energy bonds. The main drivers behind the rise in the issuance of FCY bonds of Chinese energy companies (Figure 2.12) are lower borrowing costs in USD and strategies to finance FCY expenses related to overseas operations, rising overseas M&A by China's state-owned oil companies, partly supported by government initiatives for overseas expansion, and imports of raw materials. Bond issuance by Thai companies has also increased significantly, as they have sought to take advantage of cheaper overseas borrowing costs and to support overseas oil exploration and business activities.

**Figure 2.11: Outstanding Regional FCY Bonds Issued by the Real Estate Sector (USD bn)**




Source: Bloomberg, AMRO staff calculations

**Figure 2.12: Outstanding Regional FCY Bonds Issued by the Energy Sector (USD bn)**




Source: Bloomberg, AMRO staff calculations

**FCY bonds issued by the real estate sector have also increased rapidly owing to Chinese and Hong Kong companies, making the sector one of the largest issuers.** Outstanding FCY bonds issued by the real estate sector rose to USD99.0 billion, or 17 percent of the total, as of March 2016, up from USD10.0 billion or 5 percent in 2008 (Figure 2.11). Issuance by Chinese real estate companies has increased rapidly since 2008 as a whole, with bonds outstanding rising to USD71.0 billion or 72 percent of the regional total, as of March 2016, up from just USD4.0 billion or 40 percent of the regional total eight years ago. Unlike in the energy sector (Figure 2.12), growth in real estate bonds has moderated since the end of 2014. Since early 2015, the pace of FCY bond issuance by Chinese developers has decelerated as these developers have been allowed to issue more LCY bonds domestically and have also faced more constraints in issuing FCY bonds amid rising concerns in the overseas markets about default risks.

## 2.2 Key Drivers

**Table 2.2: Key Drivers of the Growth of FCY Denominated Debt Securities after the GFC**

| Global Factors | Domestic Factors | Long-Term Market Developments |
|---|---|---|
| **Global investor appetite and liquidity**<br>-- Search for yield on the back of low interest rates and compressed term premiums due to unprecedented accommodative monetary policies in advanced economies | **Macroeconomic fundamentals**<br>-- GDP growth, improving economic policies, sustainable current account balances and low external debt<br>-- Market specific factors, such as size and liquidity<br>**NFC behavior**<br>-- Multinational NFCs hedging against FCY payments<br>-- Profit enhancing behavior through betting on LCY appreciation and increasing leverage<br>-- Regulatory and tax arbitrage strategies | **Institutional setting**<br>-- Legal environment to protect investors, local credit agencies, and accounting standards<br>**Regional Policy Initiatives (ABF1&2, ABMI)**<br>-- Greater financial deepening and higher liquidity in FCY denominated bonds due to ABF1.<br>-- Deeper local bond market as a whole due to ABF2 and ABMI* |

Note: *The primary focus is on LCY denominated bonds.
Source: AMRO

**Recent empirical literature points to three main drivers for FCY-denominated debt securities in EMs after the GFC: global factors, domestic factors, and long-term market developments (Table 2.2).**e global push factors are related to global investors' appetite and liquidity in response to monetary policy in advanced economies. On the other hand, domestic pull factors are closely tied to cyclical factors after the GFC in terms of macro fundamentals, NFC behavior, as well as structural factors linked to long-term market development.

**Firstly, global investor appetite and ample liquidity as a result of accommodative monetary policy and quantitative easing in advanced economies have led to surging demand for FCY-denominated bonds in EMs outside the region.** Recent empirical works

have documented an increase in investment allocated to FCY-denominated EM bonds by global investors facing compressed term premiums in advanced markets and ample liquidity due to unprecedented accommodative monetary policies (Chui et al. 2014, and Feyen et al. 2015). A lower debt repayment burden due to low US interest rates has also encouraged NFCs to issue FCY-denominated bonds (Levinger, H, and Li, Chen 2014).

**Secondly, on the domestic front, macroeconomic fundamentals and NFC behavior have encouraged local bond market development.** Some research has pointed out the positive role played by fundamentals such as GDP growth, improving current account balances and low external debt in bond market development in EMs (Feyen et al. 2015 and Ayala et al. 2015). Amid more active cross border activity by NFCs in the region, Shin (2013) and Chui et al. (2014) suggest that NFCs have increased FCY funding to hedge their USD payment obligations and to bet on LCY appreciation. In terms of NFC behavior, Avdjiev et al. (2014) points to three reasons for NFCs raising funding offshore: transfers of funds to headquarters, trade credit flows to unrelated firms, and cross-border deposits in banks. Bastos et al. (2015) provide evidence that bond issuance via offshore vehicles is motivated by regulatory and tax arbitrage strategies, particularly in Latin American EMs.

**Finally, common factors that have driven both FCY- and LCY-denominated bond market developments are improved institutional settings and regional policy initiatives.** The diversification of funding sources has been a long-term issue since the Asian Financial Crisis (AFC). With the increase in the size of government bond markets and the large inflow of liquidity into their domestic markets, regional EMs have been able to provide more information to construct accurate yield curves as bond market benchmarks for individual economies. Together with a greater variety of fixed income products and better institutional settings to protect investors in local markets, investors have been gradually attracted to the EM markets. These developments in local bond markets have resulted in a better capacity to utilize savings more efficiently in regional emerging markets over the long term. Moreover, the long-term commitment of policymakers in the region and regional policy initiatives such as the ABMI, ABF and CGIF have contributed to the increasing size of domestic bond markets. Chan et al. (2012) suggest that regional policy initiatives, such as the ABF and ABMI, also supported the growth of regional bond markets. Mizen and Tsoukas (2014) conclude that regional initiatives have had positive effects on NFCs' decision to issue bonds due to deepening bond markets and improved liquidity. Moreover, this appears to be a factor specific to this region.

**Although recent studies suggest that both global push and domestic pull factors have led to the growth of regional bond markets, some studies focused on EMs have**

**concluded that global factors are more important than domestic factors.** Ayala et al. (2015) argue that global and domestic factors forced NFCs to rely more on bond financing, and they assess that the search for yield as a global cyclical factor accounted for most of the variation in bond shares in total corporate debt. Feyen et al. (2015) also conclude that global factors were dominant after controlling for country pull factors and bond characteristics. Koepke (2015) also draws the same conclusion and shows that pull factors were more important for bank borrowing flows than bond flows. Lastly, policy initiatives are regarded as significant but not key drivers. Mizen and Tsoukas (2014) compare regional policy initiatives with domestic factors and find that firm-specific factors, as proxies for domestic factors, were more important contributors than regional policy initiatives for the growth of bond markets.

# 3. Risks for NFCs: Regional Evidence

**Against the backdrop of rising FCY bond issuance by EM NFCs in our region, we assess the evolving risks based on the available regional information and data.** In doing so, this report differentiates itself from earlier works by relying significantly on a bottom-up NFC firm-level approach and adapting the latest available data in the capital markets. We start by looking at the indebtedness and debt servicing abilities or solvency of NFCs in the region. Then we analyse three main financial risks since the GFC: rollover risk, currency mismatch risk, and interest rate risk.[15]

## 3.1 Financial Soundness of NFCs in the Region

**There has been a steady increase in corporate leverage over the past few years and financial soundness indicators for regional economies point to some vulnerability to shocks.** A recent study (Chui et al 2014) based on a sample of NFCs from seven large EMs, suggests that corporate indebtedness is relatively elevated, including in EMs in this region. Chinese corporates, in particular, are increasingly leveraged, in comparison with peers in other EMs. Box B provides a brief overview of leverage and debt service capability at the country level for selected regional economies with the aim of assessing, at the aggregate level, the financial health (particularly debt soundness) of the NFC sector. The main findings are that indebtedness has increased and debt servicing capacities have weakened in several regional economies, indicating some vulnerability to shocks ahead.

[15] One caveat is that we focus on risks which directly relate to liquidity. Nonetheless, if these risks are elevated for an extended period of time, they can also lead to greater difficulty in servicing debt or higher solvency risk.

## Box B. Financial Soundness of the NFC Sector (Selected Economies)[16]

**There has been a notable increase in corporate leverage amongst NFCs in most regional economies over the past several years, while the financial soundness of the NFC sector varies across economies.** This box provides an overview of leverage and debt service capability at the country level for selected regional economies. By looking at key indicators of leverage and debt service capability, as well as profitability, we can gauge early signs of potential stress. A brief description of the indicators under consideration is shown in Table B1.

**Table B1. Key Indicators for Assessing Debt Soundness of the Corporate Sector**

| Indicators | Description | Purpose |
|---|---|---|
| Debt to GDP Ratio | The proportion of corporate sector financial obligations to the size of the economy | An indicator of indebtedness |
| Net Debt to Earnings Ratio | The proportion of corporate sector (net) financial obligations to EBITDA (earnings before interest, tax, depreciation and amortisation) | Whether earnings growth has kept pace with debt build-up, as well as an indicator of solvency |
| Interest Coverage Ratio | The proportion of EBITDA to gross interest payments | A gauge as to what extent earnings cover gross interest payments, indicating an ability to repay debt – the most important solvency indicator |
| Net Profit Margin | Net income divided by revenue (defined as the portion of sales remaining after all operating expenses) | The amount of profit that a corporate can extract from its total sales |

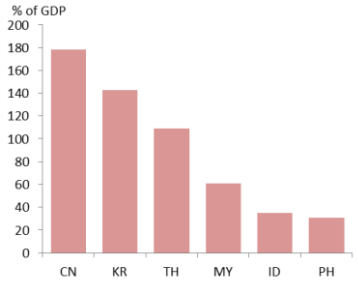
Source: AMRO

**These indicators suggest the following:**

- **First, total corporate sector indebtedness remains elevated in several regional economies.** Excluding regional financial centres Singapore and Hong Kong, the corporate sector debt to GDP ratio exceeded 100 percent in China, Korea, and Thailand. (Figure B1).

