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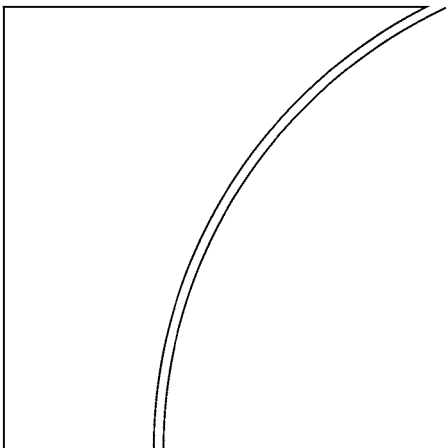
No 63

### Weathering financial crises: bond markets in Asia and the Pacific

A joint BOJ-BIS High-level Seminar on  
"The Development of Regional Capital Markets",  
21–22 November 2011

Monetary and Economic Department

January 2012



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## Preface

The Bank for International Settlements (BIS) and the Bank of Japan (BOJ) jointly organised a high-level seminar on “The development of regional capital markets” in Yokohama, Japan, on 21–22 November 2011. The seminar brought together senior officials of 12 central banks in Asia and the Pacific, the European Central Bank, the Bank of Mexico, the Bank of England and the Federal Reserve Bank of New York, as well as an academic and a private sector participant. Masaaki Shirakawa, Governor of the BOJ and Chair of the Asian Consultative Council of the BIS, and Jaime Caruana, General Manager of the BIS, delivered welcoming remarks. The seminar consisted of five sessions on (1) development of domestic bond markets; (2) development of off-shore bond markets; (3) credit derivatives and structured finance in Asia and the Pacific; (4) credit rating agencies; and (5) market liquidity. It concluded with a panel discussion on the impact of capital flows on bond market development in Asia. This volume is a collection of the welcoming remarks, a paper based on the background note for the seminar, a paper on domestic bond markets in emerging market economies, and a paper on local currency bond markets and the Asian Bond Fund 2 Initiative. The last paper served as a basis for the panel discussion by Jaime Caruana at the seminar.



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## Programme

### Monday 21 November

Welcoming remarks by Masaaki Shirakawa, Governor, Bank of Japan, and Chair of the Asian Consultative Council  
Jaime Caruana, General Manager, Bank for International Settlements

#### **Session 1**                      **Development of domestic bond markets**

Chair: Chris Ryan, Reserve Bank of Australia

Reserve Bank of India      *Developing India's corporate bond market to support infrastructure investment*

Bangko Sentral ng Pilipinas      *Macroeconomic, legal and policy factors in the local currency bond market: the Philippine case*

Bank of Japan                      *Common regional standards and measures to promote the bond markets in Asia and the Pacific*

Bank of Mexico                      *Domestic debt markets in Mexico*

#### **Session 2**                      **Development of off-shore bond markets**

Chair: Shinobu Nakagawa, Bank of Japan

Hong Kong Monetary Authority      *Off-shore renminbi bond market in Hong Kong SAR*

Reserve Bank of New Zealand      *Interaction between on-shore and off-shore bond markets in New Zealand*

Richard Portes (London Business School)      *International currencies and off-shore bond markets – the example of China*

#### **Session 3**                      **Credit derivatives and structured finance in Asia and the Pacific**

Chair: Simon Tyler, Reserve Bank of New Zealand

Federal Reserve Bank of New York      *OTC derivatives regulatory reform and current developments*

Reserve Bank of Australia      *Reassessment of risks in the RMBS market and the Asia-Pacific view on access to CCPs*

Bank of Korea                      *Korea's experience in covered bond issuances*

## **Session 4**                      **Credit rating agencies**

Chair: Frank Packer, Bank for International Settlements

Richard Cantor (Moody's Corporation)

*The development of a rating industry and the current challenges facing international credit rating agencies*

People's Bank of China            *Developing credit rating industry in China*

Bank Indonesia                    *Domestic and foreign credit rating agencies in Indonesia*

Central Bank of Malaysia        *Promoting domestic credit rating agencies in Malaysia*

## **Tuesday 22 November**

### **Session 5**                      **Market liquidity**

Chair: Rama Gandhi, Reserve Bank of India

European Central Bank            *Bond markets and the euro: Regional developments and international use*

Monetary Authority of Singapore

*Policy measures to promote the liquidity of the local currency bond market in Singapore*

Bank of England                    *Capital flows into emerging markets*

Bank of Thailand                    *Capital flows into the local currency bond market in Thailand and related policy measures*

### **Policy panel**                      **Impact of capital flows on bond market development in Asia**

Chair: Masaaki Shirakawa, Bank of Japan

Panellists                              Jaime Caruana, General Manager, Bank for International Settlements

Muhammad Ibrahim, Deputy Governor, Central Bank of Malaysia

Richard Portes, Professor, London Business School

**Closing remarks** by                Masaaki Shirakawa, Governor, Bank of Japan, and Chair of the Asian Consultative Council



## List of participants

### Central banks

Australia	Reserve Bank of Australia <b>Chris Ryan</b> Head, International Department
China	People's Bank of China <b>Huo Yingli</b> Deputy Director-General Financial Market Department
ECB	European Central Bank <b>Philipp Hartmann</b> Principal Advisor Directorate General Research
Hong Kong SAR	Hong Kong Monetary Authority <b>Carmen Chu</b> Executive Director (External)
India	Reserve Bank of India <b>Rama Gandhi</b> Executive Director  <b>Prem Sudhaker</b> General Manager Foreign Exchange Department
Indonesia	Bank Indonesia <b>Budianto</b> Head of Bureau Directorate of Monetary Management
Japan	Bank of Japan <b>Masaaki Shirakawa</b> Governor  <b>Shinobu Nakagawa</b> Head, Center for Monetary Cooperation in Asia International Department  <b>Hiroaki Kuwahara</b> Deputy Head, Center for Monetary Cooperation in Asia International Department  <b>Satoru Yamadera</b> Director, Economic and Financial Studies Division Institute for Monetary and Economic Studies  <b>Yoshihiro Komaki</b> Director, Secretary to the Governor Secretariat of the Policy Board
Korea	Bank of Korea <b>Sangdai Ryoo</b> Head, Fixed Income Market Team Financial Markets Department

Malaysia	Central Bank of Malaysia <b>Muhammad Ibrahim</b> Deputy Governor  <b>Adnan Zaylani</b> Director, Investment Operations and Financial Markets Department
Mexico	Bank of Mexico <b>Pablo Graf</b> Director, Financial Stability
New Zealand	Reserve Bank of New Zealand <b>Simon Tyler</b> Head, Financial Markets Department
Philippines	Bangko Sentral ng Pilipinas <b>Thomas Marcelo</b> Director International Relations Department  <b>Jay Dizon</b> Bank Officer IV, Capital Markets Specialist Group
Singapore	Monetary Authority of Singapore <b>Warren Mah</b> Assistant Director, Monetary and Domestic Markets Management Department
Thailand	Bank of Thailand <b>Singhachai Boonyayotin</b> Senior Director Financial Markets Group
United Kingdom	Bank of England <b>Glenn Hoggarth</b> Senior Manager International Finance Division
United States	Federal Reserve Bank of New York <b>James McAndrews</b> Director of Financial Research Research and Statistics Group

### **Academic and private sector institutions**

United Kingdom	London Business School <b>Richard Portes</b> Professor of Economics
United States	Moody's Corporation <b>Richard Cantor</b> Chief Risk Officer

Bank for International Settlements

**Jaime Caruana**  
General Manager

Bank for International Settlements  
Representative Office for Asia and the Pacific

**Eli Remolona**  
Chief Representative

**Frank Packer**  
Head of Financial Stability and Markets  
Monetary and Economic Department

**Ilhyock Shim**  
Senior Economist  
Monetary and Economic Department



## Welcoming remarks

Masaaki Shirakawa<sup>1</sup>

Good morning, everyone. It is a great pleasure to welcome you all to the Bank of Japan-BIS High-level Seminar, and to the city of Yokohama. Despite the tight schedule, a number of distinguished participants have kindly come all the way to the seminar, including central bank colleagues and well-known academics and experts, not only from Asia and the Pacific but also from other regions. Thank you all. I believe this seminar will be of great benefit to all the participants in discussing the development of capital markets from both a regional and a global perspective.

This seminar is an important part of the activities of the Asian Consultative Council (ACC), and is held annually under the chairmanship of the incumbent ACC Chair. Since I assumed this role in October 2010, this is my second opportunity, following the first one in Hong Kong just a year ago.

The objective of this seminar is to discuss frankly and candidly the timely policy issues of mutual interest among high-level officials of the ACC membership, together with representatives of other major central banks, academics and professionals. At the last seminar in Hong Kong, we exchanged views on the implementation of Basel III and a variety of macroprudential policy measures. This time, in consultation with the BIS, we have selected the development of regional capital markets as the seminar topic. This topic is very important for all of us in terms of ensuring regional financial stability, and thus promoting sustainable economic growth. At the same time, it has been one of the most challenging policy tasks for the monetary authorities in the region since the Asian financial crisis.

By the way, Yokohama, the largest port city in Japan, has a long history of trade and interaction with overseas economies, particularly with Asian and Pacific nations. As you may recall, the 18th APEC Economic Leaders Meeting was held here in Yokohama in November last year, at the adjacent hotel to be precise. I believe Yokohama is an ideal location for us to discuss such an important, challenging policy agenda.

Before introducing each session, let me briefly express my own thoughts on the development of capital markets in Asia and the Pacific.

It is often said that if there were well-developed bond markets in the region, the negative impact of the Asian financial crisis on the regional economy could have been mitigated. In the late 1990s, many local firms were in general limited to equity issuance and bank borrowing for their financing. As a result of rapid capital outflows and a bank credit crunch caused by severe external shocks, there was a widespread deterioration in firms' sentiments, and their production and investment activities were severely impaired. This happened almost regardless of the soundness of the corporate sector in the region. If local firms had access to an alternative source for their funding, namely the issuance of corporate bonds, some fundamentally sound firms might not have suffered so critically from the banks' credit crunch, and could have thereby continued their operations. One of the lessons we learned from the Asian financial crisis is that firms would benefit from having access to multiple funding instruments.

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<sup>1</sup> Governor, Bank of Japan.

Since the Asian financial crisis, the region's monetary authorities have continued to work closely to develop their bond markets. They have launched a number of initiatives, such as the Asian Bond Funds Project of EMEAP and the Asian Bond Market Initiative of ASEAN+3. The primary focus was on developing liquid, local currency sovereign bond markets, as they offer a risk-free yield curve, which is indispensable for the pricing of corporate bonds. In this regard, although still lacking in depth compared to Western counterparts, and still varying across jurisdictions, the region's sovereign bond market has been growing steadily, attracting considerable capital inflows from overseas markets after the Lehman shock.

In contrast, there has been no significant progress in regional corporate bond markets. Why? My personal observation is as follows. First, the majority of corporate bond markets in the region are still insufficiently liquid. Although I acknowledge this is a typical "chicken and egg" problem, we need to make greater efforts to enhance market liquidity and attract global corporate bond investors. In this regard, given the smallness of each individual corporate bond market, one idea might be the creation of an investment class by integrating each market to increase the total liquidity. Second, however, even if we did choose to consider the region as a group, there are a wide variety of market infrastructures across jurisdictions, such as legal, tax, accounting, and payment and settlement systems. These differences might be resolved to some extent by the kind of economic integration to be introduced in ASEAN countries in the coming years, but they will not be perfectly harmonised. Third, corporate disclosure in the region is still not adequately developed or transparent. Fourth, relating to the third point, the region's credit rating system is not sufficiently developed.

Under these circumstances, the cost of bank borrowing in some jurisdictions has been less expensive than that of corporate bond issuance for most local firms. For such firms, there is less incentive to issue corporate bonds by paying higher costs in the domestic market, and running the risk of being attacked by market participants, particularly in times of crisis. As for investors, they are reluctant to invest in such illiquid corporate bonds. Moreover, domestic major banks, which are also the largest institutional investors in the region, have tended to maintain or increase traditional corporate lending, rather than actively changing their asset allocation to hold corporate bonds.

I look forward to hearing a variety of views during the seminar on the development of regional capital markets in general, and regional bond markets in particular. We may be fortunate enough to determine how to advance from the above-mentioned "chicken and egg" situation of regional corporate bond markets, and to agree on what are the desirable and feasible policy actions. I will also actively participate in the discussions.

This one-and-a-half day seminar comprises five sessions and one policy panel, each focusing on the key aspects of the topic in a well-balanced manner. The five sessions will cover;

- i) the development of domestic bond markets,
- ii) the development of off-shore bond markets,
- iii) the current status of credit derivatives and structured finance in Asia and the Pacific,
- iv) the role of credit rating agencies, and
- v) the promotion of market liquidity.

The impact of capital flows on bond market development in Asia will be discussed at the policy panel tomorrow.

I hope this seminar will serve as a valuable opportunity to see how best we can contribute to the prosperous growth of our capital markets. If this seminar can help us deepen our understanding of this issue, including the potential cooperative and effective policy actions we can make, it will have been a great success.

Thank you for your attention.

## Welcoming remarks

Jaime Caruana<sup>1</sup>

It is my pleasure to join Governor Shirakawa in welcoming you all to this seminar. Let me also thank the Governor for agreeing to co-host the event with the BIS here in Yokohama, one of Japan's most vibrant cities. Over the next day and a half, we are assembled here to share our views about how to develop capital markets in Asia and the Pacific.

This is now our seventh high-level seminar on financial markets. The first such seminar took place in November 2005 in Kunming, China. Since then, the event has become one of the flagship seminars organised by the BIS Asian Office.

The theme of the Kunming seminar was "Developing corporate bond markets in Asia". After the Asian financial crisis in 1997–98, the region's central banks launched various initiatives to develop local currency bond markets with the twin aims of mitigating the impact of capital flow reversals and reducing foreign currency mismatches. Thus, the 2005 seminar was held to share regional experience in developing local currency corporate bond markets.

On this occasion, with the theme of "The development of regional capital markets", we revisit the issue of bond market development. During the recent international financial crisis, global credit markets imposed extraordinarily wide spreads on Asian names despite their negligible exposures to subprime debt. Many domestic banking systems ceased to lend as banks became liquidity-constrained. But this spurred local currency bond issuance. It appears that local corporate bond markets can indeed at times play a "spare tyre" role as an alternative source of financing.

Earlier this month, the G20 leaders met in Cannes, France, and endorsed "the G20 Action Plan to support the development of local currency bond markets". Under this initiative, various international organisations will coordinate efforts to provide technical assistance and improve databases on local currency bond markets. The BIS has played an active role in both areas, and will continue to do so in the future – for example, by supporting the activities of the CGFS and EMEAP.

Asia-Pacific bond markets have weathered the recent crisis well, and indeed continued to grow rapidly through the crisis. This year, the region's equity markets have experienced swings similar to those of US and European markets in the face of the European debt crisis in spite of very different fundamentals. In contrast, Asia-Pacific local currency bond markets have seen more stability in fund flows. In the long term, Asia-Pacific bonds could become an established asset class in global investors' portfolios. We may wish to discuss how to expedite this process.

I think all this makes for a very interesting seminar over the next day and a half. I look forward to your discussions.

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<sup>1</sup> General Manager, Bank for International Settlements.





# Development of Asia-Pacific corporate bond and securitisation markets

Ilhyock Shim<sup>1</sup>

## Abstract

Since the Asian financial crisis in 1997–98, policymakers in Asia and the Pacific have put a high priority on bond market development. From 2005 to 2011, the corporate bond market in emerging Asia continued to grow rapidly, even during the 2007–09 crisis. However, during the peak of the crisis, almost all major economies in Asia and the Pacific experienced sharp capital outflows from their domestic bond markets. Credit derivatives and structured credit markets in the region had also exhibited steady growth before 2008, but since then have been slow to develop.

JEL classification codes: E44, G12, G15, G18.

Keywords: local currency bonds, corporate bonds, off-shore bond markets, credit derivatives, structured credits.

## 1. Introduction

The development of local currency bond markets is a long-term task requiring efforts by both policymakers and market participants. Since the Asian financial crisis in 1997–98, policymakers in Asia and the Pacific have put a high priority on bond market development as a way to promote financial deepening and help avoid financial crises, and have pursued various national and regional policy initiatives. In November 2005, the BIS Representative Office for Asia and the Pacific and the People’s Bank of China held a high-level seminar in Kunming, China, on the theme of “Developing corporate bond markets in Asia” (BIS (2006)).

In November 2011, the BIS Representative Office for Asia and the Pacific and the Bank of Japan co-hosted a seminar revisiting Asian bond market development issues. In particular, the seminar considered the progress made since 2005, and the prospects for these markets to become a globally important asset class. During the peak of the recent international financial crisis, almost all major economies in Asia and the Pacific experienced sharp capital outflows from their domestic bond markets. After the crisis, the further development of local currency bond markets received renewed attention from policymakers interested in enhancing their ability to act as a “spare tyre” in cushioning a contraction in credit.<sup>2</sup>

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<sup>1</sup> Senior economist, BIS Representative Office for Asia and the Pacific. This article is based on the background note prepared for the BOJ-BIS High-level Seminar on “The development of regional capital markets”, held on 21–22 November 2011 in Yokohama, Japan. I am grateful for comments and suggestions from Frank Packer, Philip Turner and James Yetman. Jimmy Shek provided excellent research assistance. The views in the article are my own, and not necessarily those of the BIS.

<sup>2</sup> Chan et al (2012) provide discussion on the spare tyre role of local corporate bond markets.

Local currency bond market development has also become an important component of global initiatives to strengthen national and global financial market stability, and enhance the resilience of emerging markets against capital flow shocks. In October 2011, G20 finance ministers and central bank governors approved the G20 Action Plan to support the development of local currency bond markets, prepared by the G20 Sub-working Group on Capital Flow Management. This plan emphasises the coordination of existing and future initiatives of various international organisations and forums, and also the improvement of data bases to deepen the understanding of key aspects of local currency bond markets.