- **Second, in the NFC sector, some regional economies reported a sharp rise in corporate leverage post-GFC.** Figure B2 shows that the net debt to earnings ratio climbed the most in China, surpassing pre-GFC highs. Rising leverage can also be observed in Malaysia, Thailand and the Philippines, but to a lesser extent. Leverage ratios in Indonesia remain moderate, while in Korea the degree of NFC leverage fell.

**Figure B1.**
**Corporate Sector Indebtedness[17] (2014)**




Source : Morgan Stanley

**Figure B2. NFC: Net Debt to Earnings Ratio**

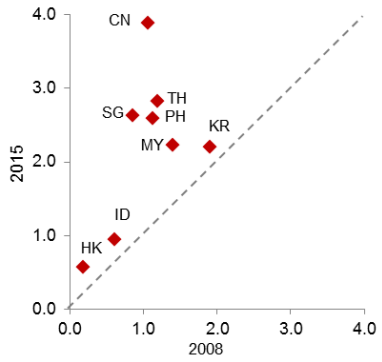

Source: Reuters

[16] Proxied by listed NFCs as information on non-listed NFCs is not readily available.

[17] It is acknowledged that there are various estimates of corporate sector indebtedness, notably in China.

- **Third, the net debt to earnings ratio for NFC across most regional economies is now relatively high as compared to 2008, due to both higher stocks of debt and lower earnings.** This suggests that there could be an increase in the incidence of debt servicing difficulty for certain entities over the next couple of years, particularly as US interest rates are set to rise (Figure B3).

**Figure B3. NFC: Net Debt to Earnings Ratio (Selected Economies)**



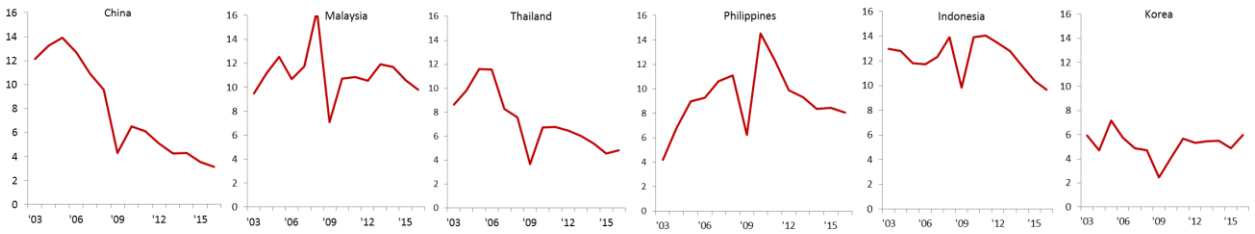

Source: Reuters

- **Fourth, rising leverage has been accompanied by a weakening interest coverage ratio and declining profitability.** Regional NFCs that are experiencing a rapid build-up in leverage also have seen their ability to repay debt fall steadily since 2012. Figure B4 shows that with the exception of the Philippines and Malaysia, this is a common development across EMs in the region. This reflects the softer earnings/ profitability growth of several NFCs due to a more challenging operating environment, both at home and overseas (Figure B5). As global interest rates are set to tighten, downside risk to the debt servicing ability of some corporates, particularly those in industries facing excess capacity, have increased. Although the interest coverage ratio is about four times for most economies, this indicator can change rapidly. Even for those economies where this indicator does not indicate alarming outcomes, liquidity challenges could make servicing more difficult due to depressed earnings.

**Figure B4. NFC: Interest Coverage Ratio**


Source: Reuters

**Figure B5. NFC: Net Profit Margin**



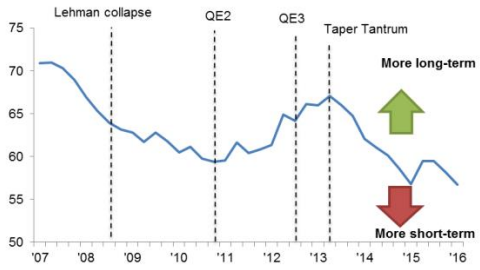

Source: Reuters

## 3.2 Rollover Risk

**Rollover risk refers to the situation when an NFC is unable to refinance its maturing FCY bonds.** It is a risk faced by firms when their debt is about to mature and has to be rolled over into new debt. Firms will have to refinance their debt at a higher rate and incur more future interest charges, when interest rates rise.

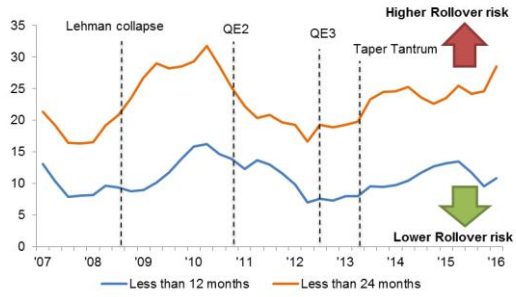
**An NFC may typically resort to issuing short-term bonds to finance a long-term project and when the short-term bond matures, some form of refinancing will be needed.** The inherent risk lies specifically in rolling short-term debt to match long-term project liabilities. In order to assess the presence of such risk, we use the average maturity of outstanding bonds[18] (the shorter the maturity, the higher the risk of rollover) and the corresponding share of bonds due in 12 months to total outstanding bonds or "debt-falling due" (the higher the share, the higher the rollover risk) as indicators for rollover risks. During a challenging period, NFCs will also likely issue bond with even shorter maturities.

**Figure 3.1: Average Regional FCY Bond Maturity Profile (Months)**




Note: The average maturity is value-weighted. The region includes China, Hong Kong, Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand.
Source: Bloomberg, AMRO staff calculations

**Figure 3.2: Regional Share of Bonds Due within 12 and 24 Months (% of Total Bonds)**




Note: The region includes China, Hong Kong, Indonesia, Korea, Malaysia, the Philippines, Singapore and Thailand.
Source: Bloomberg, AMRO staff calculations

**The rollover risk for NFCs in the region increased during the GFC.** During the GFC, regional NFCs found it more difficult to issue new FCY bonds and roll them over as USD funding and liquidity were tight, investor risk appetite was weak and counterparty risks amongst the banks that helped corporates issue/ refinance these bonds also rose. As a result, they had to resort to issuing short-term bonds. This led to a shorter maturity profile

[18] For example, consider two bonds, one has 9.5 years remaining with an amount at 100 dollars, the other has 4.2 years remaining with an amount of 10 dollars, the average maturity is (9.5*100 + 4.2*10)/(100+10). We employ different treatment to calculate the maturity date of bonds with different maturity types (e.g., bullet bonds or option-embedded bonds). Please refer to Appendix B for details.

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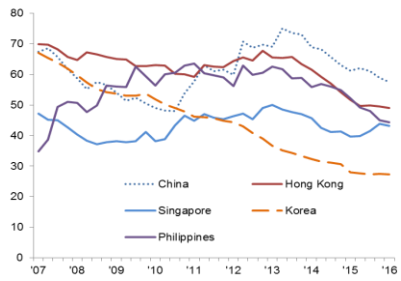
and a greater share of bonds due in the near term (within the next 12 months) from 2008 to early 2010 (Figure 3.1 and 3.2).

**Post-GFC and prior to the taper tantrum, with abundant USD liquidity due to the US Fed's QE, NFCs were able to issue longer-term bonds, leading to a lower share of bonds due in 12 months**. Between the start of QE2 (which lasted from November 2010 to Q2 2011) and the end of QE3 (which lasted from Q3 2012 until the taper tantrum in May 2013),[19] there was a gradual decline in the average maturity of outstanding bonds in the region as higher global liquidity induced NFCs to issue more FCY bonds, predominantly in USD. In that period, the share of short-term debt fell consistently as corporates took the opportunity to issue long-term FCY bonds against the backdrop of an increase in USD liquidity in the global markets.

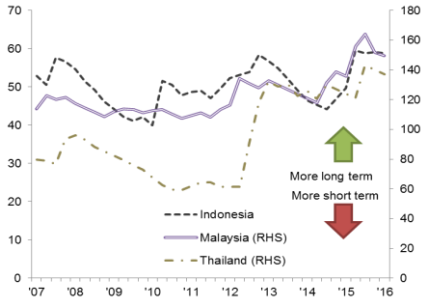
**The average maturity profile has fallen rapidly since the May 2013 taper tantrum.** Investors have been more cautious about buying long-term EM FCY bonds due to potentially higher interest rates and a higher risk premium in the wake of an EM bond selloff,[20] reducing the capability of NFCs to issue longer-term bonds and refinance their short-term debt. As a result, the maturity profile has shortened as NFCs are issuing more short-term FCY bonds. It is noted here that this indicator is now below where it was at the time of the GFC. The share of bonds due in 12 months also increased until the first quarter of 2015 but has declined since as a sizable amount of short-term bonds was repaid or matured between Q2 2015 and Q4 2015. Nevertheless, the share of bonds due in 24 months (the orange line in Figure 3.2) has continued to increase since the taper tantrum, given the concentration of bonds due within 12-24 months ahead, that is from March 2017 to March 2018.

**Figure 3.3: Regional Average FCY USD Bond Maturity by Economy (Months)**

(a) CN, HK, SG, KR and PH




(b) ID, TH and MY



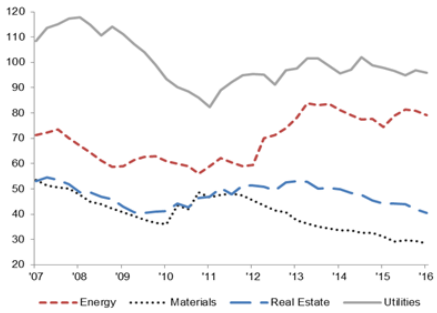

Source: Bloomberg, AMRO staff estimates

[19] QE1 began in late November 2008 when the US Fed began to purchase $600.0 billion in mortgage-backed securities. In November 2010, the Fed started a second round of quantitative easing, purchasing $600.0 billion of Treasury securities by the end of the second quarter of 2011.A third round, QE3, was launched in September 2012 when a $40.0 billion per month, open-ended bond purchasing program of agency mortgage-backed securities was announced. In December 2012, the Fed increased the amount of open-ended purchases to $85.0 billion per month. On 19 June 2013, the Fed Chairman announced a "tapering" of some of the QE policies, whereby the Fed would scale back its bond purchases from $85.0 billion to $65.0 billion a month during the upcoming September 2013 policy meeting, depending on continued improvements of economic data.

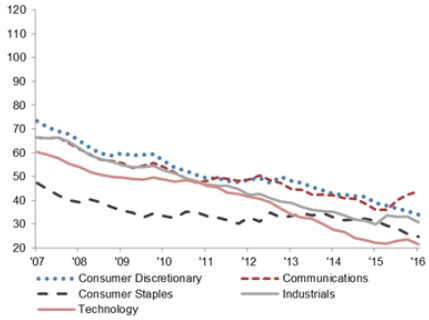
[20] This has been the case since mid-2015. The key triggers include an imminent Fed rate hike and a Chinese equity sell-off.

**Figure 3.4: Regional Average USD Bond Maturity by Sector (Months)**

(a) The energy and utilities sectors have the longest maturity




(b) In the sectors below, maturity has been declining consistently




Source: Bloomberg, AMRO staff estimates

**In most regional economies and in most sectors, the declining average maturity since the taper tantrum period indicates that rollover risks have been increasing, although there are exceptions.** The regional economies, with the exception of Malaysia, Thailand and Indonesia, have exhibited a falling average maturity since the onset of the taper tantrum in June 2013 (Figure 3.3).[21] Chinese NFCs have also seen their average maturity declining during this period, although not at an alarming level. Rollover risks have been increasing in most sectors as average maturities decline. The consumer staples and technology sectors have the highest proportion of short-term debt. The utility sectors, on the other hand, typically issue long-term FCY bonds and hence are faced with less rollover risk. The rollover risk for the energy sector is also relatively low (Figure 3.4).[22] In the real estate sector, while the average maturity has declined since the taper tantrum, it may not clearly indicate increasing rollover risk as this has been partly due to a shift to LCY bond issuances by Chinese real estate corporates, which has and will lead to a gradual decline in outstanding FCY bonds of this sector. **Continued monitoring is warranted as rollover risks are on the rise in several economies and sectors.**

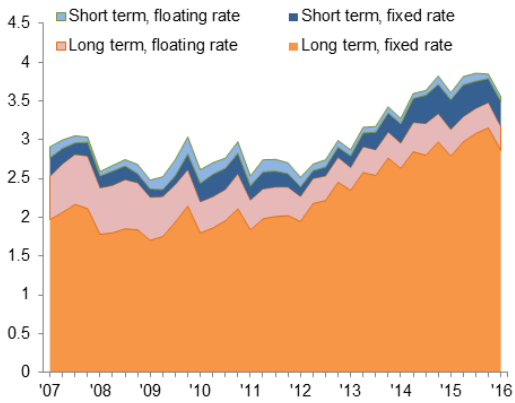
## 3.3 Interest Rate and Credit Spread Risks

**An interest rate risk is defined in terms of the additional interest costs for NFCs on their floating-rate FCY bonds when interest rates rise, and/ or when there is a higher interest charged by the investor (higher credit spread) if the NFCs are to refinance a maturing bond.** As mentioned above, firms may face difficulty in rolling over debt when interest rates are about to rise or continue rising.

**Figure 3.5: Outstanding Regional FCY Bonds By Term and Rate (% of GDP)**

[21] In Malaysia, the average maturity has been increasing due to the dominance of longer-term bond issues in the energy sector. In Indonesia, it is mostly due to the utility sector, including the local logistics (transportation) NFCs. In Thailand, it is mostly due to the energy and chemicals sectors.

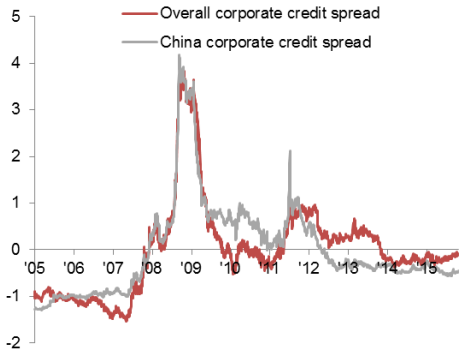
[22] This is likely because NFCs in this sector have been able to issue a large amount of long-term bonds against the backdrop of longer-term projects in the pipeline that need to be financed over a longer horizon.




Note: Please refer to Appendix D.1 for regional economies.
Source: Bloomberg, AMRO staff calculations

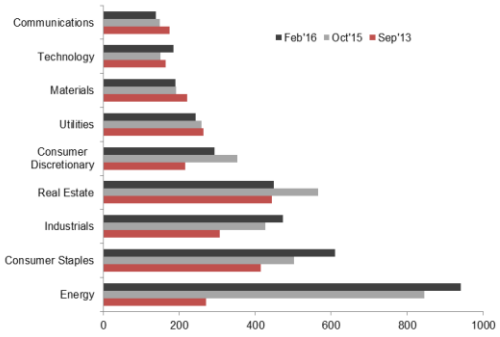
**As for the interest rate structure, we find that our regional economies mainly issue long-term and fixed-rate foreign currency bonds, implying that their exposure to short-term interest rate increases is not high (Figure 3.5).** In all regional economies, the share of the largest bond type – long-term and with a fixed rate – has been increasing over time (see Appendix D Figure D.2 for figures by economy).

**Figure 3.6: Corporate Credit Spreads (Overall and China)**




Source: AMRO's Financial Stress Indicators (FSI) – Forthcoming.

**Figure 3.7: Corporate Credit Spreads by Sector (BPS)**




Note: This is the weighted average of the spreads in each sector, based on 342 bonds that have valid spreads for both dates. This may contain a survivorship bias. Data as of 31 March 2016.
Source: Bloomberg, AMRO staff calculations

**This notwithstanding, caution is needed as risks in terms of credit spread will likely rise when the investors demand higher returns for newly issued FCY bonds in a period of stress**. Corporate bond spreads tend to escalate during stress periods. AMRO's corporate spread indicator (Figure 3.6), calculated by employing factor analysis to extract a common trend, suggests that regional corporate bond spreads over the US Treasuries rose during the 2008 GFC and the 2013 taper tantrum. Figure 3.7 shows that for the past few years, credit spreads have increased markedly in some sectors, particularly energy.

## 3.4 Currency Mismatch Risk

**In this study, we define currency risk as the mismatch between the stream of foreign currencies that a corporate has borrowed against its stream of foreign currency income/ revenue.** If the latter is substantially lower than the former, then there could be a potential stress in the event of an FCY appreciation. Currency mismatch risk for NFCs tends to arise when FCY bonds are used to fund NFCs' local activities.

**LCY depreciation could lead to higher payments of principal and interest on FCY debt in terms of LCY and thus lead to a further erosion of profitability or even a potential default**. The impact of currency depreciation on firms depends on the size of their financial buffers including natural hedges from overseas revenues and financial hedges from currency hedging.

**Currency mismatch risk is lower when firms have natural hedging and financial hedging.** If corporates have debt in FCY and also obtain their core income in FCY, then they have naturally hedged positions. Even without natural hedges, an NFC may use financial instruments such as currency swaps to hedge currency exposure, such that the liability will not be tied to the volatility of the exchange rate.

**We use the mismatch of an NFC's FCY debt against its overseas revenues as an indicator of currency mismatch risk.**[23] If an NFC's FCY bond outstanding exceeds its foreign earnings significantly, then the NFC is vulnerable to currency movements as foreign currency liabilities are then naturally hedged only partially. This is an indicator and not a measurement of currency mismatch risk since we are still comparing a stock variable with a flow variable. Overseas earnings are obtained from the financial statements of firms with FCY bond issuance.[24] The distribution of NFCs by economy and by country is listed in Appendix C.

[23] We note that some of the overseas revenues may not be in USD, and could affect the accuracy of the currency mismatches measured in USD in this study.

[24] We use their overseas revenue and earnings before interest, taxes, depreciation and amortization (EBITDA). In order to obtain it, we mapped each FCY bond to the NFCs' financial statements. If the NFC has no detailed financial information, we mapped the NFC to its parent or parent's parent company, and so on, until a valid financial statement with a geographical revenue breakdown was found. Based on the available information from the financial database of Bloomberg, we succeeded in mapping FCY bonds to 343 NFCs out of 508 corporates that issue hard currency bonds (364 have valid financial statements, some from their parent companies, and 343 have a breakdown of domestic and overseas revenues).