In this article, we review the developments in the corporate bond markets in Asia and the Pacific, both on-shore and off-shore, and also consider recent trends in credit derivatives and structured finance markets in the region.

## **2. Corporate bond market development in Asia and the Pacific**

The domestic debt market of Asia and the Pacific has grown rapidly, almost doubling in size from \$10.5 trillion outstanding in September 2004 to \$20.8 trillion by March 2011. Within this amount, emerging Asia's has expanded at the fastest pace, more than tripling from \$2.0 trillion to \$6.1 trillion. In major Asia-Pacific economies, the development of government bond markets has made noticeable progress since the Asian financial crisis in 1997–98. However, the corporate bond market and the repo market still need to develop further in the region. In the first part of this section, we review the evolution of the Asia-Pacific corporate bond markets before, during and after the recent international financial crisis. The second part discusses recent developments in off-shore bond markets in the region.

### **2.1. Overview of domestic corporate bond markets**

From 2005 to 2011, the corporate bond market in emerging Asia continued to grow more rapidly than those in other emerging markets, even during the period of the recent international financial crisis. The share of corporate bond issuance by emerging Asian corporates out of total emerging market issuance is around 70 per cent so far this year (Graph 1). The sharp increase in the amount of bond issuance by emerging Asian corporates from 2008 to 2009 was particularly noteworthy, as it helped compensate for declines in bank lending to corporates that became evident by the second quarter of 2009.

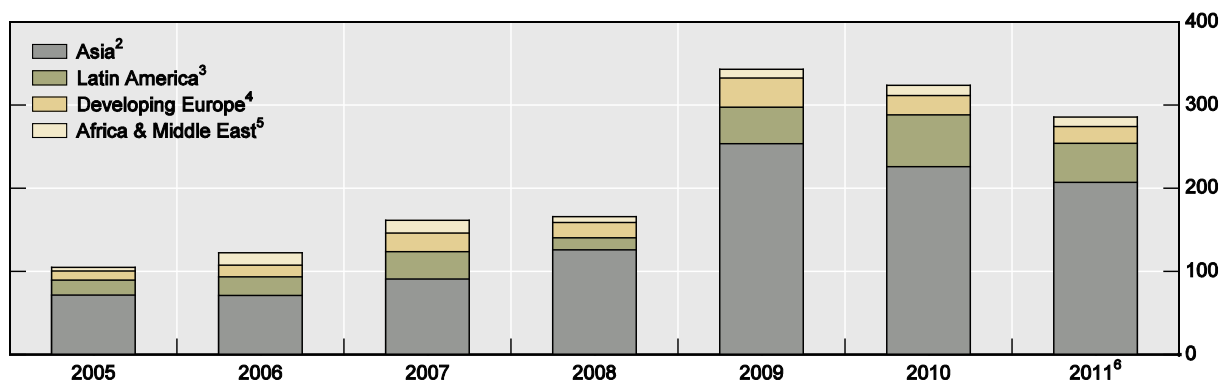
Across the Asia-Pacific region, the degree of bond market development varies considerably. In terms of the absolute amount of corporate bonds outstanding, Japan, China and Korea are the three largest markets (Graph 2, left-hand panel). In terms of the size of the corporate bond market relative to GDP, the three largest markets are Korea, Malaysia and Thailand (Graph 2, right-hand panel).

The rapid growth of corporate bond issuance in the region can be attributed to many factors. One factor is the functioning of credit rating agencies. Countries including China, India, Japan, Korea, Malaysia and Thailand have active local credit rating agencies, many of which were set up under governmental initiatives or in joint ventures with large international rating agencies. The existence of these local credit rating agencies has supported the issuance of corporate bonds in the region.

During the crisis, issuers with low ratings from the international rating agencies were almost completely shut out from the market. In 2008, sub-investment grade bond issuance was only 3% of all bonds with international ratings, compared to more than 30% the previous year (Table 1). However, the issuance of bonds with sub-investment grade ratings from the international agencies came back after 2008, so that by 2011 their share of all issuance rated by international agencies (31.6%) had reached the level of 2005.

Graph 1  
Emerging market corporate bond issuance<sup>1</sup>

In billions of US dollars



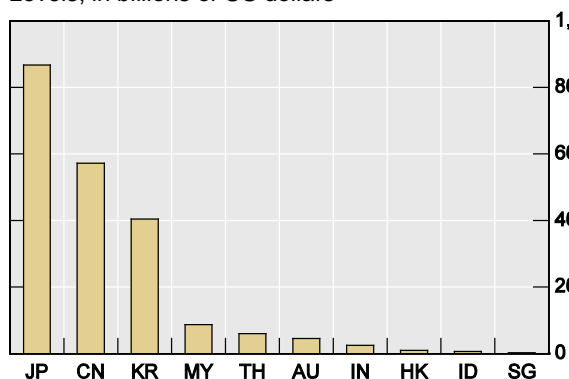
<sup>1</sup> Includes bonds issued by non-financial corporates residing in the economies in respective regions. Includes both bonds rated by at least one of the three major international credit rating agencies and other bonds either rated by other rating agencies or not rated. <sup>2</sup> Azerbaijan, Bangladesh, China, Chinese Taipei, Hong Kong SAR, India, Indonesia, Korea, Kyrgyz Republic, Malaysia, Pakistan, the Philippines, Singapore, Thailand, Uzbekistan and Vietnam. <sup>3</sup> Argentina, Brazil, Chile, Colombia, Dominican Republic, Jamaica, Mexico, Peru, Trinidad and Tobago, Uruguay and Venezuela. <sup>4</sup> Belarus, Bulgaria, the Czech Republic, Croatia, Hungary, Latvia, Lithuania, Poland, Russia, Turkey and Ukraine. <sup>5</sup> Botswana, Egypt, Ghana, Iran, Israel, Liberia, Morocco, Nigeria, Qatar, Saudi Arabia, South Africa and the United Arab Emirates. <sup>6</sup> Up to the end of September 2011.

Source: Dealogic DCM Analytics

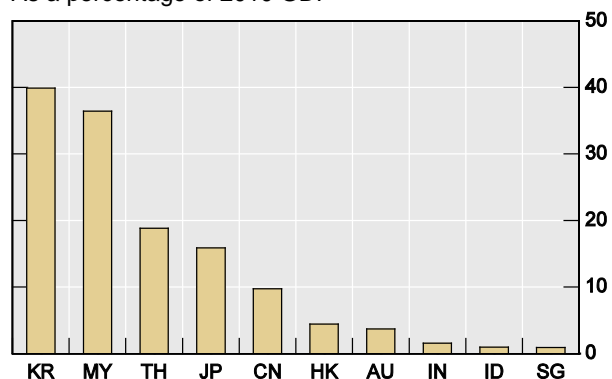
Despite declining issuance of internationally rated bonds through 2008, the amount of emerging Asian corporate bond issuances unrated or rated only by local credit rating agencies increased from 2005 to 2009 (Table 1, bottom two rows). This suggests that the corporate bond market in the region, supported by local rating agencies as well as local investors, may have fulfilled a “spare tyre” function for corporate financing during the crisis, insuring against fluctuating sentiment in global markets as well as slowing banking credit.

Graph 2  
Amount outstanding of bonds issued by corporates

Levels, in billions of US dollars<sup>1</sup>



As a percentage of 2010 GDP<sup>1</sup>



AU = Australia; CN = China; HK = Hong Kong SAR; ID = Indonesia; IN = India; JP = Japan; KR = Korea; MY = Malaysia; SG = Singapore; TH = Thailand.

<sup>1</sup> Economies are listed, in descending order, according to the size of amount outstanding as of Q1 2011.

Source: BIS.

Table 1

**Issuance of corporate bonds by rating for emerging Asia<sup>1</sup>**

Total amount in millions of US dollars

	2005	2006	2007	2008	2009	2010	2011 <sup>2</sup>
AAA	0.2%	0.0%	0.7%	0.0%	8.5%	8.1%	1.9%
AA	9.2%	8.4%	0.8%	12.3%	18.8%	12.5%	1.2%
A	15.9%	51.5%	22.2%	50.6%	46.3%	43.7%	43.8%
BBB	43.4%	20.6%	41.4%	34.2%	2.1%	18.5%	21.5%
BB	17.2%	9.8%	21.1%	3.0%	24.2%	11.5%	26.9%
B	10.9%	9.0%	13.8%	0.0%	0.0%	5.8%	4.7%
CCC	3.3%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
D	0.0%	0.7%	0.0%	0.0%	0.0%	0.0%	0.0%
Total (internationally rated) <sup>3</sup>	15,266	13,378	6,206	4,147	11,628	10,455	12,451
Total (locally rated/unrated) <sup>4</sup>	56,150	57,591	84,423	121,940	241,850	215,177	194,571

<sup>1</sup> China, Chinese Taipei, Hong Kong SAR, India, Indonesia, Korea, Malaysia, Pakistan, the Philippines, Singapore, Thailand and Vietnam. <sup>2</sup> Up to the end of September 2011. <sup>3</sup> Includes bonds rated by at least one of the three major international rating agencies. <sup>4</sup> Includes bonds rated only by local credit rating agencies or not rated.

Source: Dealogic DCM Analytics.

Encouraging foreign participation in the bond market is another important way to foster the development of domestic bond markets. However, not only can the resulting capital inflows pose challenges to maintaining monetary policy objectives, but “sudden stops” and reversals in capital flows can increase volatility in the bond and foreign exchange markets.

Almost all major economies in Asia and the Pacific experienced sharp capital outflows from their local bond markets in 2008 and early 2009, followed by strong capital inflows (Graph 3). Despite concerns over contagion from the sovereign crisis in Europe, capital inflows in Asian bond markets have generally remained positive throughout 2011. Turner (2012) shows that because growth-induced interest rate differentials tend to favour dynamic emerging market economies over the medium-term, foreign investors started to come back to their bond markets after the peak of the 2007–09 crisis. It remains to be seen whether the indications of heightened interest in Asian local currency bonds by foreign investors is the outcome of an increasing search for yield in a low-interest rate environment or a structural shift towards greater weighting of Asian bonds in the portfolios of global investors.

## 2.2. Off-shore bond markets

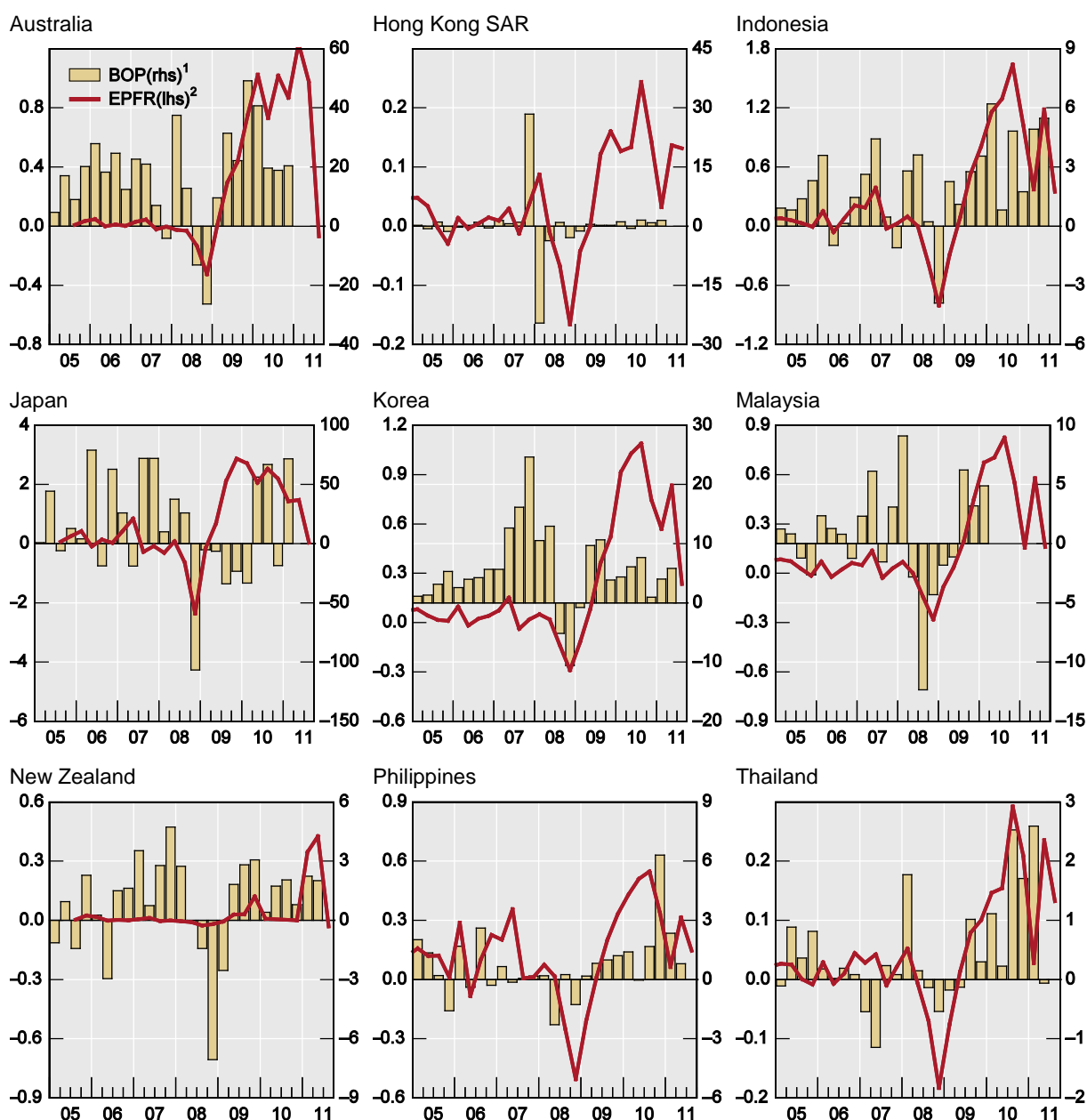
The existence of off-shore bond markets benefits domestic issuers by providing them with access to large and more diverse funding sources. Competition from the off-shore bond market may also improve the efficiency of the on-shore bond market. However, the off-shore market might also draw liquidity away from underdeveloped domestic bond markets, and slow their development.

Many firms in Asia and the Pacific have access to both on-shore local currency bond markets and off-shore foreign currency bond markets. For many emerging economies, the off-shore bond market is relatively large and liquid compared to the domestic bond market. The choice between on-shore and off-shore markets is effectively a choice of currency denomination and investor base. The factors influencing this choice include the cost structure of each market as well as the ability to hedge and manage currency risk.

Graph 3

**Bond flows to selected economies in Asia and the Pacific**

In billions of US dollars



<sup>1</sup> Portfolio investment liabilities, debt securities. <sup>2</sup> Net flows into emerging market portfolio funds.

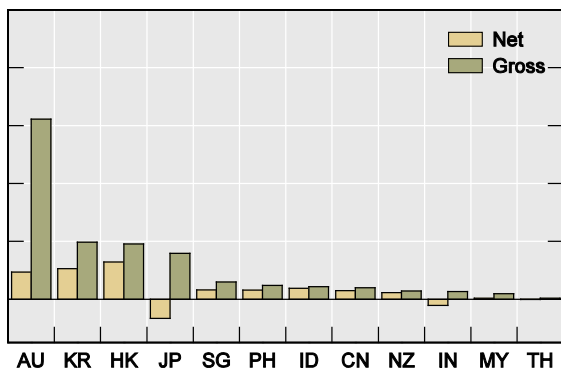
Sources: IMF, International Financial Statistics; EPFR.

Off-shore markets are growing in many jurisdictions in Asia. As in the domestic bond markets, there exists a wide variety in the region in terms of off-shore bond market activity. In particular, some off-shore bond markets have relatively long histories, such as the euroyen, eurokiwi and uridashi markets. Within the region, Australia, Hong Kong SAR (henceforth Hong Kong), Japan, Korea, New Zealand and Singapore have seen the most international bond issuance as of the end of the first half of 2011 (Graph 4).

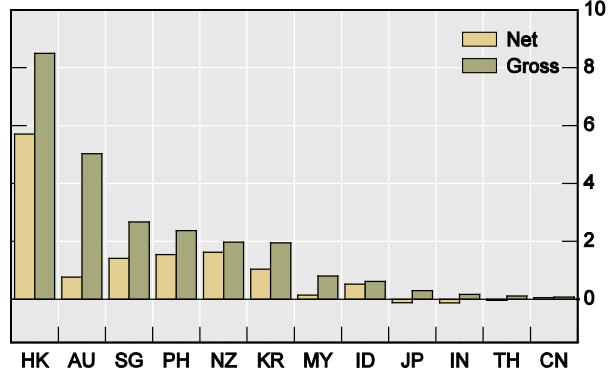
Graph 4

**International bond issuance of Asia-Pacific economies<sup>1</sup>**

Levels, in billions of US dollars<sup>2</sup>



As a percentage of 2010 GDP<sup>2</sup>



<sup>1</sup> By residence of issuers in the first half of 2011. <sup>2</sup> Economies are listed, in descending order, according to the gross issuance.

Sources: IMF, World Economic Outlook; BIS.

There has been a recent surge in both deposits and the issuance of off-shore bonds denominated in renminbi and issued in Hong Kong (so called dim sum bonds). The off-shore renminbi deposit market in Hong Kong started in 2004 when Hong Kong residents were allowed to convert Hong Kong dollars into renminbi. After 2008, the Chinese authorities started to promote off-shore use of the renminbi in Hong Kong, with the goal of mitigating US dollar exposure for some debtors and enhancing the international use of renminbi. Renminbi deposits in Hong Kong grew particularly starting in 2010 (Graph 5, left-hand panel).