**Figure 3.8: Overseas Revenues and Outstanding FCY Bonds by Sector (USD bn)**

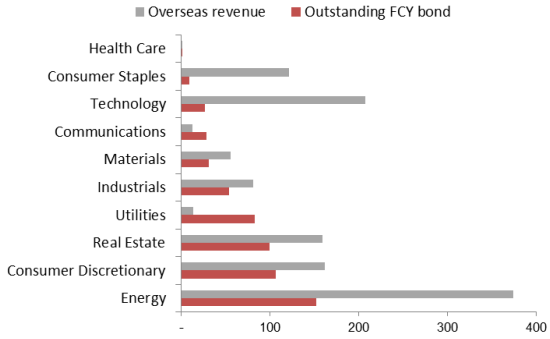
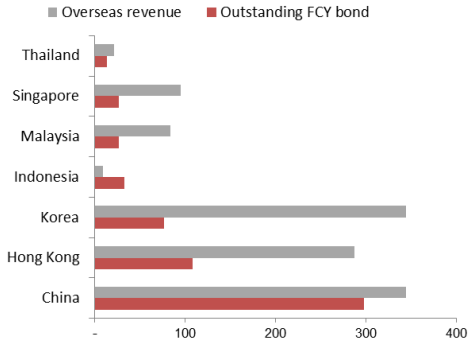


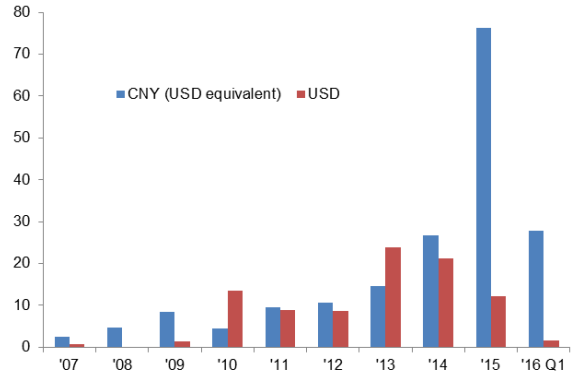

**Figure 3.9: Overseas Revenues and Outstanding FCY Bonds by Economy (USD bn)**




Notes: Overseas revenue is for FY2015 and outstanding FCY bonds and loans are as of March 2016. Foreign earnings data for major firms in the Philippines was not available, and hence it is excluded from our analysis.
Source: Bloomberg, AMRO staff estimates

**Overall currency mismatch risks indicated by a natural hedge analysis do not seem to be large but there may be pockets of high risk in certain sectors and economies in which FCY bonds outstanding of NFCs are much greater than their overseas revenues.** Figures 3.8 and 3.9 show that FCY bonds outstanding is smaller than overseas revenues based on the 2015 financial statements in most sectors and in several economies, indicating a high degree of natural hedging. The former is much smaller than overseas revenues for the technology and consumer staple sectors, as well as for Korea, Singapore and Hong Kong, indicating relatively lower currency mismatches risks. In terms of sectors, real estate could experience currency mismatch risks, as could utilities and communication. Data and longer run observations also show that this risk for certain NFCs in Indonesia and China may not be insignificant.[25]

**Figure 3.10: China Real Estate Bond Issuance (USD bn)**

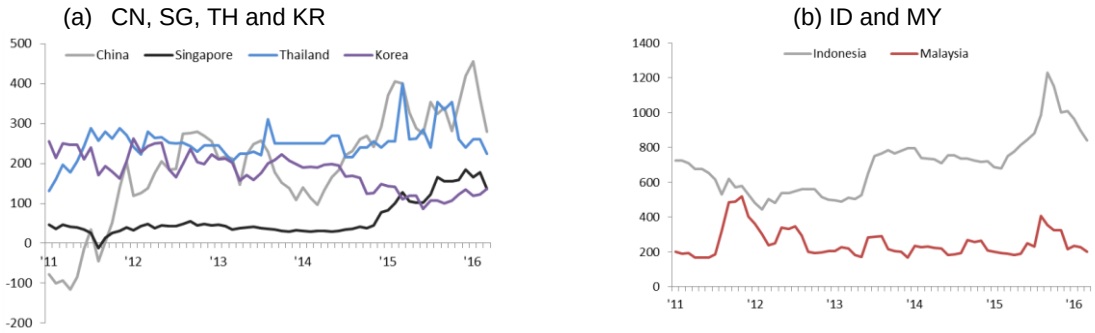



Source: Bloomberg, AMRO staff calculations

[25] As FCY debt can also be in the form of cross-border NFC borrowing, we also investigated this risk further by adding the FCY syndicated loans (data obtained from Bloomberg) to the FCY bonds outstanding. In doing so, we found that with this greater amount of FCY liabilities, risk could be quite significantly higher in these sectors and economies. We did not include FCY bilateral borrowing in this analysis as the data is not readily available. According to Bloomberg , the total amount of FCY bonds and syndicated borrowings by regional NFCs at March 2016 was USD592.0 billion and USD442.0 billion, respectively

**As the fluctuation in revenues could be sizeable in some sectors (especially energy), the risks could be higher than indicated above.** It is noted that our analysis is based on the NFCs' financial statements of 2015 and does not capture the dynamics of revenue or potential fluctuations in total and overseas revenues in the future. Therefore, currency risks may be understated here in sectors that experience substantial revenue fluctuations. On the other hand, currency mismatch risks in China, especially in the real estate sector, are mitigated to some degree as NFCs have recently relied more on the RMB bond market (Figures 3.10). [26]

**Figure 3.11: Offshore Hedging Costs by Economy (BPS)**




Note: Hedging costs for Malaysia are proxied by 1-year basis swaps.
Source: Bloomberg, AMRO staff estimates

**While NFCs with limited natural hedges could still mitigate currency mismatch risks through financial hedging, the costs in most regional economies are high, and have been rising further (Figure 3.11).** While each bond issue prospectus contains information about financial hedging, analysing it one by one is a daunting task. We therefore relied on evidence from a selection of prospectuses, BIS (2010) and AMRO interviews with bond market experts and corporates in the region (Box C) to gauge the usage of financial hedging to cover currency mismatch risks. There has been an increasing usage of hedging instruments in the region, but it is still not widespread, given that the costs[27] are still high in most economies except Korea. In recent times, costs have been rising as banks (swap counterparties) are cautious of further regional exchange rate depreciation as well as lower USD liquidity. Therefore, even NFCs that have used hedging instruments in the past could find it more expensive to hedge now. **It is also important to be mindful that liquidity in hedging markets can evaporate during times of market stress.** This is because banks are more reluctant to provide hedging products or may increase charges for hedging activities when liquidity is tight.

[26] Following the Kaisa Group default and a loosening of policy in China to allow real estate companies to issue bonds in RMB in the inter-bank market, there has been little FCY bond issuance, as these companies can tap the domestic RMB market instead. In particular, after the recent stock market correction, local RMB investors have been keen to invest in fixed income markets.

[27] This represents the cost of hedging a USD liability in local currency as reflected in the offer price of the cross currency swap (CCS) of LCY against the USD. Note, however, that this does not include the additional spread that banks will charge. Thus, the actual cost of hedging would be higher than our estimates.

## Box C. AMRO's Engagement with the Private Sector on Developments in and Risks of NFC Corporate Bonds in the Region: The Cases of China and Korea

**Considering the large market size of FCY-denominated bonds in China and Korea, this Box highlights the key takeaways from AMRO's engagement with the NFCs, bankers, and investors in order to supplement the evidence and key findings in this study**. The objective of this engagement is to better understand the evolution of risks and the attendant vulnerabilities in relation to our focus areas: rollover risk, currency mismatch, and interest rate and credit risk spreads. In China, the engagement covers the oil and gas and real estate sectors only.

- **Rollover Risk**
  Most FCY-denominated bonds issued in China and Korea tend to face higher volatility and some degree of rollover risk during periods of market uncertainty. In China, it is noted that USD-denominated bonds (typically issued by Special Purpose Vehicles (SPV) in offshore markets) in the oil and gas sector tend to be longer-term in nature, with up to 30 years maturity. It is argued that issuing such bonds offshore is relatively cheaper than borrowing in RMB domestically, as the interest rates on RMB treasury bonds are higher. In Korea, while it is noted that the FCY-denominated bond market is rather liquid, the average maturity for FCY-denominated bonds issued by Korean NFCs has declined to around 3-5 years on average in recent years, partly reflecting market expectations of US interest rate hikes. Unlike in China, in the event of stress in the USD funding market, Korean NFCs tend to be more vulnerable to rollover risks, considering their relatively shorter maturity.

- **Currency Mismatch Risk**
  Currency mismatch risk is perceived to be lower when corporates have natural and/ or financial hedging positions. In China, NFC players in the oil and gas sector have a natural hedge when liabilities from foreign currency-denominated bonds are matched with revenues in foreign currencies from oil exploration. Likewise in Korea, major NFC players that issue foreign currency-denominated bonds mostly hedge their foreign currency risks. For large Korean NFCs, these corporates tend to have a natural hedge as they are in the oil and gas tradable sectors with large USD portfolios. In terms of proceeds, the funds are typically used to finance overseas business expansion (capex), working capital and, in some cases, trade finance. In Korea, there are instances – when the USD interest rate is more attractive than domestically. As a result some NFCs tend to translate their USD proceeds into won to finance domestic operations. This usually represents an opportunistic window and is not norm. Overall, currency mismatch risk appears to be relatively small in Korea.

- **Interest Rate and Credit Spread Risks**
  Many NFCs have taken the opportunity to issue more fixed rate bonds with the aim of locking-in the interest payment burden. For example, in China, where most bond issues were on a floating rate basis, some oil and gas companies have greatly increased the proportion of fixed rate bond issuance (up to 60 percent). In the real estate sector, there is some divergence. Some Chinese corporates were able to issue fixed 3.5 percent USD bonds, while other NFC bonds are traded at interest rates of more than 10 percent. In the Korean bond market, about 90 percent of FCY-denominated corporate bonds were issued on fixed interest rate terms. Since markets have been anticipating an interest rate hike by the US Fed for more than two years, the direct impact is not a major concern so far in both China and Korea. The effects of tighter USD liquidity and increasing credit spreads may be greater.

# 4. Conclusion and Policy Discussion

## Conclusion

**The financing activities of NFCs in this region have evolved over the past decades from predominantly bank-intermediated finance to greater debt capital financing.** Compared to the AFC of 1997-98 which was attributed in part to a lack of diversified sources for corporate financing, progress has been made in regional bond market development to increase and diversify funding choices for firms. Consequently, the reliance of NFCs on bond financing in the region has increased over time.

**FCY bonds issued by regional NFCs grew fast following the GFC, although the stock is smaller than LCY bonds issued, and its size as a percentage of GDP is still not high in most economies.** Global factors such as rising global liquidity owing to unprecedented accommodative monetary easing policy in advanced economics and the search for yields by international investors have been a major driver for increasing regional NFC bonds. The explosion of global liquidity post-GFC has incentivized NFCs to take advantage of favorable conditions to issue bonds in FCY. While many resort to FCY funding to finance their overseas operations, some also use it to support their local activities.

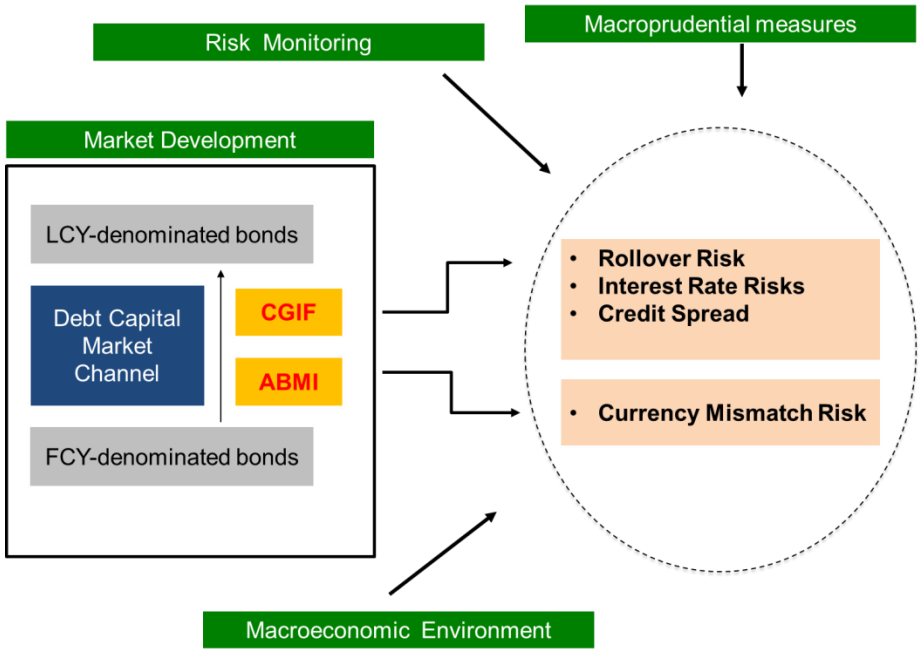
**Our analysis highlights that increasing FCY bond issuance could expose NFCs in the region to risks, especially of rollover, credit spreads, and currency mismatches. Rollover risks have been increasing in several regional economies since the taper tantrum of 2013,** as demonstrated by declining average maturity and increasing proportion of bonds due in the short term. **The increasing proportion of NFC long-term (at original maturity) and fixed rate FCY bonds in the region is a major factor that will help mitigate interest rate risks. Notwithstanding, risks emanating from an increasing credit spread cannot be overlooked and can emerge suddenly during a stress period.** This implies that some NFCs may need to rollover a sizeable portion of their bonds at an unfavorable interest rate. There are potential financing difficulties in some sectors such as materials, real estate and communications, that have a large amount of maturing bonds and limited overseas earnings.

**Overall risks from currency mismatches are assessed to be non-negligible for the majority of regional economies.** Although the degree of natural hedging may not appear to be low in most economies and sectors, and NFCs can also resort to financial hedging to

mitigate currency mismatch risks, several factors could still give rise to NFC currency loss and difficulty in FCY funding during a period of stress. First, potential fluctuations in overseas earnings could affect the ability to service debt in FCY. Second, the relatively high hedging costs in several economies could deter NFCs from employing financial hedging instruments. Third, liquidity in hedge markets can evaporate during times of market stress.

## Policy Discussion

**Figure 4.1: Policies to Mitigate Potential Risks**




Source: AMRO

**To mitigate the potential risks outlined above, it is important to enhance risk monitoring and assessment.** Our analysis suggests it will be helpful for both NFCs and policymakers to periodically check rollover risk indicators subject to both global and domestic cyclical factors. Likewise, it is useful for authorities to examine their currency mismatches periodically and to increase their understanding of the behaviour of NFCs' overseas operations. It is also essential to keep an eye on global interest rate developments as well as EM interest rate spreads both within and outside the region.

**A credit guarantee mechanism[28] could have a role in mitigating financial risks that NFCs are facing.** The ASEAN+3 Credit Guarantee and Investment Facility (CGIF), as part of the Asian Bond Market Initiative (ABMI), could be further enhanced. This mechanism allows firms to issue local bonds with long-term maturities more easily, reducing reliance on

[28] The CGIF was established in 2010 to provide guarantees for domestic currency denominated bonds issued by investment grade firms in ASEAN+3 economies with capital contributions of USD700.0 million.

FCY bond issuance and helping reduce both rollover and currency mismatch risks. Hence, it should be further promoted. Future considerations to expand capital contributions by members and extend the guarantee to bonds issued in FCY would further help ease NFCs' access to liquidity during periods of stress.

**In the longer term, further financial market deepening can help mitigate risks from debt market financing, including through providing greater hedging tools for NFCs.** Although hedging activities have been used widely in some regional economies, the costs are still high in some economies, disincentivizing NFCs from employing them. Supply-side policies to deepen financial markets can help increase hedging tools at cheaper prices. The ASEAN+3 Bond Market Forum (ABMF) initiative, which seeks to further build up bond market infrastructure and harmonize the legal system and market practices, is a crucial next step that will further deepen regional markets.

**There is a need for policymakers to keep tabs on the financial health of major NFCs, as their financial soundness can deteriorate when the global environment worsens abruptly.** In particular, leverage should be kept in check, especially if earnings potential slows. Prudential regulations can also help address over-leverage in FCY bond financing. For example, the Indonesian authorities recently imposed restrictions on new offshore financing arrangements by non-banking institutions, requiring them to satisfy certain minimum hedging and liquidity ratios in relation to their external indebtedness.[29] Korean authorities have also retained macro-prudential measures introduced during the GFC in the form of banks levies and net open position regulations for banks to extend the maturity of external debt and limit FCY exposure. Regulation requiring greater disclosure of information by NFCs on their foreign currency exposure could be another consideration for economies in this region.

**Lastly, fostering a favorable macroeconomic environment in order to deter NFCs from facing imprudent maturity and currency exposures could also help mitigate risks.** A prolonged period of low interest rates could induce NFCs to incur higher leverage and a long period of very stable exchange rates could also encourage NFCs to increase FCY bond issuance and borrowing. Thus, some market-driven volatility in the long-term interest rate and some exchange rate flexibility may actually be desirable and could help incentivize NFCs to address maturity and currency mismatches.

[29] The second phase, effective 1 January 2016, has imposed a minimum "BB" ratings requirement on borrowers seeking offshore funding. For more country-specific measures related to the bond market, please refer to Appendix F.

### Suggestions for Future Research

**Given the need to enhance understanding about financing risks in our region, further research could be developed using the framework and data set established for this study.** Indeed, this is AMRO's third thematic paper in the area of financial sector stability.[30] We view that future research could be conducted on two important fronts. First, risk assessment based on bond default data would provide a comprehensive picture about solvency risks of NFCs in addition to an aggregate level assessment. Second, our framework and data set at the firm level in this study could also be expanded to cover emerging local currency bonds, and the rising cross-border bank borrowings and the role of regional banks. These works will further enhance financial sector risk assessment in the region against the backdrop of the changing domestic and external environments and increasing financial sector volatilities.

[30] They include "Interconnectedness of the ASEAN+3 Banking Sectors: Selected Features, Characteristics and Implications" (2012) and "The recent developments and issues in ASEAN+3 bond markets (2013)".