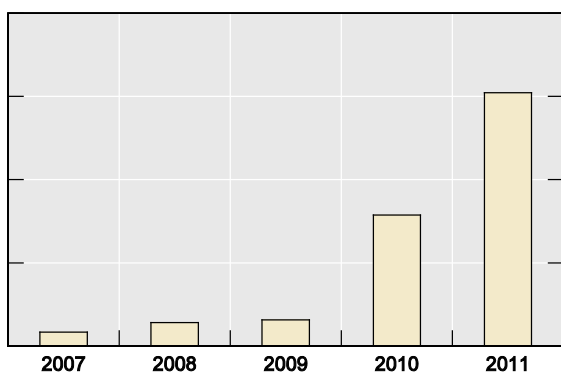
At the same time, dim sum bond issuance has also risen sharply (Graph 5, right-hand panel). Issuers of dim sum bonds have become increasingly diverse, so that they now include China's Ministry of Finance, Chinese corporates and foreign companies. However, the dim sum bond market is still very small compared to the bond market in China, just as the size of off-shore renminbi deposits in Hong Kong is small compared to the total renminbi deposits.

Graph 5

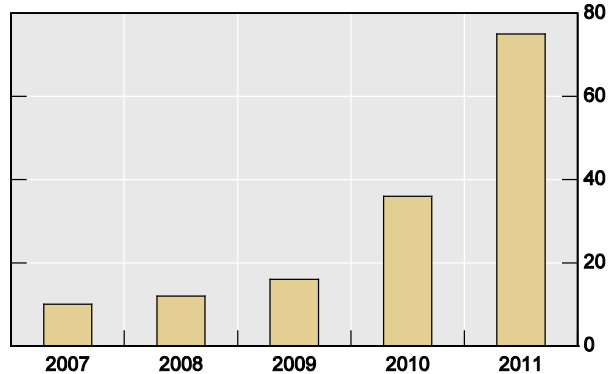
**Renminbi markets in Hong Kong SAR**

In billions of renminbi

Renminbi deposits<sup>1</sup>



Renminbi bond market<sup>1</sup>



<sup>1</sup> 2011 data is as of the end of August 2011.

Source: Hong Kong Monetary Authority.

The Chinese case presents an example where the off-shore market has developed before the liberalisation of the on-shore market was complete. In order to maintain their ability to manage capital flows and control access to still underdeveloped domestic financial markets, the Chinese authorities decided to liberalise the off-shore renminbi market first. This is different from the US approach, under which the on-shore market developed first and off-shore market developed later.

### 3. Credit derivatives and structured finance markets in Asia and the Pacific

Credit derivatives and securitisation markets play important roles to support the development of domestic bond markets in Asia and the Pacific. Especially, foreign investors tend to rely on credit derivatives when they take exposures in the region (see Remolona and Shim (2008) and Goswami and Sharma (2011)). This section reviews recent developments in the credit derivatives and structured finance markets of Asia and the Pacific. The history of securitisation in the region is short compared to that of the United States and Europe. Credit derivatives markets in the region are small and illiquid, and structured credit markets have been slow to develop.

#### 3.1. CDS markets

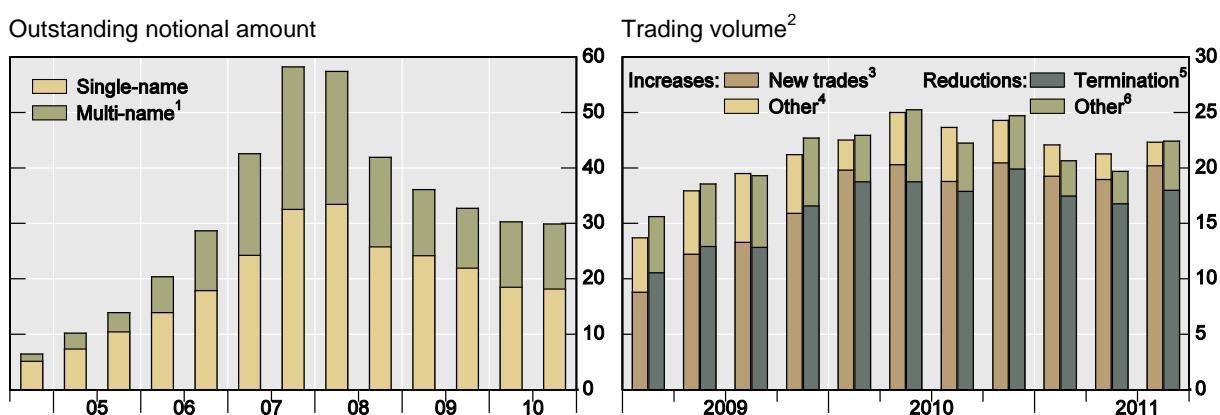
The first CDS contracts referencing borrowers in Asia and the Pacific emerged in the late 1990s, while the first CDS indices devoted to regional credits began trading in 2004. A few years later, after an increase in bond issuance in 2006, CDS contracts were written on the new names in the market, and CDS indices were reconstituted to include them.

The Asia-Pacific CDS market tends to be dominated by *international* investors. One reason for this is that many local currency bonds, though highly rated by domestic rating agencies, are less highly rated by international rating agencies. Thus, foreign investors may be more interested in hedging and trading the concomitant credit risks than domestic investors.

Graph 6

#### CDS outstanding amount and trading volume

In trillions of US dollars



<sup>1</sup> Multi-name contracts include credit default tranches. <sup>2</sup> Summary of transaction activity. <sup>3</sup> Newly traded contracts. <sup>4</sup> Backloads, ie contracts previously executed and confirmed non-electronically. <sup>5</sup> Partial and full unwinding of contracts in the warehouse. <sup>6</sup> Matured contracts and contracts removed due to credit events.

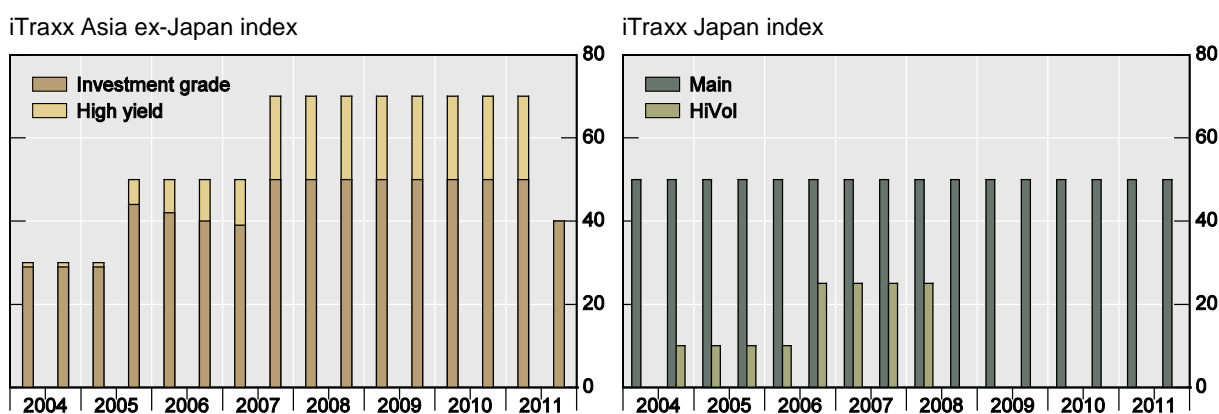
Sources: DTCC Deriv/SERV; BIS.

The international financial crisis dampened activity in the global CDS market, which shrank rapidly from the second half of 2008 (Graph 6, left-hand panel). After 2009, global CDS market activity slowly stabilised. Data from the Depository Trust and Clearing Corporation show that while reductions in CDS contracts were consistently larger than increases until mid-2010, increases have been larger during most of this year (Graph 6, right-hand panel).

Liquidity in Asian CDS markets has declined from 2008 in line with reduced global activity. While it is not easy to track the transaction volume of CDS contracts written specifically on Asia-Pacific entities, we can infer the change in liquidity conditions by examining the composition of the Asian-Pacific CDS indices. For instance, the number of entities in the iTraxx Asia ex-Japan index had increased from 30 names in 2004 to 70 by September 2007 (Graph 7, left-hand panel). However, it had decreased to 40 in September 2011.

Graph 7

**Number of entities in Asian CDS indices**



Source: Markit.

The number of high-yield or sub-investment grade names within the Asian indices also indicates declining activity of recent vintage. When the iTraxx Asia ex-Japan index started trading in 2004, only one entity was included in the index. This number had reached 20 when the new iTraxx Asia ex-Japan High Yield index was constituted in 2007. However, reflecting the lack of liquidity in Asian sub-investment grade names after the crisis, this index was discontinued in September 2011, and no sub-investment grade names are now included in the iTraxx Asia ex-Japan index.

Similarly, the iTraxx Japan HiVol index was created in 2004, comprising ten (later expanded to 25) Japanese entities with the widest spreads from the 100 most liquid single names (Graph 7, right-hand panel). But, this index was discontinued in 2008 due to lack of market interest. By contrast, the iTraxx Australian index has consistently comprised 25 investment grade entities since its inception in 2004, with roughly one new name per semester.

The recent decline in CDS trading on non-investment grade names in Asia is surprising given the robust issuance volume of sub-investment grade corporate bonds in emerging Asia discussed in Section 2.1. One reason could be that the main players in global CDS markets such as large international investment banks and hedge funds have greatly reduced their credit risk exposures. Another reason may be that large bond issuers on whom CDS contracts had been written before the crisis, such as sub-investment grade Chinese property developers, have become less popular in the CDS market. Finally, the collapse in activity of synthetic and single-tranche CDOs, which were based on CDS contracts, may have also contributed to the overall decline in non-investment grade CDS activity.



### 3.2. Structured credit markets

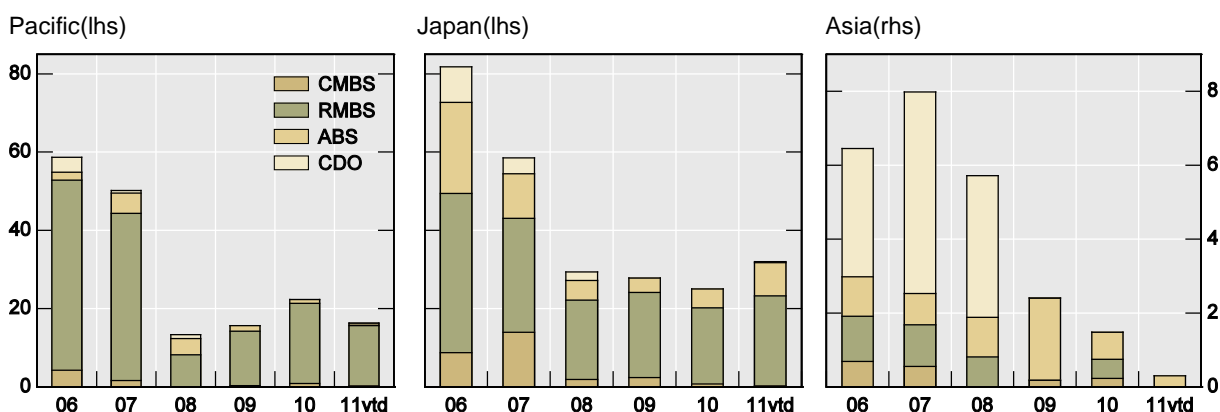
The first structured credit markets in the Asia-Pacific region were based on mortgages and consumer finance assets. The main contribution of these instruments was to enhance the liquidity of the underlying assets rather than the credit quality. Prior to the recent international financial crisis, however, structured credit markets had begun to match local investors' preference for highly rated debt with local issuers' average credit quality. In particular, structured finance products backed by corporate debt (CDOs) offered the promise of easier market access for lower-quality borrowers, by reducing through diversification the credit risk associated with holding their obligations.

Most Asia-Pacific banks were not active in originating assets for securitisation and, therefore, the collapse of structured credit markets in mid-2007 did not have a significant impact on their balance sheets. Despite the limited damage to bank balance sheets in the region, greatly reduced appetite for securitised products is evident in plunging issuance volumes (Graph 8). Not only the size but also the nature of structured finance in the region has been transformed by the crisis. In particular, securitisation has been moving "back to basics": that is, a decline in more complex securitisations and a shift toward simpler structures.

Graph 8

#### International rating scale issuance of structured finance products in Asia and the Pacific

In billions of US dollars



Sum of local market issuance (ie, domestic issuance) and cross-border issuance (ie, international issuance). It includes issuances rated by Standard and Poor's, and excludes issuances rated by local credit rating agencies. 2011 data is to the end of August 2011.

Sources: Reserve Bank of Australia; Standard and Poor's.

Certain securitisation subsectors have held up better than others. The fall in the issuance volume of asset-backed securities (ABSs) in Asia and the Pacific has been relatively mild. Residential mortgage-backed securities (RMBSs) continue to remain an important market in the region, albeit at a smaller scale than before the crisis. RMBS issuance in Australia remains below pre-financial crisis levels due partly to the more cautious participation of off-shore investors.

By contrast, CDOs have not yet recovered from their collapse across all of the Asia-Pacific economies in 2008. Single-tranche CDOs disappeared, while synthetic CDOs greatly lost popularity. Only a few CDOs based on Asian names were issued in 2011. In contrast to RMBS, only a small number of commercial mortgage-backed security (CMBS) deals have been completed recently in the region, reflecting both reduced risk appetite and generally tighter credit conditions for commercial property borrowers.

Improved credit conditions across most sectors in Asia are likely to support stable performance of structured finance assets and thus new structured finance issuance. Simple

ABS and RMBS markets will continue to attract domestic and foreign investors. At the same time, a few countries are either trying to introduce or just started to issue covered bonds, an alternative form of structured finance which may make some strides in the region in the coming years.

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# Weathering financial crisis: domestic bond markets in EMEs

Philip Turner\*

## Abstract

Currency mismatches in the major EMEs have been much reduced over the past decade. The development of deeper domestic bond markets has contributed greatly to this. Stresses in international markets after the failure of Lehman severely tested these new markets. There was a flight of foreign investors largely because of the limited international “collateral capacity” of this new asset class. But those markets with a substantial domestic investor base withstood this intense pressure well. The wider development of exchange-traded interest rate derivative contracts in EME currencies would be helpful.

JEL classification: E43, E44, E58, G12

Keywords: Bond markets, currency mismatches, macroeconomic liquidity

## 1. Introduction

The question of the resilience of domestic debt markets in emerging market economies (EMEs) to financial crises of the advanced economies remains very topical. It was much debated during 2009 when EME debt markets were shaken by the Lehman débâcle.<sup>1</sup> EME debt markets quickly recovered, however, and developments during the past two years have confirmed the resilience of these markets – despite all the turbulence generated by the euro area bond markets crisis.

This suggests that the 2007–20xx – which still drags on – financial crisis showed how far local currency bond markets could immunise emerging markets from international financial crises. The argument for this optimistic view (the pessimistic case will be considered below) goes like this. One of the great reforms in developing Asia and Latin America during the past decade has been the diminished reliance on foreign currency and increased borrowing by governments in local currency and at long maturities. The development of local bond markets has in many ways been the foundation stone of this progress.

As a BIS report a few years ago argued, balance sheet weaknesses due to currency mismatches had played a key role in virtually every major financial crisis affecting EMEs

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\* This reflects my own views, not necessarily those of the BIS. I am grateful for comments and suggestions from Stephen Cecchetti, Pablo Graf, Dubravko Mihaljek, Ramon Moreno, Ilhyock Shim and Haibin Zhu. Thanks to Pablo García-Luna, Gabriele Gasperini and Jimmy Shek for statistical analysis, Karsten von Kleist and Carlos Mallo for help with data on derivatives, Denis Pêtre and Branimir Gruic for advice on BIS's bond statistics. Clare Batts and Alejandra Gonzalez provided most efficient secretarial assistance.

<sup>1</sup> These developments in the year post-Lehman were reviewed in Turner (2009). This paper brings Turner (2009) up-to-date.

since the early 1980s (CGFS, 2007). A heavy dependence on foreign currency debt made it impossible to use macroeconomic policies as countercyclical tools. As government interest payments on foreign currency debt rose when the exchange rate fell, governments were forced to raise taxes (or cut other spending) in the face of recession. And monetary policy had to focus not on stabilising the domestic economy but on propping up the exchange rate.

Matters were often made worse by the short duration of much foreign currency debt. Sharp increases in international interest rates, coming on top of currency depreciation, further increased debt servicing costs, worsening creditworthiness. Difficulties in rolling over maturing debt on sustainable terms were compounded. As many EMEs shared similar balance sheet vulnerabilities, crises could reach globally systemic dimensions.

The development of local currency bond markets would reduce such vulnerabilities by eliminating currency mismatches and lengthening the duration of debt. Such markets would also improve economic efficiency by generating market-determined interest rates that reflect the opportunity cost of funds at different maturities (see CGFS (2007) for a fuller development of these arguments). The shift in a decade from foreign currency debt to local currency debt in the emerging markets, especially in Latin America, has been impressive (Table 1).<sup>2</sup>

	2000		2005		2010		2011 <sup>1</sup>	
	Local currency	Foreign currencies	Local currency	Foreign currencies	Local currency	Foreign currencies	Local currency	Foreign currencies
Euro area	90.0	10.0	89.9	10.1	89.8	10.2	90.3	9.7
Japan	98.5	1.5	99.1	0.9	99.4	0.6	99.4	0.6
Latin America	46.0	54.0	59.9	40.1	71.2	28.8	70.8	29.2
Emerging Asia	88.4	11.6	91.2	8.8	94.2	5.8	94.3	5.7

<sup>1</sup> End-September 2011.

Source: BIS.