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# Appendix A: Bond Data Collection

## A1. Bloomberg NFC Sectors and Sub-sectors Used in the Sample

| Sector | Sub-sector |
|---|---|
| Communications | Media<br>Telecommunications |
| Consumer Discretionary | Apparel & Textile Products<br>Automotive<br>Commercial Services<br>Consumer Services<br>Distributors - Discretionary<br>Gaming, Lodging & Restaurants<br>Passenger Transportation<br>Recreation Facilities & Services<br>Retail - Discretionary |
| Consumer Staples | Consumer Products<br>Distributors - Consumer Staples<br>Retail - Consumer Staples |
| Energy | Oil, Gas & Coal<br>Renewable Energy |
| Healthcare | Biotechnology & Pharmaceutical<br>Health Care Facilities & Services<br>Medical Equipment & Devices |
| Industrials | Electrical Equipment<br>Engineering & Construction Services<br>Machinery<br>Transportation & Logistics<br>Transportation Equipment<br>Waste & Environment Services & Equipment |
| Materials | Chemicals<br>Construction Materials<br>Forest & Paper Products<br>Iron & Steel<br>Metals & Mining |
| Real Estate | Asset Management (REITS)<br>Real Estate |
| Technology | Hardware<br>Semiconductors<br>Software<br>Technology Services |
| Utilities | Utilities |

## A2. Sample of FCY Bonds in the Region

| Currency | Number of bonds |
|---|---|
| USD | 4486 |
| EUR | 71 |
| GBP | 8 |
| **Total** | **4565** |

| Maturity type | Number of bonds |
|---|---|
| AT MATURITY | 1817 |
| PUTABLE | 862 |
| CONV/PUT | 626 |
| CALLABLE | 526 |
| CONVERTIBLE | 195 |
| CONV/PUT/CALL | 149 |
| CALL/PUT | 91 |
| CALL/SINK | 73 |
| CONV/CALL | 72 |
| SINKABLE | 68 |
| PERP/CALL | 51 |
| EXTENDIBLE | 8 |
| CONV/CALL/PERP | 7 |
| SINK/EXT | 7 |
| CALL/SINK/PUT | 4 |
| CONV/CALL/SINK | 2 |
| CONV/PERP | 2 |
| CONV/SINK | 2 |
| CONV/PUT/CALL/SF | 1 |
| PERPETUAL | 1 |
| SINK/PUT | 1 |
| **Total** | **4565** |
| | |

Note:

- An "**AT MATURITY"** bond will mature exactly at the fixed date. This is the most plain vanilla bond product, as there is no embed option. Bonds with other "maturity type" typically have embedded options.
- "**CALL**" refers to "callable bond'. That is, a bond that can be redeemed by the issuer prior to its maturity.
- "**PUT**" refers to "puttable bond". That is, a bond that allows the holder to force the issuer to repurchase the security at specified dates before maturity.
- "**CONV**" refers to "convertible bond". That is, a bond that the holder can convert into a specified number of shares of common stock.
- "**SINK**" refers to "sinkable bond". That is, a bond that is backed by a fund, called a sinking fund, that sets aside money on a regular basis to ensure investors that principal and interest payments will be made as promised.

| Economy | Number of bonds |
|---|---|
| CHINA | 788 |
| HONG KONG | 517 |
| INDONESIA | 323 |
| KOREA | 2288 |
| MALAYSIA | 137 |
| PHILIPPINES | 142 |
| SINGAPORE | 245 |
| THAILAND | 117 |
| VIETNAM | 8 |
| **Total** | **4565** |

| Coupon type | Number of bonds |
|---|---|
| Defaulted | 192 |
| Exchanged | 67 |
| Fixed | 2232 |
| Flat Trading | 28 |
| Floating | 913 |
| Funged | 24 |
| Pay-In-Kind | 8 |
| Step Coupon | 26 |
| Variable | 81 |
| Zero Coupon | 993 |
| Other | 1 |
| **Total** | **4565** |

Note:

- We consider a "ZERO COUPON" bond as a "FIXED" rate bond. And we consider other types of bonds as floating rate bonds.

| Sector | Number of bonds |
|---|---|
| Communications | 336 |
| Consumer Discretionary | 755 |
| Consumer Staples | 198 |
| Energy | 510 |
| Financials | 422 |
| Health Care | 96 |
| Industrials | 665 |
| Materials | 525 |
| Technology | 661 |
| Utilities | 393 |
| Others | 4 |
| **Total** | **4565** |

## Appendix B: Definition of Average Maturity and Assumption on the Maturity Date

The average maturity is the weighted average of the maturity of bonds, based on the principal amount. Consider, for example, two bonds – one has a remaining duration of 9.5 years with a coupon value of 100 dollars, the other has 4.2 years remaining with a coupon value of 10 dollars. The average maturity is (9.5*100 + 4.2*10)/(100+10).

We need to impose plausible assumptions on the above maturity date, as information from Bloomberg about the actual maturity date is not complete.

For a bullet bond ("At Maturity" as shown in Appendix A2), we use the "at maturity" date as the final maturity date. We also assume that a "sinkable bond" is a bullet bond. Without any additional assumption, we can obtain the actual maturity date for these types of bonds.

For other type of bonds, we need to make assumptions about the maturity date. (1) For an active bond, the maturity date is unknown but has to be estimated. (2) For a matured bond (that is outstanding amount is zero), Bloomberg does not have the information of the actual maturity date.

Hence, we impose some simple assumptions to estimate the actual maturity dates as follows

- For a matured bond (that is where the outstanding amount is zero), we impose the following assumptions:
  - For a callable bond (including callable, perpetual, payment in kind, etc.) that has already expired, we use the "**first** call date" as the date for final maturity.
  - We treat a convertible bond in a same way as a callable bond.
  - For a puttable bond and convertible bond that is expired, we use the original "maturity date" as the date for final maturity.
- For an active bond (that is where the outstanding amount is greater than zero), we impose the following assumptions:
  - For a callable bond (including callable, perpetual, payment in kind, etc.) that has expired, we use the "**next** call date" as the estimated date.
  - We treat a convertible bond in a same way as a callable bond.
  - For a puttable bond, if the original "maturity date" is later than today, we use the "maturity date" as the estimated maturity date. If the original "maturity date" is earlier than today, we use the "Next put date" as the estimated maturity date.
- If a bond has mixed features, that is, it has both callable and puttable features, we will consider it as a callable for simplicity.

## Appendix C: NFC Samples with Valid Financial Data (Local and Overseas Revenue)[31]

| Sectors | Number of NFCs | Average External Revenue (USD bn) | Average Overseas EBIT (USD bn) |
|---|---|---|---|
| Communications | 20 | 619 | 104 |
| Consumer Discretionary | 50 | 3,240 | 246 |
| Consumer Staples | 22 | 5,544 | 177 |
| Energy | 46 | 8,138 | 407 |
| Health Care | 6 | 64 | 4 |
| Industrials | 48 | 1,690 | 97 |
| Materials | 41 | 1,353 | 80 |
| Real Estate | 98 | 1,622 | 250 |
| Technology | 17 | 12,219 | 1,288 |
| Utilities | 19 | 732 | 148 |
| **Total** | **367** | **3,238** | **257** |

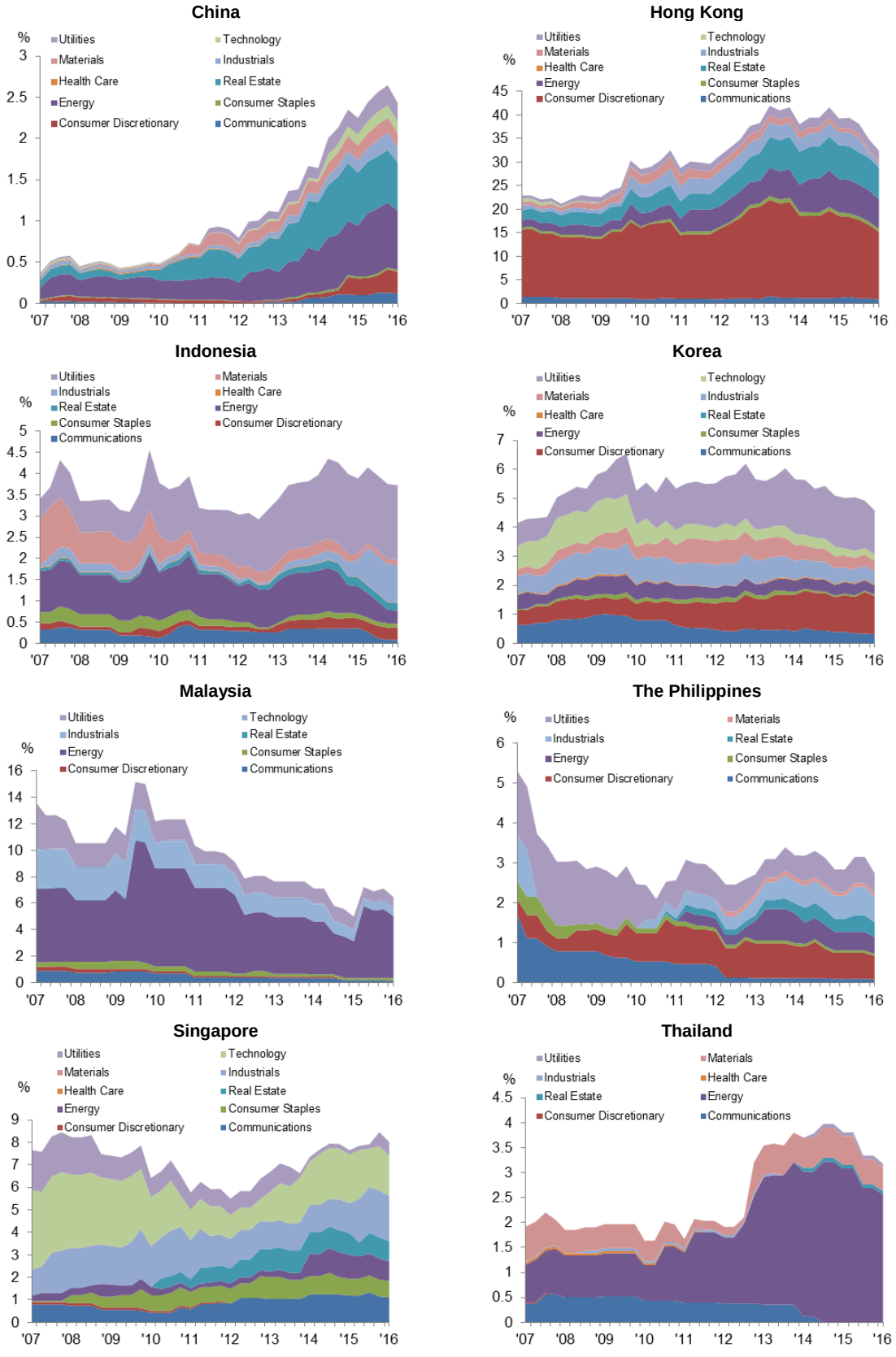
| Economy | Number of NFCs | Average External Revenue (USD bn) | Average Overseas EBIT (USD bn) |
|---|---|---|---|
| China | 153 | 2,251 | 156 |
| Hong Kong | 67 | 4,292 | 287 |
| Indonesia | 33 | 280 | 14 |
| Korea | 60 | 5,736 | 458 |
| Malaysia | 9 | 9,286 | 1,274 |
| Philippines | 11 | 192 | 15 |
| Singapore | 20 | 4,764 | 459 |
| Thailand | 14 | 1,559 | 162 |
| **Total** | **367** | **3,238** | **257** |