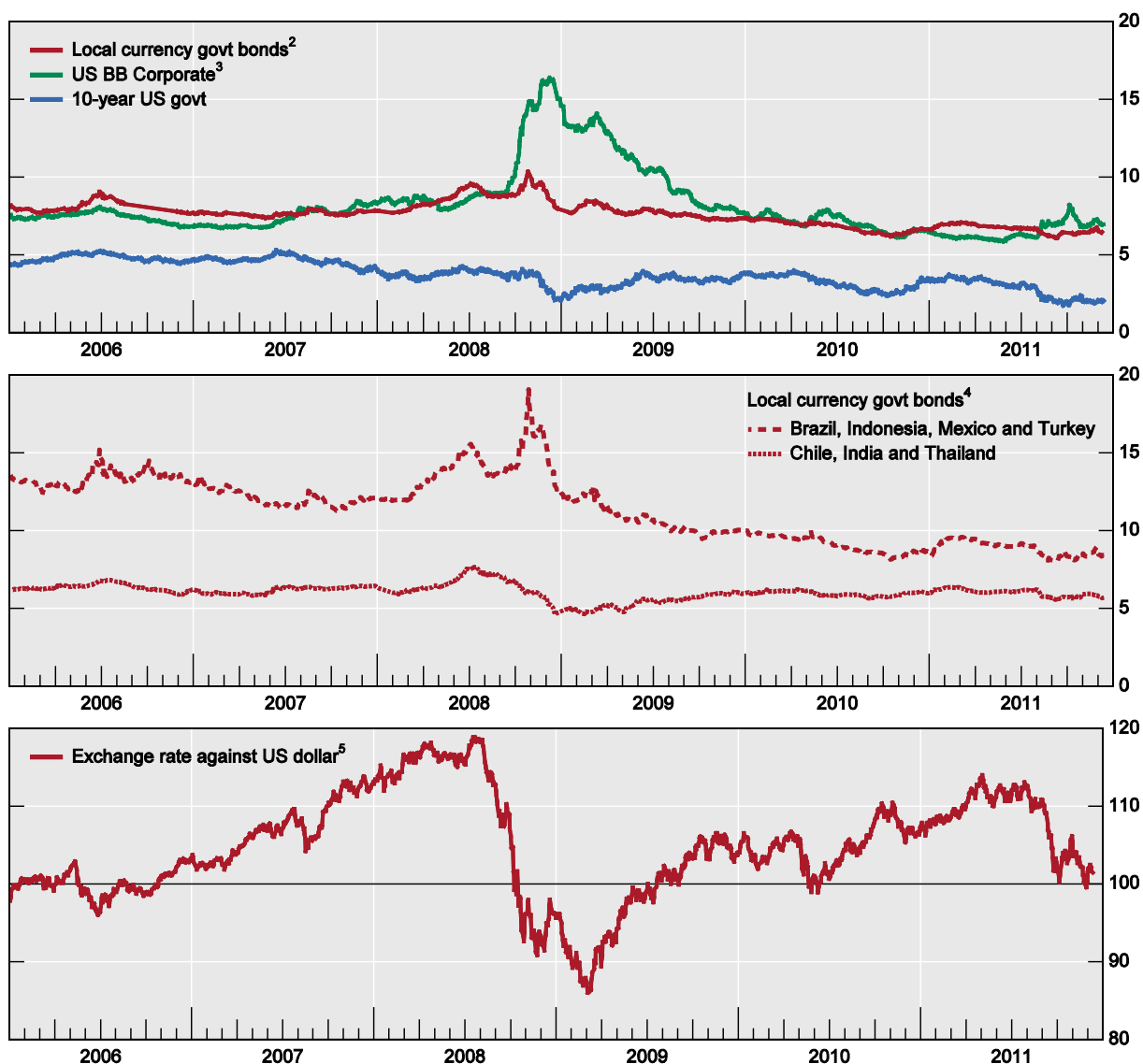
Because currency mismatches had been reduced, most Asian and Latin American economies did indeed prove to be resilient during the crisis. This was true even when faced with very steep drops in the exchange rate. Many countries now have foreign currency assets in excess of foreign currency liabilities. Brazil is an excellent example – currency depreciation now improves the country's net worth. Because of this, policymakers can be more relaxed about currency depreciations – and can use monetary policy to stabilise their economies when faced with a decline in world demand. And many countries did so in the aftermath of this crisis.

Conversely, those countries that had moved to the top of the currency mismatch list – that is, Hungary, Romania, Estonia, Latvia and Lithuania – were hard hit (on this, see Goldstein and Xie (2009), especially pp 25–30). The lack of domestic debt markets and an overdependence of foreign currency debt magnified their crisis, and they were forced to take deflationary measures as demand was falling.

<sup>2</sup> Likewise there has been an impressive lengthening in the duration of domestic government debt (Table A1 in the Annex), although there was some reversal in 2009.

This optimistic reading has much to recommend it. But there is a more pessimistic qualification. This is that, in the wake of the Lehman débâcle, many of these local currency bond markets collapsed. This had not at all been the expected consequence of a crisis that had originated in the major financial centres, not the EMEs. Not all EMEs were affected equally. But Brazil, Indonesia, Mexico, Russia and Turkey suffered badly (Graph 1). And yields might have risen even more had not governments taken the special measures outlined in Section 6 below. The developments in individual countries are shown in Graph A1 in the Annex. At the same time, a flight to quality and liquidity drove yields on US government bonds down to very low levels – so an enormous yield differential opened up.

Graph 1  
Bond yields<sup>1</sup> and dollar exchange rates



<sup>1</sup> Ten-year generic Bloomberg interest rates; for Brazil, three-year; for Chile and South Africa, nine-year; for Turkey, two-year. <sup>2</sup> Simple averages of Brazil, Chile, Colombia, the Czech Republic, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, Russia, South Africa, Thailand and Turkey. <sup>3</sup> Yields on BB-rated Merrill Lynch US corporate bonds. <sup>4</sup> Simple averages. <sup>5</sup> 2007 = 100; a rise indicates an appreciation. Simple averages of Brazil, Chile, Colombia, the Czech Republic, Hungary, India, Indonesia, Korea, Malaysia, Mexico, Peru, the Philippines, Poland, Russia, South Africa, Thailand and Turkey.

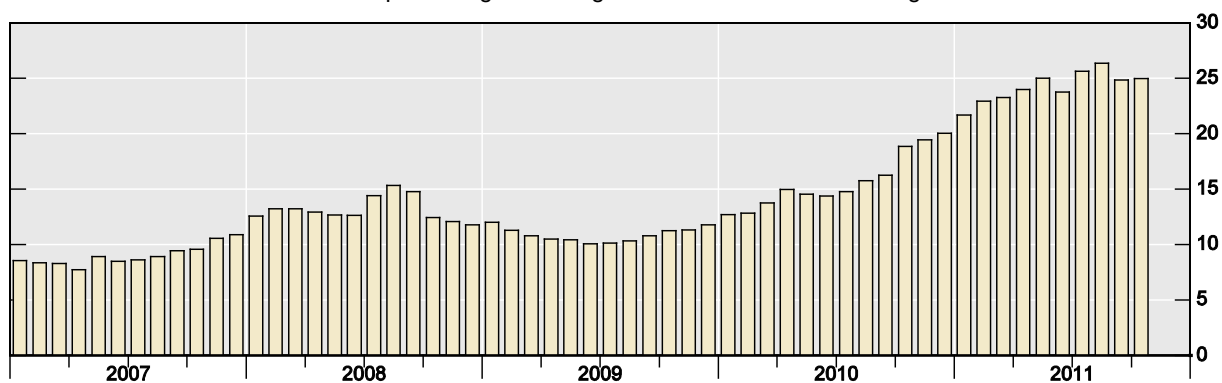
Sources: Bloomberg; Datastream.

The collapse had, as its proximate cause, the flight of foreign investors – who had, in calmer times, been credited with bringing liquidity to these nascent markets. In addition, the local subsidiaries of major foreign-owned international banks reduced their holdings of local government bonds and scaled back their market-making activity. Graph 2 illustrates the sharp fall in non-resident holdings in Mexican government bonds in 2008 Q4. But note that more than half of foreign holdings remained. And from mid-2009 foreign investors began to return: by late-2011, the share of bonds held by non-residents had risen above pre-crisis levels. Many other EMEs have reported a similar rise.

Graph 2

**Foreign holdings of Mexican government bonds**

As a percentage of total government bonds outstanding



Source: Bank of Mexico.

The thread of the argument in this paper is as follows. Cross-country differences in the scale of the EM bond crisis in 2008 Q4 did not reflect differences in macroeconomic performance; but they were closely related to credit ratings which are crucial for foreign investors (Section 2). The past four years since 2007 have been mixed for foreign investors in EM bonds. But because growth-induced interest rate differentials tend to favour dynamic EMEs over the medium-term, foreign investors started to come back after the Lehman crisis (Section 3). The crisis nevertheless should prompt more careful thinking about the different dimensions of liquidity – the macroeconomic dimension is key even if the concept is very elusive. The “collateral capacity” of new assets is often not resilient to crises – and this matters for leveraged investors (Section 4). It is clear that the domestic investor base needs to be diversified away from banks and that forcing pension funds to put too high a proportion of their assets in local bonds is a mistake (Section 5). Strong balance sheets and (in most cases) credible policy frameworks enabled the authorities to take unorthodox and interventionist policies that worked well during the crisis (Section 6).

## 2. Local macroeconomic factors not the main cause

The scale and simultaneity of reversals across different markets after Lehman, and their subsequent bounceback, does suggest that the cause was probably not the underlying macroeconomics – which differ across countries and in any case normally change slowly.<sup>3</sup>

<sup>3</sup> Perhaps the collapse of international trade was the common macro shock – but should this drive bond yields up? In any case, bond prices recovered during 2009 while trade was still very depressed.

A comprehensive examination of the underlying macroeconomics is beyond the scope of this paper. But one simple exploration is to examine whether the cross-country pattern of the rise in bond yields during the crisis is related to any of the obvious macroeconomic factors: the rate of inflation; the current account; fiscal deficits; debt/GDP ratios; and the policy rate in real terms. None of these macroeconomic variables turned out to be significant either in levels or in term of changes from 2007.<sup>4</sup> Therefore the sharp drop in bond prices does not appear to be due to poor domestic macroeconomic performance.

But what was highly significant was the country's sovereign credit rating on *foreign currency debt* (see the first equation below): countries with a credit rating of A or better (Chile, Czech Republic and Korea) were hardly affected. On average, countries in the BBB– to BB range faced a rise of between 200 and 350 basis points during October 2008, which was the most acute phase of this crisis. This finding is puzzling. The risk of default of local currency government debt is not the same as that of foreign currency debt (on which the ratings are based). This could suggest that the decisions of foreign institutional investors – for whom ratings may matter – played a strong role. In the months that followed, however, these spreads fell back. The resulting cross-country pattern of changes in yields in the second quarter of 2009 (when the heaviest pressures had subsided) shows no relation to the countries' ratings (see the second equation shown below).

$$\text{CHYIELD}_{\text{Oct08}} = -3.27 + 0.54(\text{RATING}); R^2 = 0.58$$

(4.5)

$$\text{CHYIELD}_{\text{Q209}} = 1.79 - 0.17(\text{RATING}); R^2 = 0.03$$

(0.7)

where:

CHYIELD = Change in bond yields from 2008 Q1 (ie pre-crisis) to the dates shown in the subscripts (ie October 2008 and 2009 Q2);

RATING = S&P's long-term foreign currency debt rating;

t-Statistics shown in parentheses; and the number of observations is 17.

The conclusion of the comparative unimportance of the usual macroeconomic indicators also echoes Braasch's (2010) analysis that it was various financial market channels, not the usual elements of macroeconomic vulnerability, that explain why the financial crisis in the major financial centres had such a disproportionate effect on some local bond markets in the EMEs. The next two sections therefore look at the role of foreign investors more closely.

### 3. Attractions of EM bonds for foreign investors receive a knock?

Before analysing this particular event, it is useful to examine some history of intellectual fashions with respect to EMEs' ability to borrow in their own currencies and the feasibility of local bond markets. A view that became fashionable in the 1990s was that emerging markets borrowers were indelibly tainted by "original sin". The idea was that it was impossible for developing countries to borrow abroad in their own currencies. This made currency mismatches almost endemic.

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<sup>4</sup> The rate of inflation had the correct sign but fell below the significance level.

This view was increasingly challenged during the 2000s. During this decade, both international bonds issued in EME currencies<sup>5</sup> and bonds issued domestically rose substantially. Careful analysis of investment in local currency bonds by global investors clearly demonstrated that such bonds were, contrary to “original sin” theorists, actually extremely attractive for international investors. Their mean return was high, the variance of returns was comparatively low, and the low limited covariance of such returns with other bond classes in a global portfolio made them attractive for diversification purposes.<sup>6</sup>

Table 2 – which is updated from CGFS (2007) – summarises what had become the consensus by the mid-2000s: see the results shown under January 2002 to December 2006. *The average annual return* of an unhedged portfolio modelled on JPMorgan Chase’s Government Bond Index of emerging market bonds (GBI EM) was 17.2% in dollar terms. Hedging the exchange rate risk, however, would have produced a much lower average return – only 6.2%. This unhedged return is still higher than a global government bond benchmark of developed countries (GBI Global).

Table 2 **Risk return characteristics and diversification benefit versus other fixed income assets**

	Annual return	Annual volatility	Sharpe ratio <sup>1</sup>	Correlation vs GBI G <sup>2, 3</sup>	Correlation vs US HY <sup>2, 4</sup>	Correlation vs EMBI+ <sup>2, 5</sup>
<b>January 2002 to December 2006</b>						
GBI EM	17.2	8.8	1.75	0.23	0.18	0.33
Hedged into USD	6.2	2.4	1.87	0.28	0.17	0.33
GBI Global, unhedged	8.3	7.2	0.90	0.65	0.05	0.23
<b>January 2007 to October 2009</b>						
GBI EM	9.6	14.3	0.56	-0.33	0.45	0.67
Hedged into USD	4.5	3.3	0.84	-0.15	0.39	0.67
GBI Global, unhedged	9.4	8.1	0.95	0.62	-0.10	-0.02

<sup>1</sup> Ratio of the daily excess returns of the index to the risk free return in US dollars and the index return volatility. <sup>2</sup> Using daily percentage changes. <sup>3</sup> Total return correlation versus global government benchmark of developed countries hedged into US dollars. <sup>4</sup> Total return correlation versus US high-yield benchmark. <sup>5</sup> EMBI+ comprises US dollar-denominated bonds and traded loans issued by sovereign entities rated BBB+ or lower.

Sources: JPMorgan Chase; Barclays Capital; BIS calculations

The size of this hedged/unhedged difference shows that exchange rate movements have played a crucial role. The interest rate parity condition has been violated – that is, the rate of

<sup>5</sup> International bonds outstanding in EME currencies (not counting the Hong Kong and Singapore dollars) rose from about \$20 billion at the end of 2000 to over \$300 billion by end-September 2011.

<sup>6</sup> Note, however, that return distributions are typically both skewed and have “fat tails”, which cannot be identified simply by the mean and variance of returns. Hence a “rare event” shock – and the 2008 shock was that – could well overturn this comfortable conclusion.



nominal depreciation of EM currencies proved to be less than the initial interest rate differential vis-à-vis US dollar rates. This may be partly because of the risk premium earned from holding a currency with a long history of volatility (ie greater than the actual volatility observed over the period used to calculate the Sharpe ratio). Or it could be a “peso problem” effect – investors are deterred by the risk of very costly tail events that do not materialise in the sample period.

This finding of a persistent positive return to speculation in emerging market currencies and local bonds has been supported in many studies.<sup>7</sup> It may itself have policy implications. Mohan and Kapur (2009) argue that the interest rate differentials in favour of dynamic EMEs over the industrial world reflect more rapid growth in developing countries. Because such growth differentials are likely to persist, the interest rate differential is likely to continue for decades. In order to avoid excessive appreciation, they argue, foreign investments in local currency government bonds should be subject to ceilings to avoid excessive arbitrage-led flows. Several major EMEs (eg China and India) do indeed maintain such restrictions. Others in effect force local financial institutions to buy all government issuances – so that genuine market prices do not develop and there is no arbitrage with international markets. This perspective raises important if controversial issues related to monetary independence but not directly relevant to this paper.

A second important dimension is the *variance of the returns*. The volatility of EM bonds is significantly higher than that of portfolios of bonds of the major industrial countries. Nevertheless, calculations show that the Sharpe ratio – the mean return divided by the standard deviation – of portfolios of emerging market bonds has in recent years been well above that for classical dollar, euro and yen government benchmarks – which are generally well below 0.5.

How did the crisis affect these calculations? To see this, an identical exercise was carried out for the period January 2007 to October 2009 (Table 2). The returns from investing in EME bonds (9.6% a year) and industrial country bonds (9.4% a year) are almost identical. Investing in industrial country bonds would have yielded a better Sharpe ratio thanks to their lower volatility than EM local bonds. Of course, the very good performance of EM local bonds from February to October 2009 influenced this result. But the general conclusion still stands: over a two- to three-year period that includes both the crisis and some subsequent recovery, foreign investors in these bonds did not do badly.<sup>8</sup> Extending this risk-return analysis to October 2011, which is not shown here, reduces the unhedged return on industrial country bonds below that on EME bonds but the Sharpe ratio is still higher.

Graph 3 charts measures of volatility over time. There are two points to note:

- (a) It is true that the spike in volatility in EM local bonds was much more brutal in late 2008 than for industrial country bonds; but
- (b) This was mainly because of the rise in exchange rate volatility. A portfolio of local bonds hedged into dollars proved to be much less volatile than the EMBI+ portfolio of dollar bonds. In this sense, international bonds were harder hit than local bonds.

The rise in EME exchange rate volatility since early 2011 – fallout from the euro crisis – has again made returns more volatile. Again, an exchange rate-hedged portfolio was more stable.

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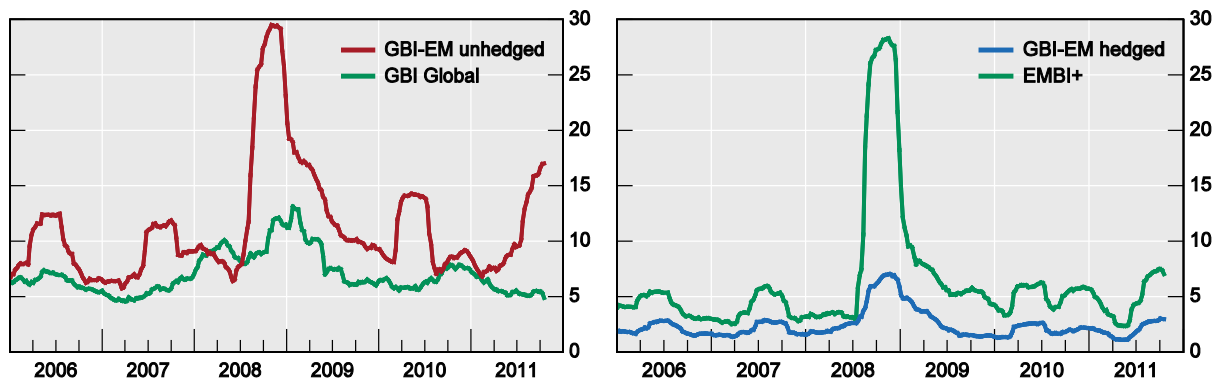
<sup>7</sup> For instance, Burnside et al (2009) find that including emerging market currencies in carry trade strategies substantially increases the Sharpe ratio of such strategies.

<sup>8</sup> Note, however, that the correlation with the EMBI+ (ie US dollar-denominated bonds) did rise sharply – so EM local bonds became less attractive as diversification.

Graph 3

### Comparisons of volatility of returns<sup>1</sup>

In US dollar terms; weekly averages



Note: GBI = Government bond index.

<sup>1</sup> Standard deviation of daily percentage changes over a centred 90-day moving window, annualised.

Source: JPMorgan Chase.

## 4. Liquidity and the flight of foreign investors

The flight of investors from even high-credit quality markets that were illiquid has been well documented in the major financial centres. One excellent German example is the spread that arose between German government bonds and yields on bonds issued by KfW. Because this bank is owned by the German government and its debt enjoys a government guarantee, there is no additional credit risk – but KfW bonds are less liquid and a sizable liquidity premium arose during the crisis (Graph 4). During the months around the Lehman crisis, this liquidity premium hovered around 100 basis points. It fell subsequently but never returned to its pre-2007 spread of 10–15 basis points. It has again risen significantly during the euro crisis.

Graph 4

### The KfW spread over German government bonds<sup>1</sup>



<sup>1</sup> Ten-year zero-coupon spread between yields on bonds issued by KfW (a bank owned by the Federal Republic of Germany and the federal states and whose debt is guaranteed by the Federal Republic of Germany) and German government bonds; in basis points.

Sources: Bloomberg; BIS calculations.

The influence of foreign investors on the liquidity of EM local currency bond markets deserves a closer look. Before the crisis, a common observation was that it was foreign

rather than domestic investors who made many of these markets liquid. They traded frequently and often in sizeable lots – their arbitrage operations between different bond vintages were seen as enhancing liquidity. During the crisis it was their actions that led to the evaporation of liquidity in many markets. Why this apparently dominant influence?

To answer this, it is necessary to analyse carefully what exactly is meant by “liquidity”. This is not easy as this word is used in many different ways. A first observation is the characteristics of “liquid” assets encompass both microeconomic and macroeconomic dimensions. The microeconomic dimension has been most explored empirically – usually covering depth, tightness and resilience.<sup>9</sup> Several microeconomic indicators suggest that EM local currency bonds are not yet regarded as liquid enough for regular inclusion in the portfolios of international investors.

- Bid-ask spreads tend to be wide. We discovered during the crisis that they are also highly dependent on the willingness of the big market-makers to assume the warehousing risk of two-way quotes. Under intense pressure from the financial crisis, the major banks widened their bid-ask spreads for trading local currency bonds.
- A second aspect is the limited scale of arbitrage activity. The correlation of month-to-month yields on the bonds of most EMEs with the international benchmark (US Treasury) is still much lower than that for bonds of any large industrial country (including countries facing quite diverse macroeconomic shocks – such as Australia, the euro area and the United Kingdom).
- A third aspect is the ease of hedging. As Saxena and Villar (2008) have noted, trading of interest rate risk in many EM currencies is still very thin. The BIS’s Triennial Central Bank Survey, for instance, finds that the development of interest rate derivatives in EMEs has lagged well behind the development of forex derivatives in EMEs (see Mihaljek and Packer (2010)). In recent years, however, the volume of OTC derivatives has increased sharply in Korea and South Africa (Table 3).
- A fourth aspect is fragmentation. National differences in bond market practices (taxation, infrastructure, regulation, etc) can deter international investors. As noted by several speakers in this seminar, the Asian Bond Fund 2 seeks to reduce impediments to broad non-resident investment in Asia’s bond markets (Chan et al (2012) in this volume).

The macroeconomic dimensions are much harder to define empirically. The basic idea is that an asset is more liquid when it keeps its value in those circumstances when its holder wants to liquidate it for cash (Tirole (2008)). Liquidity thus defined depends *both* on the nature of the macroeconomic shock prompting the need to sell assets *and* on the identity of the asset holder. Taking the example of a corporation that needs to sell its financial assets in a recession, Tirole (2008) argues that a US Treasury security, which typically does not fall in

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<sup>9</sup> The elements of microeconomic liquidity are usually defined as follows:

Depth: the market’s ability to absorb large transaction volumes with small changes in price (measured by average turnover)

Tightness: cost efficiency (measured by low bid-ask spreads and by the differential between on-the-run and off-the-run bid-ask spreads)

Resilience: ability to absorb random shocks (day-to-day price volatility)

The Asian Bonds Online website of the Asian Development Bank monitors bond market liquidity in Asia in an authoritative way (see, for example, ADB (2011)).

value in a recession, is in this macroeconomic sense more liquid than an equity index, which tends to fall in a recession – exactly when a firm or a household has greater need of liquidity.

Table 3 **OTC single currency interest rate derivatives turnover<sup>1</sup>**

Daily averages, notional amounts in billions of US dollars

Currencies	April 2001	April 2004	April 2007	April 2010
<b>Asia</b>				
Indian rupee	0.0	0.4	3.1	1.5
South Korean won	0.0	0.4	4.1	9.8
New Taiwan dollar	0.0	0.4	1.1	0.8
Malaysian ringgit	0.0	0.0	0.1	0.7
<b>Latin America</b>				
Brazil real	0.2	0.8	0.1	1.0
Mexican peso	0.4	1.2	2.8	1.3
<b>Other</b>				
Czech koruna	0.1	0.3	0.6	0.2
Hungarian forint	0.0	0.2	0.8	0.2
Polish zloty	0.4	0.8	2.1	1.5
South African rand	0.5	1.8	4.0	5.8
Turkish lira	...	...	0.1	0.0

<sup>1</sup> Local turnover. Net of local inter-dealer double-counting. Including forward rate agreements, interest rate swaps, interest rate options and other interest rate products.

Sources: BIS Triennial Central Bank Survey on Foreign Exchange and Derivatives Market Activity (for 2001 to 2007) and Table 2 of Interest rate market turnover activity in 2010.

This macroeconomic dimension has several implications. One is that different economic agents will be subject to quite different economic shocks. This will mean that various agents face different “needs” to sell their assets: the scale and the timing of sales will in general vary across agents.<sup>10</sup> So one simple explanation of the sharp reaction of foreign investors is that financial firms in the major financial centres were hardest hit by the extreme rise in risk aversion. Wholesale markets that had been very liquid before the crisis just dried up. Deepening uncertainties about counterparty risks in the interbank markets in the major financial centres (because the value of their exposures to subprime debt, CDOs, etc was unknown) led to an evaporation in liquidity in the (large) interbank cash markets. This forced banks to attempt to raise liquidity (or curb lending) in FX swap markets – which, faced with these large demands, became dysfunctional. This forced the liquidation of portfolios of EME assets.<sup>11</sup>

<sup>10</sup> This is why a diversified investor base makes financial markets more liquid. Indeed an ADB survey of market-makers found that developing a more diversified investor base was the single most needed element in improving liquidity in Asian local bond markets (See page 52 of CGFS (2007)).

<sup>11</sup> See Baba et al (2008) for an explanation of this mechanism.

Another implication is that the impact of a macroeconomic shock depends on the investor's balance sheet as a whole. The distinction between non-leveraged and leveraged investors is key. How leveraged investors respond to a macroeconomic shock depends not only on the nature of their assets, but also on the impact of the shock on their liabilities. Mismatches on the balance sheet of a leveraged investor (eg long-dated assets financed by short-term debt) can magnify the impact of a macroeconomic shock on its net worth and thus on its creditworthiness.

An additional link arises because leveraged investors will post their assets as collateral for funding. In some cases, leveraged investors will be reliant on short-term financing from banks that will not be easily rolled over in adverse circumstances. For all these reasons, an adverse shock (or even the imminent prospect of such a shock) can force leveraged investors to rapidly deleverage and liquidate their positions. As this happens, assets widely regarded as liquid by the standard microeconomic measures can suddenly become illiquid.

An influential paper by Fostel and Geanakoplos (2008) on the pricing of new asset classes has shown just how important is the impact of collateral. The "collateral capacity" of an asset depends on expectations about the distribution of future asset prices. As the volatility of an asset's price rises (or is expected to increase), its value as collateral falls much more than its market price because lenders demand larger haircuts of more volatile assets. Leveraged investors will therefore become more inclined to buy assets which they can pledge as collateral with minimum "haircuts" (ie the discount applied to the asset's current market value) to their bankers – and may have to forego buying some assets regarded as underpriced (because their price has become too volatile).

During the crisis, there was indeed a dramatic narrowing in the quality of collateral international banks would accept – and this hit disproportionately hard new asset classes such as local currency bonds. I am not aware of evidence of whether local banks in emerging markets also demanded larger haircuts when their local bonds were pledged as collateral – presumably the ready acceptance by central banks of their own government's local currency bonds limited any ratcheting up of collateral requirements.

A more stable foreign investor base should develop over time. Several years ago, cross-border local currency investment in EMEs was dominated by leveraged investors such as hedge funds and the proprietary trading desks of major international banks. In the early 2000s, it was often asserted that the ability of hedge funds to use leverage and their capacity to manufacture exposures (even in markets hampered by extensive controls) through derivative structures meant that they were the major foreign players in local currency bond markets. By the mid-2000s, however, non-leveraged foreign investors were becoming more important. Dedicated emerging market bond funds grew. Foreign pension funds were increasing their investments in emerging markets, and this is being reflected in the mandates being given to fund managers. As benchmark global bond indices gradually incorporate EME local bonds into their indices, the interest of "index-aware" institutional investors in these markets is likely to increase. This broadening of the foreign investor base to take in more "real money" investors should in time improve macroeconomic liquidity in these markets.

Nevertheless, the crisis clearly showed that the foreign investor base has not yet reached the stage of providing reliable, *macroeconomic* liquidity after a massive shock. In some sense, foreign investors provide a great deal of liquidity in normal times; but there are reasons for thinking much of this can evaporate in a crisis. Because of that, policymakers need to pay special attention to the domestic investor base.

## 5. The domestic investor base and local markets for interest rate derivatives

Did the domestic investor base serve to stabilise bond markets? In principle, the flight of foreign investors and the fall in bond prices should have given domestic investors a golden opportunity to snap up bargains. This would have mitigated the price decline: the very sharpness of the price decline suggests that domestic players did not play this stabilising role very well – at least in the short run. What could have constrained them?

One factor might have been that large crisis-related losses on other parts of their portfolio limited their room to manoeuvre. In several countries, the crisis brought to light unsuspected forex exposures of local firms. There is some evidence that currency risk may have been shifted onto the domestic private sector in a non-transparent manner (it could also have been shifted to other foreigners of course). Conversely, foreign investors in local currency bonds tend to hedge their currency exposure (equity investors do not) and this may have added to the currency risk borne by the local private sector and financial system. If so, local investors as a group will end up holding short forex positions that could prove quite expensive in the event of market turbulence. Much more needs to be known about the net effects of such hedging strategies and about the role of banks in facilitating excess currency exposures.

### *Domestic investor base*

The following paragraphs consider how far the different classes of domestic investor could be expected to stabilise those markets. Broadly speaking, there are three classes of investor: local banks, pension funds and mutual funds.

#### *Local banks*

The first striking fact about the ownership of local currency bonds in the EMEs is that the share held by banks is much larger, and that of other financial institutions is much smaller, in the EMEs than in the industrial countries. Large holdings of long-term government bonds on the asset side of their balance sheet combined with shorter duration liabilities exposes them to sizeable interest rate risk exposures. In addition, the short duration of their borrowed funds exposed some banks to the risk that funding in money markets would become more difficult. In the years before the crisis, there was a trend decline in long-term interest rates on local currency bonds. This gave banks holding these bonds significant capital gains. When the advanced country crisis broke, however, banks in EMEs probably became more aware of the latent risks they faced. The combination of interest rate and liquidity risk exposures could have forced the domestic banks to attempt to simultaneously sell their holdings of local currency bonds, aggravating the loss of liquidity in bond markets. In order to forestall this, several countries relaxed regulations on the valuation of bond portfolios to ease the plight of banks (see Section 6). Because of this, the heavy concentration of government bond holdings on local banks may not be very conducive to macroeconomic liquidity.

#### *Pension funds*

Pension funds are usually not leveraged and do not have a large stock of short duration liabilities. Hence they are less likely to be induced to sell bonds in periods of a market stress. In this sense, they can provide more robust liquidity to the market. In most EMEs, however, local pension fund assets are still small (even if growing rapidly). Because pension funds need to hold long-dated paper in order to match annuity streams, they can be seen as quintessential providers of liquidity in the macroeconomic sense. So the continued expansion of pension funds in EMEs is probably important for the development of liquid long-term local currency debt markets.

It is, however, very short-sighted for the government to create an artificial institutional investor demand for local bonds by prohibiting pension funds in their jurisdiction from buying

foreign bonds. As Kotlikoff (1999) pointed out more than a decade ago, a high proportion of institutional investor assets held abroad (denominated in foreign currency) provides a buffer not only against local or regional shocks but also against sharp currency depreciation. The experience of Chile during this crisis illustrates this very well indeed. The international financial crisis and the sharp decline in the exchange rate led Chilean pension funds to repatriate some of their foreign assets and put the proceeds into Chilean bonds, driving down yields dramatically.

#### *Local mutual funds*

Mutual funds are also comparatively underdeveloped in EMEs. Mutual funds allow households, in effect, to hold local currency bonds in more liquid and easily tradable (“indirect” debt securities) units. Because mutual funds tend to trade their “primary” securities actively in response to changes in market conditions, they bring additional (microeconomic) liquidity to local currency bond markets. This can be particularly important in those markets that would otherwise be dominated by local buy-and-hold investors.

The main conclusion from all this is familiar – continued efforts are needed to deepen and to diversify the local investor base. The development of local interest rate derivatives markets is essential to help local investors manage risks.

#### **Markets for interest rate derivatives**

How did interest rate derivatives markets hold up in the crisis? It is worth recalling that one of the major rationales for nurturing local currency debt markets is to develop a yield curve as far out as possible to help banks and other investors hedge local currency interest rate risk.

As noted in Table 3 above, the volume of transactions in OTC interest rate derivatives in most EME currencies is rather limited. Before the financial crisis, a number of large countries – notably Brazil, Korea and Mexico – had fostered the development of some key exchange-traded derivative contracts. The development of standardised products traded on exchanges should help financial stability – the crisis clearly demonstrated the vulnerability of OTC products to the creditworthiness of key counterparties. Annual data on OTC interest rate derivatives in EME currencies are not available.<sup>12</sup> It was, however, widely reported that many OTC markets dried up but exchange-traded products proved more resilient. Table 4 shows that, although volumes were reduced as the crisis led to sharp reductions in risk positions, trading continued effectively on a number of exchanges. And exchange-traded interest rate futures in the Brazilian real and the Korean won have since risen strongly.

Mexico’s experience during the crisis, discussed in Banco de Mexico (2009), is of wider interest. The growth of a liquid government bond market in Mexico helped the development of key derivatives markets, which in turn helped the liquidity of cash markets (see CGFS (2007), pp 54–56). The volume of transactions and the size of open interest in the 10-year bond future contract rose sharply during the crisis. The failure of Lehman undermined confidence in counterparties in OTC markets, leading to a sharp contraction in transactions and made many hedging operations much more expensive.

The Banco de Mexico (2009) noted that “... *at that point, the standardised markets became a preferred refuge for investors. The availability of mechanisms like margins, daily valuation and clearinghouses with a rock-solid capital structure was tremendously helpful during the moments of most intense uncertainty. The clearinghouse [of the Mexican Derivatives Exchange maintained] a robust capital structure and even strengthened it, making intraday margin calls on 28 occasions during 2008*”.

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<sup>12</sup> The BIS’s semi-annual survey on OTC Derivatives Market activity covers only G10 countries.

One important lesson, therefore, is that more EMEs should consider the development of one (or only very few) exchange-traded interest rate derivative contracts, on long-term debt.

	2004	2007	2008	2009	2010	2011
<b>Short-term</b>						
Brazil	505.7	1,211.1	1,306.8	761.1	1,880.5	2,069.3
Korea	0.2	-	-	-	-	-
Mexico	91.2	93.5	48.1	23.5	7.4	18.9
<b>Long-term</b>						
Brazil	0.4	0.6	1.9	0.1	0.1	0.2
Korea	53.9	129.6	91.4	117.6	184.5	246.0
Mexico	1.8	2.4	7.6	4.0	4.3	4.8

Sources: FOW Tradedata; Futures Industry Association.

## 6. Policy responses in the crisis

The shock hitting local currency bond markets was, for many countries, systemic in its dimensions evoking, to quote Dornbusch, “a world of pure contagion, [where] innocent bystanders are caught up and trampled by events not of their making and when consequences go far beyond ordinary international shocks”.<sup>13</sup> This systemic dimension can justify an extraordinary policy response that is more interventionist than desirable in normal times.