| Sectors/ Economy | CN | HK | ID | KR | MY | PH | SG | TH | Sum |
|---|---|---|---|---|---|---|---|---|---|
| Communications | 9 | 3 | 1 | 2 | 2 | 2 | 1 | 0 | **20** |
| Consumer Discretionary | 15 | 16 | 5 | 11 | 0 | 2 | 0 | 1 | **50** |
| Consumer Staples | 6 | 2 | 5 | 4 | 1 | 0 | 3 | 1 | **22** |
| Energy | 17 | 8 | 6 | 4 | 2 | 2 | 2 | 5 | **46** |
| Health Care | 3 | 1 | 0 | 2 | 0 | 0 | 0 | 0 | **6** |
| Industrials | 22 | 4 | 3 | 12 | 0 | 0 | 6 | 1 | **48** |
| Materials | 17 | 3 | 4 | 13 | 1 | 1 | 0 | 2 | **41** |
| Real Estate | 52 | 24 | 6 | 1 | 2 | 3 | 6 | 4 | **98** |
| Technology | 5 | 1 | 1 | 8 | 0 | 0 | 2 | 0 | **17** |
| Utilities | 7 | 5 | 2 | 3 | 1 | 1 | 0 | 0 | **19** |
| **Total** | **153** | **67** | **33** | **60** | **9** | **11** | **20** | **14** | **367** |

[31] The firms covered in our study are only listed companies. This would exclude other non-financial corporations that are privately-owned.

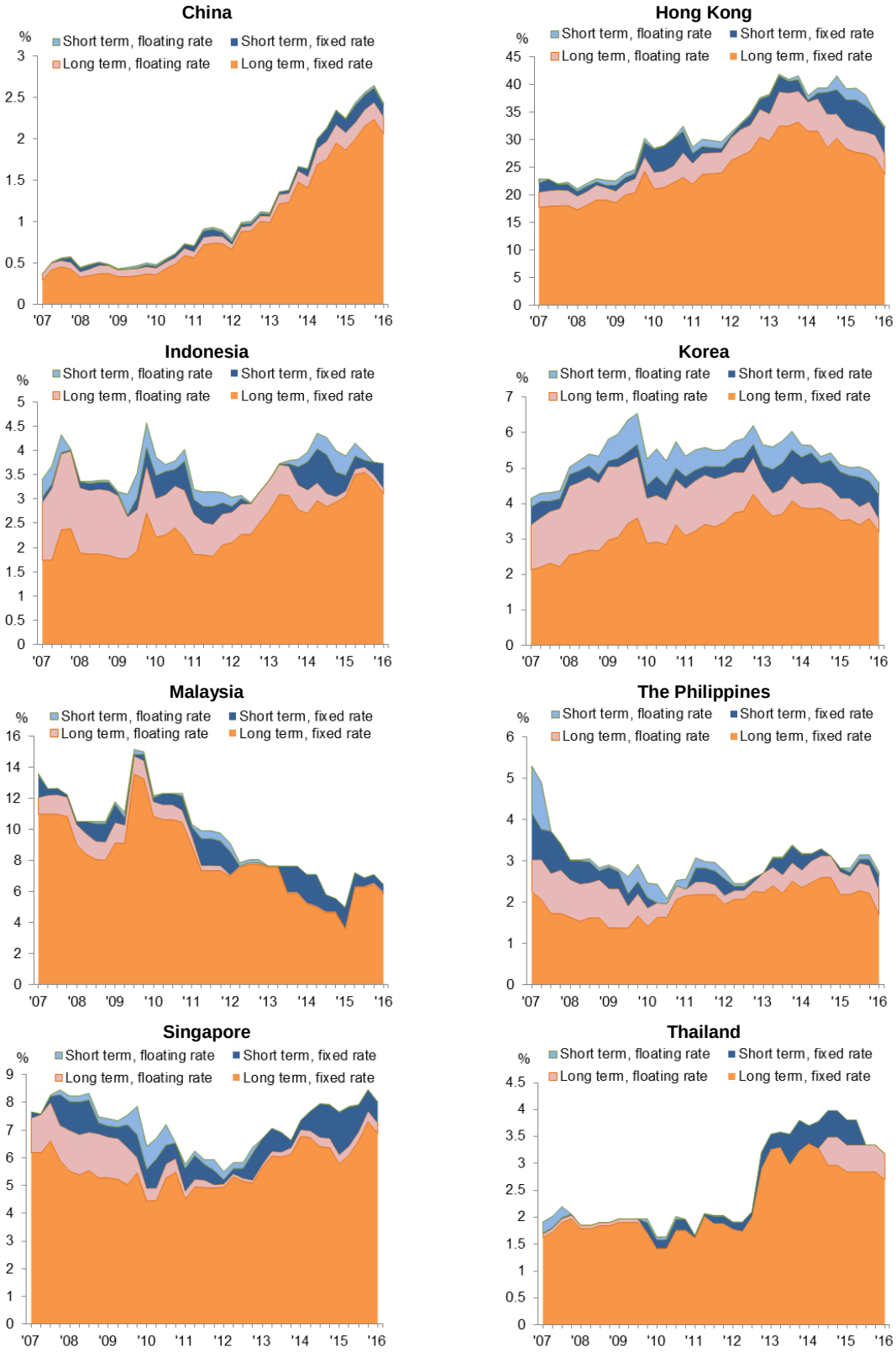
# Appendix D: Outstanding FCY Bonds by Economy