Governments and central banks have a wide array of instruments and policies at their disposal to deal with a government bond market collapse. Ideally such emergency measures should aim to “block” those feedback effects that could destabilise the financial system. But they should not stabilise markets too much or for too long – otherwise they would impair the price discovery and capital allocation functions of asset markets. Balancing these two conflicting objectives is an old and difficult choice.

Measures adopted by EMEs over the past year or so include:

- (a) *Relaxing conditions for accepting bonds as collateral for loans.* The problem, identified above, is that their collateral value in a crisis is hit first by the decline in the market value of the bonds and secondly by the sharp increase in volatility which leads to larger “haircuts”. Such destabilising feedback effects can raise systemic issues that justify a public policy response.
- (b) *Ease mark-to-market rules on banks and other financial institution holding these bonds.* Several developing countries (eg Indonesia, Malaysia and the Philippines) followed this approach – especially after the IASB and the accounting rulemakers in the United States had relaxed mark-to-market rules for illiquid assets (see BIS (2010) and CGFS (2009)). The justification of such moves is that they can forestall distress selling which could destabilise the whole system (see Shim and von Peter (2007)).

<sup>13</sup> From Claessens and Forbes (2001).



- (c) *Change government debt issuance policies.* The medium-term strategic objective that government borrowing should largely take the form of long-dated, local currency issuance should not always determine short-term, tactical policy decisions. Mexico's response is a good illustration of this. This country successfully pursued for many years a strategy of financing its government debt in local currency and at lengthening maturities. But faced with the flight from long-term peso paper after the Lehman collapse, the government announced an increase in the share of borrowing in foreign currency. It also shortened the duration of its new debt issuance in order to meet the strong demand for short-dated government paper (Table 5). Nevertheless, the country continued to announce in advance an issuance calendar which included significant amounts of long-term debt. Markets at all durations remained open with regular quotations of benchmark interest rates for peso-denominated debt. By 2011 Q4, long-term issuance had returned to its pre-crisis level.
- (d) *Remove tail risk.* In a financial panic, fears of disaster often paralyse investors and lead to an unwarranted flight to liquidity/safety. In such circumstances, the selective public sector purchase of "bargains" bonds can help markets stabilise. The announcement that the authorities intend to follow such a policy may well provide reassurance to the market. In effect, it removes the tail risk fear of extreme price movements, and allows price movement within a "normal" range. This can have an impact on market prices even before transactions commence. As Mehrling (2009) has argued, the use by the government of options and derivative contracts can be the cheapest and most efficient way of taking out tail risk.<sup>14</sup>

Table 5 **Pre-announced quarterly issuance of Mexican government bonds**

In billions of Mexican pesos

	2008 Q3	2008 Q4	2009 Q4	2011 Q4
Short duration <sup>1</sup>	22.8	28.5	34.3	31.5
3 to 5 years <sup>2</sup>	7.8	7.8	10.0	10.5
10 to 30 years <sup>2</sup>	16.3	3.0	9.0	15.0
Index-linked <sup>3</sup>	1.5	1.0	1.4	1.6

<sup>1</sup> Cetes plus Bondes D 5y <sup>2</sup> Bonos <sup>3</sup> Udibonos 3 years to 30 years

Source: Mexican Public Debt Office

Such non-orthodox policies were credible in large part because earlier policy frameworks (on regulation, debt issuance, currency flexibility, etc) had made balance sheets less vulnerable to shocks in market prices. Markets remained confident that these exceptional measures would be reversed.

<sup>14</sup> Mexico's interest rate swap programme may have worked in part through this reassurance channel. The Bank of Mexico introduced an interest rate swap programme of 50 billion pesos. The facility allowed market participants to exchange their exposure to long-term fixed interest rates for short-term variable interest rates, thus reducing their interest rate sensitivity (Sidaoui et al (2010)). Because the first of these swap operations was conducted only on 14 November 2008, when the bond market had already begun to stabilise, not many intermediaries participated: only 4.4 billion Mexican pesos of nominal 10-year swaps were assigned.

## 7. Conclusion

The development of domestic bond markets promoting borrowing in local currency has been one of the great policy successes in the emerging markets during the past decade (Caruana (2009)). Currency mismatches have been reduced so that exchange rate depreciation no longer destabilises these economies. The longer maturity of government debt not only reduced refinancing and rollover risks but also helped to insulate fiscal positions from a sharp rise in market interest rates.

Did such markets provide a resilient source of finance when international financial markets froze in the wake of Lehman? The post-Lehman crisis was a stress test of altogether extreme dimensions. The fragility of these instruments was underestimated, and the crisis taught us a lot about the complexity of liquidity. International banks reduced their activities in many EM bond markets. The flight of foreign investors from some markets became almost a stampede. (In several countries, instability in bond and forex markets was aggravated by some large and unsuspected forex exposures of residents – in future better information is needed about this). This crisis showed that the foreign investor base has not yet reached the stage of providing liquidity that holds up well during a major financial crisis (“macroeconomic liquidity”). The reality in international financial markets is that the “collateral capacity” of any new asset class – such as emerging market debt paper – is hit hard during a crisis.

But these observations should not be overstated. The volatility in domestic bond returns (in local currency) after the Lehman failure was less than for comparable international bonds. Yields and volatility returned to pre-crisis levels in a matter of months. In general, then, these comparatively new local currency bond markets held up well against an altogether exceptional shock.

As for derivatives, it is noteworthy that it was the new exchange-traded interest rate derivative contracts – not comparable OTC products which were hit by counterparty worries – that proved their worth in helping market participants hedge and manage risk more effectively. This lesson was of course reinforced by the AIG debacle – there are clear advantages in standardising derivatives contracts and shifting settlement and trading to exchanges.<sup>15</sup>

In addition, the exceptional policy responses of governments and central banks did succeed in containing potentially destabilising dynamics while allowing markets to function. Many of these policy responses were made feasible by the strength of balance sheet positions of governments in the emerging markets at the start of this crisis. And markets remained confident that such interventionist policies would be reversed as conditions normalise. The crisis demonstrated the importance of developing a diversified and resilient domestic investor base. Domestic holdings are still too concentrated with local banks and pension funds. Some local financial institutions were too exposed to interest rate risks from holding local bonds.

To conclude it is important to reiterate one qualification to this positive assessment on the resilience of government debt markets. This is that much more needs to be done to develop the *private* long-term debt markets on top of government debt markets – domestic corporate bond markets, mortgage markets, etc. Credit derivatives and securitisation markets need to support this development (Remolona and Shim (2008)). In Asia, the eventual development of an integrated regional market for local currency bonds could give these markets the critical size needed for the wider use (Goswami and Sharma (2011)). All these issues, explored by Shim (2012) in this volume, are of first order importance.

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<sup>15</sup> Central counterparties (or exchanges), however, need to be well-conceived and very robust if the concentration of risks that they entail is not to make matters worse. See Heller (2010) and Cecchetti et al (2009).

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## Annex

Table A1 **Remaining maturity of domestic central government debt outstanding in years<sup>1</sup>**

	2000	2005	2008	2009	2010
<b>Latin America<sup>2</sup></b>	2.5	3.9	4.8	4.5	4.6
Brazil	2.7	2.3	3.3	3.4	3.4
Chile	...	16.9	16.5	14.0	13.5
Colombia	3.6	3.8	4.4	5.1	5.1
Mexico	1.4	3.4	6.5	6.4	7.2
Peru	6.4 <sup>3</sup>	9.6	16.2	16.0	15.0
<b>Asia, larger economies</b>	5.1	7.0	7.6	7.5	7.6
India	7.1 <sup>3</sup>	10.0	10.6	10.5	9.8
Korea	2.4	4.1	4.5	4.6	5.0
Chinese Taipei	8.8	8.4	7.6	7.2	7.6
<b>Other Asia</b>	5.7	5.5	4.4	4.3	4.3
Malaysia	5.0	5.0	5.3	5.3	4.5
Philippines	5.8	4.1	4.9	5.4	5.4
Thailand	...	5.6	5.8	5.8	6.0
<b>Poland</b>	2.6	3.6	4.2	4.1	4.3
<b>Russia</b>	4.4	7.2	9.4	7.4	5.6
<b>Turkey</b>	1.0	1.8	1.9	1.9	2.5
<b>South Africa</b>	9.2	8.1	9.9	10.6	10.6
<b>Industrial countries<sup>4</sup></b>	6.5	5.9	5.0	5.1	5.3

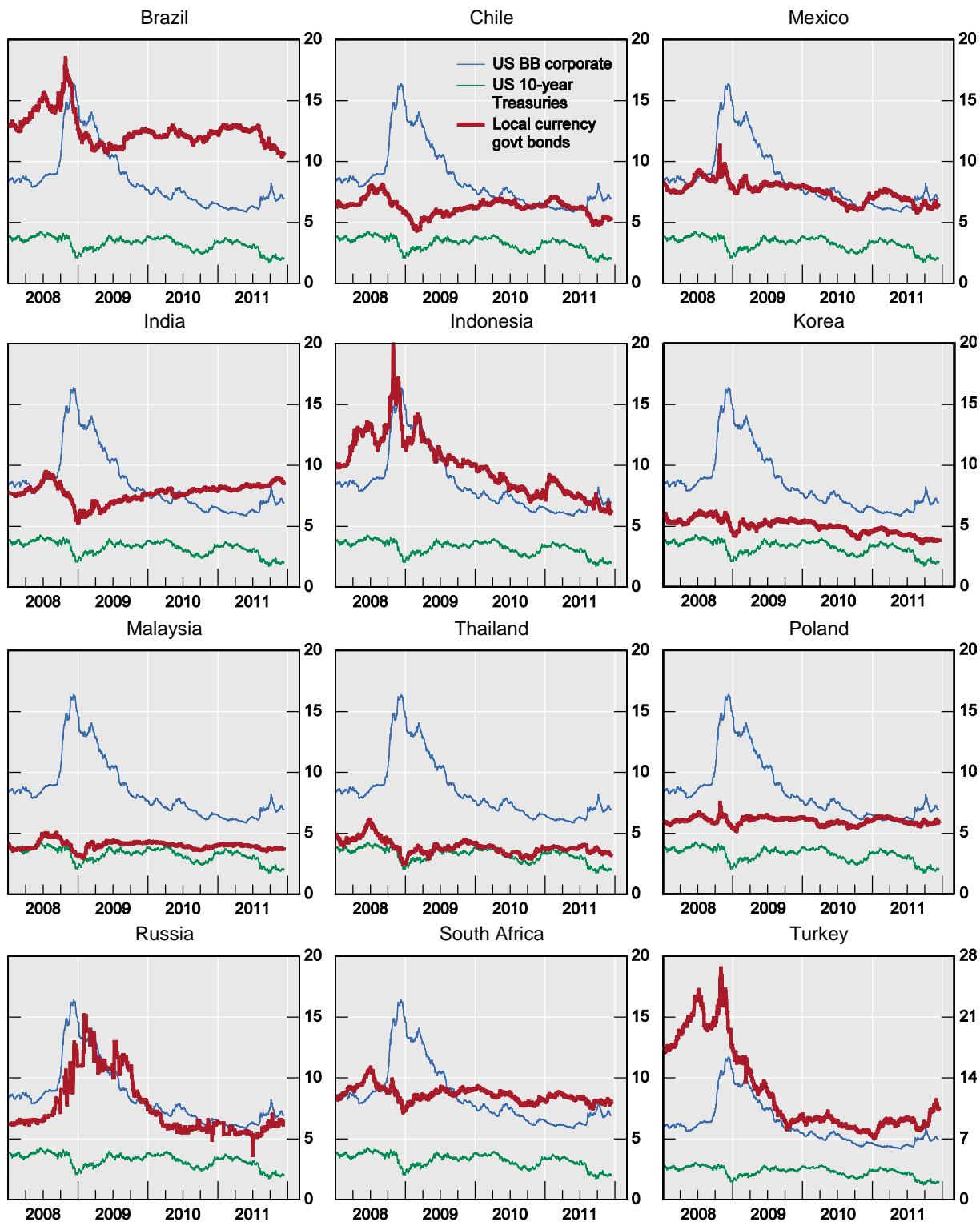
<sup>1</sup> Includes bonds, notes and money market instruments. Regional totals based on the economies listed in the table and weighted by the corresponding amounts outstanding. <sup>2</sup> Latin America includes also Argentina and Venezuela. <sup>3</sup> 2001. <sup>4</sup> Australia, Belgium, Canada, Germany, Spain, the United Kingdom and the United States.

Source: BIS survey updating Table D4 in CGFS (2011). This is reported on the BIS's website.

Graph A1

**Yields on local currency government bonds**

Maturities close to 10 years<sup>1</sup>



<sup>1</sup> Ten-year generic Bloomberg interest rates; for Brazil, three-year; for Chile and South Africa, nine-year; for Turkey, two-year; for US BB corporate bonds, yields on BB rated Merrill Lynch US corporate bonds.

Sources: Bloomberg; Datastream.

# Local currency bond markets and the Asian Bond Fund 2 Initiative<sup>1</sup>

Eric Chan, Michael Chui, Frank Packer and Eli Remolona

## Abstract

Liquidity in the eight government bond markets in which the ABF2 invests has improved significantly since the fund's inception in 2005. These improvements may be traced to the consolidation of issuance in a few benchmark maturities, an increase in market making activity, and the lowering of barriers to participation by non-resident investors. In each of these factors, the ABF2 project played an important catalytic role. But there remains work to be done. Local-currency corporate bond markets have yet to develop active secondary markets. These markets would benefit from more effective market making arrangements and the introduction of certain types of derivatives.

JEL classification: E43, F21, G12, G18

Keywords: Bond markets, yield curve, derivatives, market liquidity

## 1. Introduction

In December 2004, the EMEAP central banks launched the second stage of the Asian Bond Fund. The ABF2, as this initiative is called, would invest \$2 billion in domestic currency bonds issued by sovereign and quasi-sovereign issuers in the eight EMEAP markets other than Australia, Japan and New Zealand. Its initial objective was to provide an innovative, low-cost and efficient product in the form of passively managed index bond funds, so as to broaden investor participation, identify impediments to bond market development in EMEAP economies, and act as a catalyst for regulatory reforms and improvements to market infrastructure. Five years on, the EMEAP Working Group on Financial Markets, under the chairmanship of the then Assistant Governor of the Bank of Japan, Mr Akinari Horii, asked the BIS Representative Office for Asia and the Pacific to prepare a third-party review of the local currency bond markets. One aim of the review is to examine the extent to which the ABF2 initiative has stimulated the development of domestic bond markets as a source of

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<sup>1</sup> This paper was prepared at the request of Mr Akinari Horii, former Assistant Governor of the Bank of Japan and Chair of the EMEAP Working Group on Financial Markets. It draws heavily from interviews with asset managers, investment strategists, interdealer brokers and central bank staff in several of the EMEAP economies. Eli Remolona is Chief Representative and Frank Packer Head of Financial Stability and Markets at the Representative Office for Asia and the Pacific, Bank for International Settlements. Eric Chan and Michael Chui, who worked at the Bank for International Settlements at the time of the writing of this paper, are currently affiliated with Bester Paper Products, and China International Capital Corporation, respectively. The views expressed in this paper are those of the authors and do not necessarily reflect those of the Bank for International Settlements.

long-term funding for Asian borrowers and promoted local currency bonds as a new asset class for both resident and non-resident investors.

Over the past five years, the ABF2 has invested in eight local currency bond markets, and authorities of the EMEAP economies have continued to implement various measures to promote local currency bond markets. During this period, most of these government bond markets have made significant strides. Liquidity has improved considerably and yield curves have become more reliable. These improvements may be attributed to three factors: (a) the growth of bond issuance in general and the consolidation of issuance in a few benchmark maturities; (b) the increase in market making activity, as reflected in the development of interdealer markets and the newly active role of interdealer brokers; and (c) the reduction of barriers to entry of non-resident investors. In each of these factors, the ABF2 project seemed to play an important catalytic role, although the significance of this role is hard to quantify.

The ABF2's catalytic role included accelerating tax reforms to exempt withholding tax of non-resident investors; enhancing the regulatory framework for exchange traded funds (ETFs); further liberalising foreign exchange administration rules; improving regional market infrastructure and reducing cross-border settlement risk; promoting adoption of documentation in line with international best practices; and introducing a set of credible, representative and transparent bond indices. Nonetheless there remains work to be done. The government bond markets can benefit from opening up the markets further to non-resident investors. Although there has been a surge of issuance in the local currency corporate bond markets, these markets have remained largely illiquid.

The ABF2 is not the only policy initiative taken over the past five years to encourage the development of local currency bond markets in the region. Another prominent example is the Asia Bond Market Initiative (ABMI), which was launched in 2002 under the ASEAN+3 framework, with technical support from the Asian Development Bank (ASEAN+3 (2009)). Shortly after, a number of working groups were formed to focus on specific topics, including the creation of new securitised debt instruments; credit guarantees and investment facility, the development of rating systems, the fostering of bond issuance by multinational financial institutions in regional currencies; and foreign exchange transactions and settlements issues.<sup>2</sup>

While both the ABF2 and the ABMI aimed to develop local currency markets, there have been subtle differences in their means to achieve the goal. The ABMI, at least in its early years, focused more on the issuer perspective, aiming to foster an increased diversity of bonds and issuers, not least small and medium sized firms. On the other hand, as stated above, mitigating impediments to investors and improving liquidity in the major government bond markets have been the principal objectives of the ABF2 from the start.