**Figure D.1: Outstanding FCY Bonds by Sector and Economy (% of GDP)**




Source: Bloomberg, AMRO staff calculations

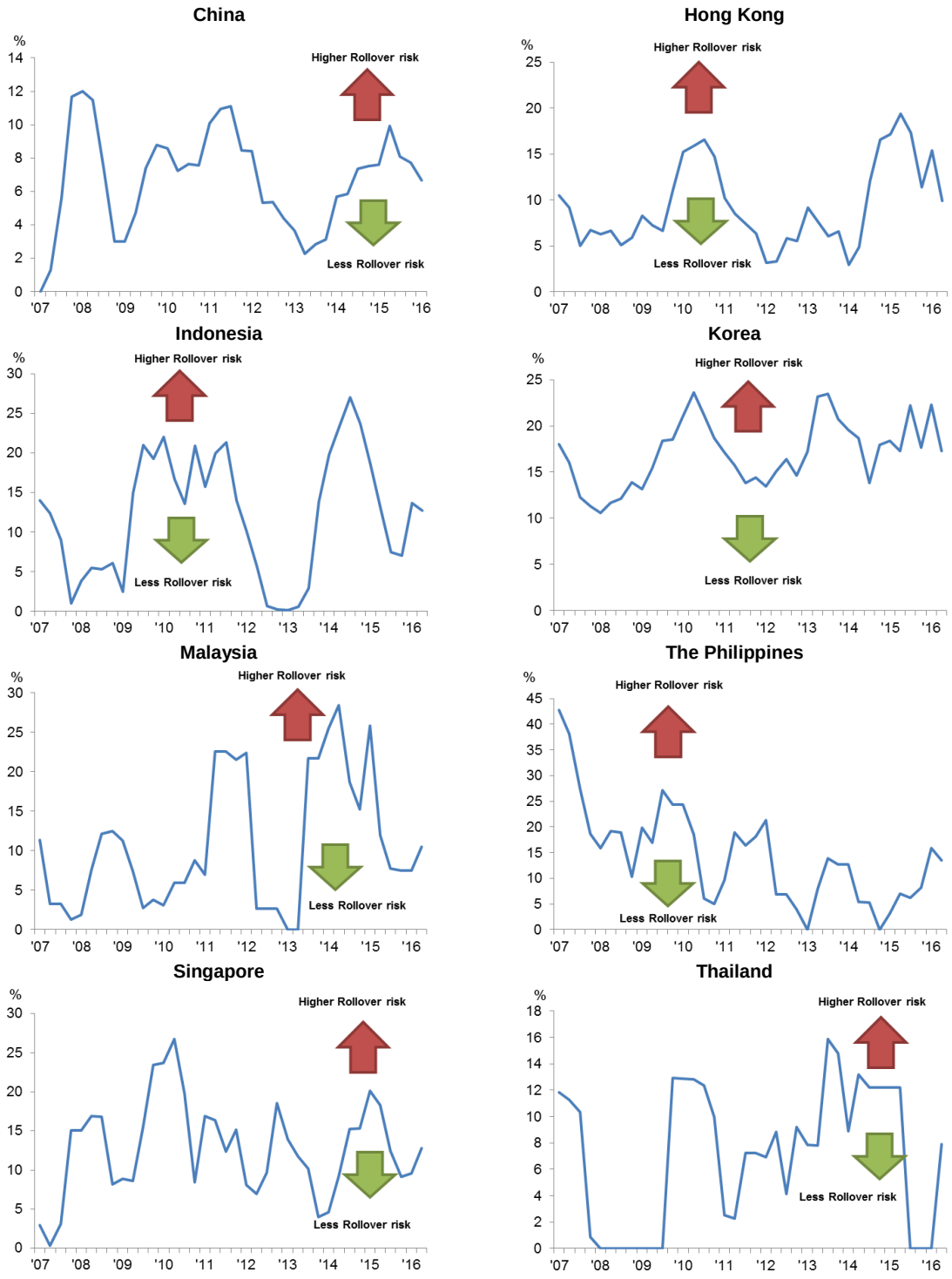
**Figure D.2: Outstanding FCY Bonds by Term, Rate and Economy (% of GDP)**




Source: Bloomberg, AMRO staff calculations

# Appendix E: Share of Bonds due in 12 Months (by Economy)

**Figure E.1: Share of Bonds due in 12 Months (% of total bonds)**




Source: Bloomberg, AMRO staff calculations

## Appendix F: Corporate Bond Market Development Measures and Related Macro-prudential Measures by Economy, Since 2013

| Economy | Corporate Bond Market Development Measures | Macro-prudential Measures Related To Corporate Bond Market |
|---|---|---|
| China | (Aug 2013)<br>• The People's Bank of China (PBC) announced an expansion of the pilot asset-backed securitization program, aiming to improve credit structure and increase bond products.<br>(Jan 2015)<br>• The China Securities Regulatory Commission (CSRC) eased the restrictions on corporate bond issuance, allowing all qualified companies to issue corporate bonds and simplifying the issuance procedures. Previously, only listed companies were allowed to issue corporate bonds.<br>(May 2015)<br>• The PBC cancelled the approval procedures for bond trading in interbank bond markets. All kinds of legitimately-issued bonds can go into trading and circulation in the interbank bond markets after creditors' rights and liabilities are confirmed and recorded.<br>(Jun 2015)<br>• The PBC allowed qualified private investment funds to invest in the inter-bank bond markets directly, after submitting the required documents to the PBC.<br>(Sep 2015)<br>• The National Development and Reform Commission encouraged NFCs with sound financial conditions to issue FCY bonds, aiming to take advantage of low cost foreign funds and boost the domestic economy. | (May 2014)<br>• The State Council strengthened the punishment on false statement, inside trading transaction and price manipulation. |
| Hong Kong | (Jun 2013)<br>• The authorities enhanced market infrastructure for RMB bonds (Dim Sum Bonds).<br>• The Treasury Market Association introduced the CNH HIBOR fixing, encouraging the growth of RMB financial products.<br>(Jul 2013)<br>• RMB liquidity facility provided by the Hong Kong Monetary Authority (HKMA) was enhanced to provide T+0 funding to banks. | |

| Economy | Corporate Bond Market Development Measures | Macro-prudential Measures Related To Corporate Bond Market |
|---|---|---|
| Korea | No new major policy measures since 2013. | (July 2013 – end 2015)<br>• The government reintroduced the measure to acquire corporate bonds issued by corporates requiring large refinancing at a short period of time, mainly targeted at the shipbuilding industry, which is facing liquidity problems. Through the Korean Development Bank (KDB), the government acquires 80 percent of the total rollover amount, most of it included in the primary collateralized bond obligations (CBO). The measure has expired automatically at the end of 2015. |
| Indonesia | (Nov 2014)<br>• INDOBEX Bond Indices were introduced as a reference for performance and returns to encourage more investments in Indonesia's bond market.<br>(Jan-Dec 2015)<br>• Policy measures in the pipeline targeted to be implemented in 2015 include:<br>➢ Introduction of an electronic trading platform (ETP);<br>➢ Improvement on transparency and supervision on settlement of bond transaction;<br>➢ Implementation of tax facilities on repo transactions to avoid multi-stages taxing;<br>➢ Implementation of tax facilities on bond transactions to guarantee equal treatment on capital gain tax. | (Jan - Dec 2015)<br>• Non-bank borrowers are required to hedge at least 20 percent of the difference between the amount of their foreign currency external indebtedness that will be due in the following six months and their foreign currency assets, and to maintain a liquidity ratio (the ratio of foreign currency assets to the amount of foreign currency external indebtedness that will fall due in the ensuing three months) of 50 percent.<br>(Jan 2016 onwards)<br>• Any non-bank institution that is seeking to incur foreign currency external indebtedness must have a minimum BB rating from an authorized ratings agency.<br>(Q1 2016)<br>• The minimum hedging ratio has increased to 25 percent and the minimum liquidity ratio will be increased to 70 percent. |
| Malaysia | (2013)<br>• The authorities implemented new capital market regulations through the Capital Markets and Services (Amendment) Act 2012, including revised guidelines on private debt securities and *sukuk* that allow publicly listed companies and banks to offer bonds and *sukuk* to retail investors<br>(Jan 2015)<br>• Credit rating agencies were given more flexibility in the trading of unrated bonds and *sukuk*.<br>(Q3 2015)<br>• Memorandum of Understanding (MOU) was signed between Monetary Authority of Singapore (MAS), Singapore Exchange, | (2013 onwards)<br>• MOU signed between Bank Negara Malaysia (BNM) and Securities Commission Malaysia on enhanced collaboration, with the aim of promoting financial sector and capital market stability. |

| Economy | Corporate Bond Market Development Measures | Macro-prudential Measures Related To Corporate Bond Market |
|---|---|---|
| | Securities Commission Malaysia, and Thailand's SEC for the creation of a streamlined ASEAN framework that aims to facilitate cross-border debt and equity offerings in ASEAN.<br>(Jan 2017)<br>• Mandatory credit ratings for new corporate issues will be removed and full ownership of international credit rating agencies will be allowed. | |
| Thailand | (Nov 2013)<br>• The Securities and Exchange Commission (SEC) and the Thailand Bond Market Association (ThaiBMA) collaborated in launching the Bond Supermart, a user-friendly one stop information site for retail investors to access prices and necessary information of liquid bonds traded in the secondary market to encourage retail investors' access to corporate bonds in the secondary market.<br>(Dec 2013)<br>• ThaiBMA developed a pricing procedure to assess the price of bonds that could default.<br>(Mar - Dec 2015)<br>• The SEC and ThaiBMA jointly launched "One Step Beyond with Bond Issue" project to encourage bond issuance to businesses that have never raised fund through this channel. In addition, ThaiBMA offered a registration fee discount to those businesses issuing bonds within the year, with a 20,000 baht registration fee exemption and a 10,000 baht discount for annual fee for new bond issuers participating in the project and issuance of long-term bonds within 2015. | No new major policy measures since 2013. |
| Singapore | (2014)<br>• Prospectus requirements for issuing bonds in Singapore were streamlined. | No new major policy measures since 2013. |
| The Philippines | • The Bangko Sentral ng Pilipinas (BSP) carried out initiatives to strengthen and further develop the domestic capital market and to make it more aligned with the developments in the international arena. In particular, the initiatives aimed at promoting fair market access, enhancing transparency, disclosures and good governance and fostering investor confidence. These include among others:[32]<br>➢ Overseeing of the set-up of | No new major policy measures since 2013. |

[32] Based on information provided by the BSP during an AMRO Consultation Visit in 2015.

| Economy | Corporate Bond Market Development Measures | Macro-prudential Measures Related To Corporate Bond Market |
|---|---|---|
| | overnight index swap (OIS) as a short-term benchmark yield curve;<br>➢ Reviewing the single price proposal as a pricing convention;<br>➢ Initiating the framework to adopt a tri-party repo market structure;<br>➢ Drafting of the policy proposal to segregate securities activities from regular banking functions (brokering, dealership and underwriting);<br>➢ Initiating the policy study on stripping of bonds and market maker incentives;<br>➢ Helping to develop market infrastructure. Rules were enhanced on delivery of securities by adding the use of a central securities depository (CSD) as another option available to investors to further enhance the handling of securities for their protection. | |