In the next section, the paper begins with a review of the performance of the ABF2 funds, assessing their role as an investment product for investors. Section 3 discusses the development of the local currency bond markets over the past five years, characterising especially the growth of the primary government bond markets, the issuance of benchmarks and the role of corporate bond markets as "spare tyres" in times of stress. Section 4 examines how secondary markets have fared in terms of liquidity, attributing much of the improvement to the increase in market making activity. Against this backdrop of maturation in both the primary and secondary markets, Section 5 then reviews the status of the impediments to market development identified by the ABF2 proponents, with a view towards assessing the significance of their decline. Section 6 concludes.

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<sup>2</sup> It may also be noted that, similar to the ABF2 and the Asian Bond Market Initiative, ASEAN financial integration initiatives have likewise contributed in mobilising government efforts to reduce barriers and impediments to the flow of funds (foreign direct, portfolio and other investments) and financial services.



## 2. Performance of ABF2 funds

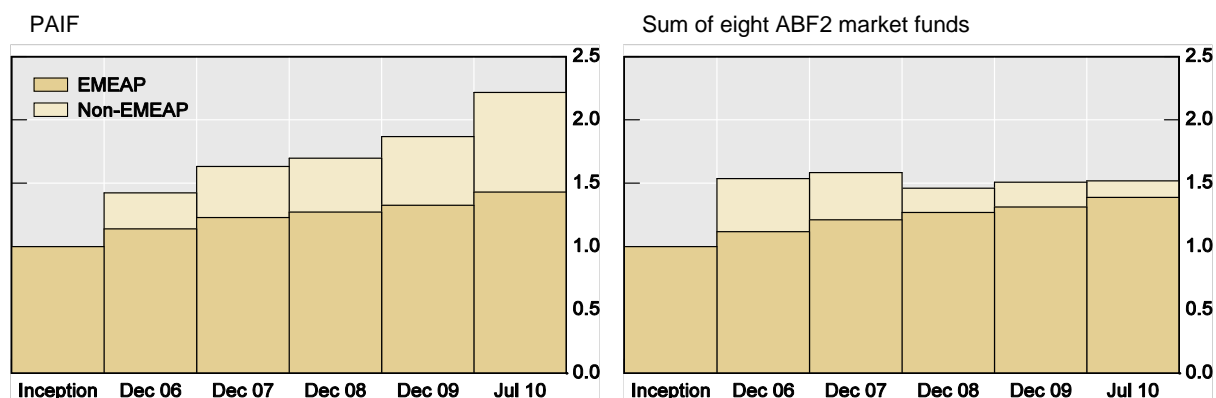
One of the key objectives of the ABF2 initiative is to provide an innovative, low-cost and efficient investment product to broaden investor participation. As investment vehicles, the ABF2 funds have performed well over the past few years, and represent the successful introduction of a new asset class in Asia, laying the foundation for broader investor participation in bond markets. Since inception up to end-April 2010, the Pan Asia Bond Index Fund (PAIF) gained cumulatively 40% in local currency terms. The best performing funds have been the ABF Indonesia Fund, returning 86% and the ABF Philippines Fund, returning 51%. In each of three years to end-2008, all but the ABF China Fund recorded positive annual returns. The China Fund fell by 2% in 2007 before gaining 13% in the following year. Performance of the funds, however, was mixed in the immediate aftermath of the Lehman bankruptcy. In 2009, the best performer was the ABF Indonesia Fund, gaining 22%. The ABF Thailand Fund, which declined by 3% in 2009, was the worst performer. The ABF China and Hong Kong SAR (henceforth Hong Kong) Funds also fell slightly.

Despite their good performance, the success of these ABF2 funds in attracting investors other than EMEAP central banks has been mixed. The left-hand panel of Graph 1 shows that the size of non-EMEAP central bank investment (“non-EMEAP investment”) in the PAIF has increased steadily since its inception. By contrast, the initial strong increase in non-EMEAP investment in the eight market funds was followed by a gradual redemption (Graph 1, right-hand panel).<sup>3</sup> By the end of July 2010, total non-EMEAP investment in the ABF2 market funds was \$129 million, compared with \$716 million in the PAIF fund.

Graph 1

### Size of the ABF2 market funds and PAIF by investor

In billions of US dollars



Source: BIS.

<sup>3</sup> However, it should be noted that the single market funds were designed to target resident investors while non-resident investors are expected to gain exposures to individual markets through the Pan Asia Bond Index Fund. That might help explain the higher proportion of non-EMEAP investment in the latter.

### 3. Growth of the local currency bond markets

The ABF2 was planned to help raise investor awareness and interest in Asian bonds. It is believed that it has served to further broaden and deepen the domestic and regional bond markets and hence contributed to more efficient financial intermediation in Asia. The size of local currency bond markets has grown significantly in the eight ABF2 economies since 2005, with China, Korea, Malaysia and Singapore registering the strongest growth (Table 1). In most markets, the government sector continues to dominate, except in Hong Kong, Korea, Malaysia and Singapore, where the amounts of corporate bonds outstanding are also considerable. In Hong Kong, corporate bonds used to have a larger share than government bonds. However, following the marked increase in the issuance of Exchange Fund paper in 2009, the amounts outstanding of government debt securities and private sector debt securities are broadly the same.<sup>4</sup> The size of the corporate bond markets has also increased significantly in China, Malaysia and Thailand. In spite of a recent surge in issuance, the corporate bond markets remain rather small in Indonesia and the Philippines.

Table 1  
**Amounts of local debt securities outstanding<sup>1</sup>**  
In billions of US dollars

	2005			2009		
	Corp	Govt	Total	Corp	Govt	Total
China	64	835	<b>899</b>	454	2,113	<b>2,567</b>
Hong Kong SAR	69	16	<b>86</b>	74	70	<b>144</b>
Indonesia	6	48	<b>54</b>	9	89	<b>98</b>
Korea	361	393	<b>754</b>	575	446	<b>1,021</b>
Malaysia	46	61	<b>107</b>	84	101	<b>185</b>
Philippines	1	41	<b>42</b>	8	56	<b>63</b>
Singapore	36	47	<b>83</b>	62	88	<b>150</b>
Thailand	14	65	<b>79</b>	36	141	<b>177</b>

<sup>1</sup> Local debt securities outstanding are defined as long-term bonds and notes, treasury bills, commercial paper, and other short-term notes.

Source: Asianbondsonline.

#### 3.1 Consolidation of government bonds and market liquidity

The expansion in government bond issuance is one important contributing factor to the increased liquidity in some markets. In Malaysia and Thailand, the size of the government bond market has grown to exceed \$100 billion, the rough threshold set by McCauley and Remolona (2000) as the size necessary for a deep and liquid market. While that size

<sup>4</sup> The marked increase in the issuance of Exchange Fund Bills during that period was primarily to meet banks' strong demand for liquidity management purpose.

threshold suggests only the order of magnitude, it is clear that by 2005 the Chinese and Korean markets already had the size required.

Beyond the overall size of markets, the size of individual issues also matters for liquidity. Rather than trying to populate a whole yield curve with small issues in many maturities, it seems to be more effective for the authorities to choose just a few maturities and issue in size in each of them. If the objective is to provide a benchmark curve to facilitate pricing of corporate bonds, maturities beyond 10 years are not truly necessary in countries without a significant proportion of corporate bonds with maturities more than 10 years. The maturity of choice for most corporate bond issues is, after all, just five years.

Indeed, over the past few years, some ABF2 governments proactively undertook significant efforts to create and maintain benchmarks by consolidating government securities with a wide range of existing maturities into just a few benchmark securities. As shown in Table 2, countries where considerable consolidation is apparent in government securities issuance include Korea, Malaysia and the Philippines. Such consolidation has evidently allowed even such a relatively small market as that of the Philippines to develop depth and liquidity.

Table 2  
**Trends in Government Bond Issuance Programs**

	Korea	Malaysia	Philippines
Before consolidation			
Maturities (years)	As of 2005: 3, 5, 10	As of 2007: 1, 3, 5, 10, 20	As of 2005: 1, 2, 3, 4, 6, 7, 10, 20, 25
Average issuance size	KRW 1.7 trillion	MYR 1.7 billion	PHP 10 billion
After consolidation			
Maturities (years)	Since 2006: 3, 5, 10, 20	Since 2008: 1, 3, 5, 7, 10, 20	Since 2006: 1, 3, 5, 7, 10, 20, 25
Average issuance size	KRW 1.3 trillion	MYR 2.6 billion	PHP 22 billion
Trend	Regular issuance schedule for 3-, 5-, 10- and 20- year government bonds	Larger issuance size	Fewer maturities, larger issuance size

Sources: Bloomberg; BIS.

In Malaysia, the financial authorities introduced Malaysian Government Securities (MGS) “switch” auctions in April 2007, which were aimed at stimulating trading of benchmark MGS by increasing their amount outstanding. These auctions involved the government redeeming off-the-run MGS and replacing it with the current benchmark MGS. In addition, “switching” allowed the authorities to maintain the flexibility to keep up their regular issuance schedule in all market conditions, and respond to investors’ demand for securities of certain duration.

In both Korea and the Philippines, the issuance process has become well-managed and disciplined. In Korea, closing and reissuing bond issues has become common and contributed to deeper on-the-run issues. In the Philippines, the government has also had a programme to consolidate many government securities into a few benchmarks. The benefits of increased liquidity in these markets are documented in Section 4.

Improving the regularity and depth of issuance schedules has not been the only measure taken with the direct intent of increasing market liquidity. In July 2005, the Malaysian authorities arranged for the provision of daily indicative yield-to-maturity quotes for government securities. In developing the longer end of the yield curve and to meet the demand from investors, the government has issued securities that are as long as 20 years.

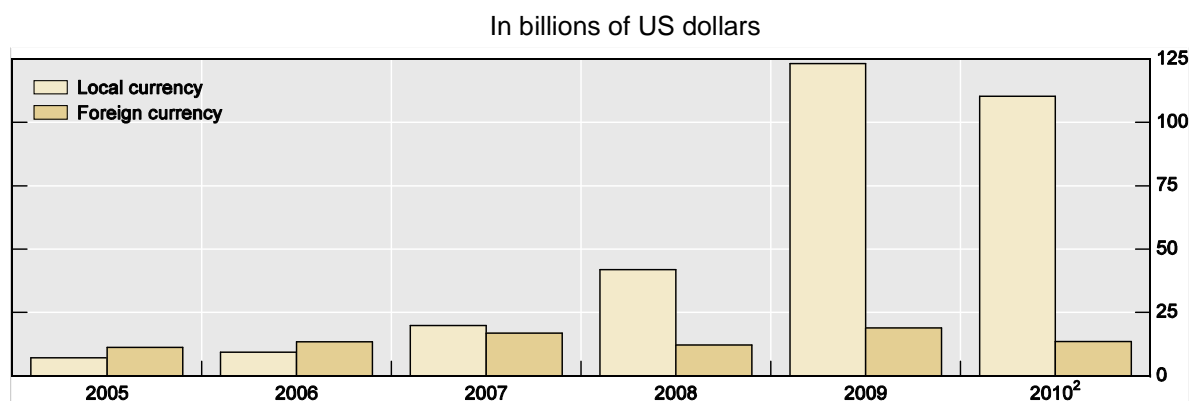
Even with much greater consolidation of government securities issuance, there remain the problems of quasi-sovereigns, which are included in the indices of various market funds. Governments may wish to consider consolidating issuance in quasi-sovereigns so that minimum liquidity thresholds are met.

In some ABF2 economies, large amounts of securities have been issued by monetary authorities for the purpose of sterilising capital inflows. Instead of selling government bonds, central banks in recent years found themselves issuing their own securities. Since market participants tend to distinguish these securities from government bonds, these would not contribute to the size and liquidity of government bond markets. A programme to consolidate these central bank bonds into government bonds would facilitate the further development of the local bond markets, though perhaps at the cost of a diminished ability to distinguish different purposes for different securities programs.

### 3.2 Corporate bond markets

Recent years have seen a sharp rise in local currency corporate bond issuance in the ABF2 region. There are 52 corporate bond issuers in the region for which credit default swaps are available. In the case of these 52 firms, bond issuance since 2005 has amounted to \$413 billion. As shown in Graph 2, such issuance has surged since the onset of the international financial crisis in 2008. Of the total amount issued between January 2005 and October 2010, about \$328 billion or nearly 80% was issued after January 2008.

Graph 2  
Corporate bond issuance in eight ABF2 economies<sup>1</sup>



<sup>1</sup> Sample consists of 52 (39 investment grade and 13 high yield) companies in the iTraxx Asia ex Japan CDS index. <sup>2</sup> As of 31 August 2010.

Source: Dealogic.

Significantly, the sharp increase in corporate bond issuance since the crisis has been driven by issues in local currencies. Since 2008, \$275 billion or 86% of (financial and non-financial) corporate bond issuance was denominated in local currencies. During this period, the primary markets for corporate bonds in the region were dominated by two large financial institutions issuing in renminbi, the China Development Bank and the Export-Import Bank of China. Between them, these two Chinese banks accounted for \$214 billion of local currency

issuance. These two banks, however, are quasi-government entities and not the type of issuers one would like to encourage for the development of the corporate bond market. Nonetheless even excluding these two large issuers, the surge in local currency issuance since the start of the crisis remains evident.

The increase in local currency issuance since 2008 is significant because it indicates that local corporate bond markets can indeed play an important “spare tyre” role. In 2002, then Federal Reserve Chairman Greenspan suggested that better functioning capital markets in the late 1990s might have provided the Asian countries with a “spare tyre” in terms of an alternative source of financing and might have made the 1997–1998 Asian financial crisis more benign (Greenspan (2000)).

The experience of 2008–2009 lends support to that idea. During the recent crisis, as fund raising in the global corporate bond markets became difficult, Asian corporations turned to the local corporate bond markets to raise funds, and they were able to do so in large quantities. Although by 2007 local currency issuance by large Asian corporations had already started to exceed foreign currency issuance, the crisis of 2008–2009 accelerated this shift.

When it comes to the choice between raising funds in the local corporate bond market and raising funds in the global market, the eight ABF2 jurisdictions reveal strikingly different patterns. These patterns reflect the degree to which the capital accounts are open. As shown in Table 3, which reports the issuance of companies in the iTraxx Asia ex-Japan CDS index, in the largest borrowing jurisdiction, China, the big corporate issuers rely almost exclusively on the renminbi market. By contrast, in the second largest borrowing jurisdiction, Korea, corporate issuers rely somewhat more heavily on the global market. This difference between China and Korea is due in part to the availability in Korea of currency swaps that allow borrowers in the global markets to switch back into the Korean won. The availability of such swaps is not necessarily bad for the local market, because it allows foreign issuers to enter the market (See Munro and Wooldridge (2010)).

Hong Kong stands out as a jurisdiction where a relatively small fraction of corporate issuance is done in the local currency market. The heavy reliance on the foreign currency market may be due in part to the issuers’ desire to reach a broader investor base. At the other extreme, over our sample period, corporate borrowers in Indonesia and the Philippines seemed to borrow only in local currencies. This may be due in part to the countries’ non-investment grade rating. Nonetheless, as in the case of China, this may also be due to the lack of currency swaps that would allow corporations to borrow abroad and switch back into Indonesian rupiahs or Philippine pesos. Making such swaps available may mean allowing non-resident firms to borrow locally so that they may become the natural counterparties in the swaps.

For the most part, the secondary markets for corporate bonds in the region have yet to develop adequate depth and liquidity. Typically, a large new corporate issue would be traded only for a few days after issuance, with the underwriter of the issue serving as the only market maker until its inventory runs out. Compared to government bonds, it is much more difficult to provide liquidity for corporate bonds because of the highly heterogeneous nature of the borrowers and the many special covenants that typically characterise individual bond contracts. Liquidity would arise more easily in a market with large issues, credible credit ratings and a degree of standardisation with respect to bond covenants. It also helps liquidity to have a system for post-trade transparency, in which the price, quantity and parties to a trade are quickly revealed to the market at large. With the notable exception of Malaysia’s

Electronic Trading Platform (ETP) such post-trade transparency is missing in the region (see Gyntelberg et al (2005)).<sup>5</sup>

Table 3

**Credit ratings and benchmark corporate bond issuance in ABF2 economies<sup>1</sup>**

	<b>Average long-term foreign currency sovereign rating</b>	<b>Weighted average rating on foreign currency issuance</b>	<b>Local currency issuance (\$, million)</b>	<b>Foreign currency issuance (\$, million)</b>	<b>Local currency denominated issuance as % of total</b>
China	A	BBB–	248,987	6,475	98
Hong Kong SAR	AA	BBB+	2,781	17,777	14
Indonesia	BB–	...	678	0	100
Korea	A	A	50,878	70,580	42
Malaysia	A–	A–	3,344	440	88
Philippines	BB–	...	151	0	100
Singapore	AAA	A–	4,065	4,943	45
Thailand	BBB+	A–	3,477	640	85

<sup>1</sup> Sample consists of 52 (39 investment grade and 13 high yield) companies in the iTraxx Asia ex-Japan CDS index, and in the case of Hong Kong SAR their special purpose vehicles, subsidiaries and related companies. The sample covers the period between January 2005 and August 2010. In calculating average ratings, the ratings are assigned numbers as follows AAA = 16, AA+ = 15, AA = 14, ..., B+ = 3, B = 2, and B– = 1. The average long-term foreign currency sovereign rating is calculated as the average of the end-of-year long-term foreign currency ratings of Standard & Poor's for each sovereign over the period. The weighted average rating is calculated for the entire time period for each market, in which the rating is the Standard and Poor's rating on each foreign currency bond issued during the period by sample companies at time of issue, and the weights for determining the average rating are the fractions of the volume of each issue in the total foreign currency bond issuance of sample companies during the 2005–2010 period. It should be noted that a significant proportion of corporate bond issuance in international financial centres such as Hong Kong SAR and Singapore is conducted by non-residents. These transactions, however, are not included in this table.

Source: Dealogic.

#### **4. Development of the secondary markets**

Liquidity in secondary markets is an important aspect of the development of local currency bond markets. There are two markets to consider: the government bond market and the corporate bond market. First, a deep and liquid government bond market would allow the fiscal authority to raise funds while keeping to a minimum the crowding out of borrowing by the private sector. It would also provide a market that would allow the monetary authority to add or drain liquidity and serve as part of the transmission mechanism for monetary policy. Second, a deep and liquid corporate bond market would allow businesses and financial

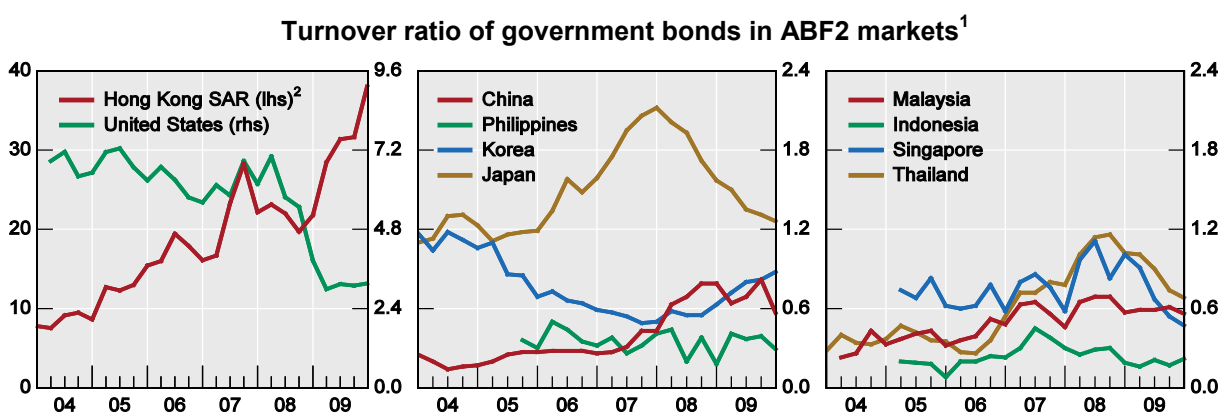
<sup>5</sup> Malaysia has introduced a Bond Pricing Agency to provide daily independent fair value quotations for all ringgit denominated bond to facilitate daily mark-to-market valuation of bond portfolios. The Thai Bond Market Association and the Korea Security Dealers Association also provide post-trade information, albeit with a lag.

institutions to raise long-term funds in a way that lets bond prices provide signals to guide the economy in allocating resources over time and among investment activities of different risks.

#### 4.1 Liquidity in ABF2 secondary markets

In the absence of reliable data on bid-ask spreads, the price impact of trades or the responsiveness of markets to the arrival of public information, turnover ratios provide a rough indicator of the liquidity of government bonds in the ABF2 markets. As shown in Graph 3, the turnover ratio shows a dramatic decline in the liquidity of the US Treasury market. While the graph also shows a rise in the liquidity of the Hong Kong market, the data here includes short-term instruments. Turnover in the Seoul market had deteriorated between 2004 and 2007 but started to improve in more recent periods. With the development of the interbank market and a growing diversity of available financial products, the turnover ratio in China has improved since 2007. Turnover ratios in Thailand and Singapore rose to high levels in 2008 but have now settled back down to previous levels. The turnover ratio in the Malaysian market has shown a steady increase over the years.

Graph 3



<sup>1</sup> Calculated as the value of bonds traded divided by amount of bonds outstanding. <sup>2</sup> Includes Exchange Fund Bills and Notes.

Source: Asianbondsonline; central banks; BIS calculations.

#### 4.2 Market making in the government bond markets

Size in terms of issuance does not by itself lead to liquidity in fixed-income markets. The experience of deep and liquid government bond markets in the United States and Europe shows that the provision of liquidity in these markets requires an active role for market makers. These market makers do not just arise from nowhere. They are often designated by the government and are obliged to make markets by providing two-way quotes on benchmark issues in exchange for certain privileges, such as being able to trade with the central bank. To be effective, these market makers often trade among themselves in an interdealer market with the help of interdealer brokers. Indeed, the interdealer market is often the most active part of the government bond market, and it is often where most of the price discovery takes place.

##### 4.2.1 Market making in US and European bond markets

In the US Treasury market, the market makers are the primary dealers. In exchange for a counterparty relationship with the Federal Reserve Bank of New York (FRBNY), primary dealers are obliged to participate in auctions of government securities and to make markets

in securities in which the FRBNY conducts open market operations. As of April 2010, for example, there were 18 designated primary dealers, including banks and securities firms. The UK gilts market has a similar mechanism. In exchange for a counterparty relationship with the Bank of England, gilt-edged market makers are obliged to provide effective two-way prices in gilts.

In Europe, an important breakthrough in market making was the creation of EuroMTS, an interdealer electronic trading platform for European benchmark bonds. EuroMTS has played the role that the FRBNY plays in the United States and the Bank of England in the United Kingdom. To participate in the EuroMTS trading platform, dealers commit to a liquidity pact in which they must continuously offer two-way firm quotes with a maximum spread. To participate in the same mechanism, issuers commit to listing issues of at least EUR 5 billion for benchmark bonds and allocating the bonds among dealers randomly. For its part, EuroMTS ensures ex ante anonymity and post-trade transparency in the interdealer market.<sup>6</sup>

While EuroMTS dominates the trading of benchmark issues in most of the euro area, it is dwarfed by the trading of futures contracts on Eurex. Trading activity on interest futures at Eurex has risen from \$20 trillion in the fourth quarter of 1999 to \$121 trillion in the fourth quarter of 2009, a six-fold increase over a decade.

#### **4.2.2 Market making in ABF2 government bond markets**

Market making structures are a strong suit of government bond markets in the ABF2 economies. The nature of market making in these markets has tended to follow the example of the US Treasury market and the UK gilts market. Each of the ABF2 markets has between 10 and 50 designated market makers. Each market has at least a few interdealer voice brokers, suggesting the existence of a fairly active interdealer market.

Market liquidity does not seem to require many designated market makers. In the more liquid ABF2 markets, there tends to be only 10 to 20 designated market makers. As shown in Table 4, Hong Kong has designated 12 primary dealers for government bonds (although 23 more market makers have been designated for Exchange Fund Bills and Notes), Indonesia 18 primary dealers, Korea 20 primary dealers, Malaysia 12 principal dealers, Singapore 13 principal dealers and Thailand 9 primary dealers. China and the Philippines rely on the most number of market makers. The People's Bank of China has designated 50 primary dealers as counterparties for its open market operations and 23 market dealers in the interbank bond market. The Bureau of the Treasury of the Philippines has designated 42 government securities dealers.

The presence of foreign market makers could be even more important than just having many designated market makers. The foreign market makers are more likely to provide access to non-resident investors, who are often a significant source of the diversity required for market liquidity. In Singapore, for example, the majority of designated market makers are foreign. In Malaysia and Thailand, half of them are foreign.

Interdealer voice brokers operate in all eight ABF2 markets. Such brokers have played critical roles in the fixed-income markets of the United States and the United Kingdom by ensuring ex ante anonymity and ex post transparency in bringing counterparties together. The leading global interdealer brokers include BGC, ICAP, Tullett Prebon, GFI and Tradition. At least one or two of them operate in the more liquid of the ABF2 markets. Some of the

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<sup>6</sup> Ex ante anonymity means that the counterparties to a trade would not know each other before the deal is completed, except that the other party is on a list of pre-qualified counterparties. Ex post transparency means that once a deal is completed, the terms of the transactions become known to the market as a whole. Both ex ante anonymity and ex post transparency have been essential for liquidity in interdealer markets.



markets rely largely on local interdealer brokers. This is especially the case in Indonesia and Malaysia.

Table 4  
**Market making in ABF2 government bond markets**

Jurisdictions	Market makers	Interdealer brokers
China	As of September 2010: 50 primary dealers for PBOC's Open Market Operations (2 foreign banks); 23 market dealers in the interbank bond market (3 foreign banks); and 3 money broking companies providing broking business for the interbank bond market.	As of September 2010: Shanghai CFETS-ICAP, Tullet Prebon SITICO (China) Ltd, Pingan Tradition International Money Broking Co Ltd
Hong Kong SAR	As of end-April 2010: 12 primary dealers for government bonds (7 foreign banks) 23 market makers for exchange fund bills and notes (10 foreign banks)	As of end-April 2010: Associated Capital Ltd, BGC Capital Markets (HK) Ltd, GFI (HK) Brokers Ltd, ICAP (HK) Ltd, iMarkets Ltd, Nittan Capital Asia Ltd, SMBC Capital Markets Ltd, Tradition (Asia) Ltd, Tullett Prebon (HK) Ltd.
Indonesia	18 primary dealers (5 foreign banks)	BNI Securities, Danareksa Sekuritas, Mega Capital Indonesia, OSK Nusadana Securities, Reliance Securities, Trimegah Securities Tbk
Korea	As of March 2010: 20 primary dealers (2 foreign banks)	As of March 2010: Korea Interdealer Broker Corporation (KIDB), Korea Money Brokerage Corporation (KMB)
Malaysia	As of February 2010: 12 principal dealers (6 locally incorporated foreign banks)	As of February 2010: Affin (Tullett Prebon), Amanah Butler Malaysia Sdn Bhd, First TAZ Tradition Sdn Bhd, Harlow's & MGI Sdn Bhd, Forex Enterprise Sdn Bhd, KAF-Astley & Pearce Sdn Bhd.
Philippines	As of February 2011: 42 government securities dealers (9 foreign banks and financial institutions)	As of February 2011 : AFS Philippines Inc, ICAP Philippines Inc, Tradition Financial Services, Tullett Prebon Philippines Inc
Singapore	As of February 2011: 13 principal dealers (10 foreign banks)	As of February 2011: ICAP, Tullett Prebon, Tradition
Thailand	9 primary dealers (4 foreign banks)	ICAP, Wallstreet Tullett Prebon

Sources: National authorities; Asianbondsonline; BIS.

### 4.3 Repo markets

If the strong suit of the ABF2 markets is market making, their weak suit is the repo markets. A well developed repo market can serve to enhance liquidity in the bond markets in two ways: (a) by allowing short positions through securities lending; and (b) by providing a market in which market makers can finance their positions. The growth of repo markets in ABF2 markets has certainly lagged far behind that of unsecured money markets. In some cases, borrowers face a significantly higher interest rate in the repo market than in the

unsecured interbank market. As explained below, this suggests that for various reasons the use of collateral is not seen as truly providing security. In most other cases, activity in repo markets has been limited to transactions between financial institutions and the central bank.<sup>7</sup>

One problem of repo markets in ABF2 economies may be the lack of an appropriate legal apparatus.<sup>8</sup> When financial institutions engage in repos with each other, lenders often impose rather strict credit limits on their counterparties, thus behaving as if the transactions were not truly secured. This phenomenon seems to arise from master agreements and legal frameworks that fail to ensure that the lender will in fact be able to take possession of the collateral in the event of default.

Another problem of repo markets may be the lack of suitable collateral.<sup>9</sup> The collateral of choice is naturally government bonds. Since these bonds are considered to be virtually immune to default risk, haircuts need to take account only of price volatility and not of credit quality. These bonds are also now book-entry securities that are easily transferred between counterparties through the books of the central bank. In some markets, however, there is not enough such collateral to go around. To the extent that fiscal surpluses have depleted the available pool of government securities, some governments have resorted to overfunding just to make such securities continue to be available. To indicate what forms of collateral are eligible for repo transactions, Table 5 shows what instruments are eligible for open market operations by the central bank. In all ABF2 markets central banks generally do not accept corporate and asset-backed instruments as collateral for repo transactions.<sup>10</sup> However, in the case of China, Indonesia, Korea, Malaysia and Thailand, paper issued by the central bank itself, often for purposes of sterilising capital inflows, may be eligible as collateral for repo transactions.

Partly reflecting the underdevelopment of the repo markets, many participants in ABF2 markets now resort to FX swaps as a way to obtain secured financing. In effect, however, such swaps require collateral in the form of foreign currency. While domestic banks in need of short-term funds can easily turn to the unsecured interbank markets, foreign banks find themselves having to rely on the FX swaps market. In the Philippines, the FX swaps market has become so important that the nascent interest rate swap market uses as its benchmark short-term interest rate the implied peso interest rate in peso-dollar FX swaps.

An important innovation that has yet to find its way to ABF2 economies may provide a solution to the problems of repo markets. This innovation is the tri-party repo agreement (which has been extensively used in the United States since the early 1990s), in which a clearing bank serves as a third party between a lender and borrower. This clearing bank would serve as a centralised custodian of collateral, and any form of collateral the clearing bank is willing to hold would be eligible for repo transactions. In the United States, the repo market is now dominated by transactions in tri-party repos with two major clearing banks.

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<sup>7</sup> This is not to say the central bank cannot play a role facilitating market development. Bank Negara Malaysia (BNM) established a web-based custodian system called the Institutional Securities Custodian Program (ISCAP), which allows BNM to borrow securities and thus “free” the captive market from major institutional investors by circulating or lending the securities to market players via repo. This facilitates market making activities as the market maker can borrow securities from BNM to cover their short positions.

<sup>8</sup> See Loretan and Wooldridge (2008). Here as well, the role of the central bank as facilitator is evident in Malaysia, where BNM has taken the initiative to sign GMRA with all the financial institutions and initiated a market-wide standard local annex. More financial institutions including non-banks such as insurance companies and pensions funds have signed GMRAs with each other using similar standardised documents.

<sup>9</sup> See CPSS (2010) for a discussion of the efficient use of collateral in repo markets.

<sup>10</sup> During the global financial crisis, the Bank of Korea announced that it would accept for the period of one year bank debentures and some Korean government agency securities, including mortgage-backed securities as collateral for repo transactions. This temporarily measure expired on 6 November 2009.

Table 5  
**Eligible collateral for ABF2 central banks' open market operations**

As of 30 April 2010

	PBOC	BI	BOK	BNM	BSP	MAS	BOT
Government securities	Yes	Yes	Yes	Yes	No <sup>1</sup>	Yes	Yes
State-government, agencies, quasi-government, government-guaranteed securities	Yes	No	Yes <sup>3</sup>	Yes	No <sup>1</sup>	No	Yes
Supranational / foreign government securities	No	No	No	Yes <sup>2</sup>	No	No	No
Central bank securities	Yes	Yes	Yes	Yes	No <sup>1</sup>	NA	Yes
Corporate bonds/bills/CPs	No	No	No	No	No	No	No
Bank bills/CDs/bonds	No	No	No	No	No	No	No
ABS/RMBS/ABCPs	No	No	No	No	No	No	No

<sup>1</sup> These securities are not considered as eligible collateral for Bangko Sentral ng Pilipinas' open market operations here because the central bank's repurchase and reverse repurchase windows are classified as standing facilities. <sup>2</sup> But BNM does not accept foreign government securities for its open market operations. <sup>3</sup> Government-guaranteed securities only.

Source: national authorities.

#### 4.4 Role of benchmark indices

A benchmark index serves an important role in portfolio investments. Not only does a benchmark index provide a basis for an asset manager to construct a portfolio, it also allows investors to gauge the performance of a "passively" managed portfolio against other portfolios that are actively managed. The launch of the ABF2 was accompanied by the introduction of the iBoxx ABF Indices. Although a number of proprietary indices existed at the time, it was hoped that a new set of credible, representative and transparent bond indices would enable fund managers to replicate the performance of the indices with little difficulty. In this aspect, the iBoxx indices have been quite successful. While initially large, the tracking errors – the differences between the performance of the funds and their respective benchmark indices – have been reduced as the indices became easier to replicate. In some countries (eg Korea and the Philippines), replication was made easier by the governments' consolidation programmes. Not only have the government bond markets become more liquid as a result of these programmes, but there are also now leaving fewer and larger issues. The number of bonds included in the iBoxx ABF Korea index, for example, fell from 87 in March 2007 to 38 in August 2010.

Nonetheless, the family of iBoxx ABF indices has been less successful in establishing themselves as industry benchmarks, even though they perform relatively well in comparison to other indices (see Box A). Discussions with asset managers and investment bankers reveal that indices created by large broker-dealers such as the HSBC ALBI, the JPMorgan Government Bond Index (GBI) and Citigroup's World Government Bond Index (WGBI) continue to attract much greater market recognition. In part, the greater recognition of the broker-dealers' index families might be a result of their longer history. It could also reflect the

complementarities for banks in marketing their own indices and other business, as well as their ability to tailor the indices to the demand of market participants.

Nevertheless, there are signs that these iBoxx indices have slowly gained popularity among investors. According to Markit, a small number of funds now use the iBoxx indices or derivatives of them as benchmarks. The company also compiles several customised versions of the indices (such as excluding specific countries) for a number of asset managers. More recently, Deutsche Bank has introduced two exchange traded funds tracking the iBoxx ABF Korea and Singapore indices in the Singapore Stock Exchange.

#### Box A

##### The iBoxx ABF2 and HSBC ALBI indices

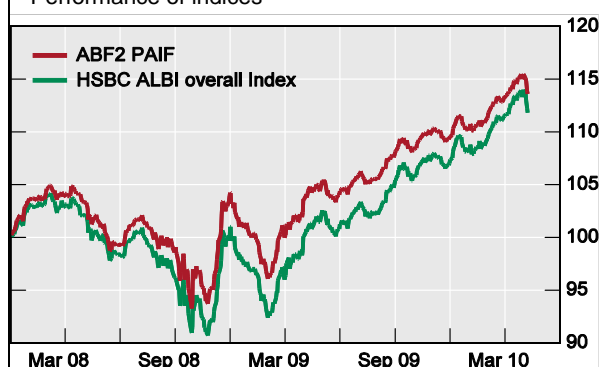
The ABF2 and ALBI indices are developed to track the performance of local currency bonds in emerging Asia. The construction criteria for the two indices are very similar: they use market capitalisation, turnover ratio and market openness/market impediments to determine the country weights, but the ABF2 index provider also considers the sovereign credit rating. The market openness/impediment factor is subjective and based on proprietary information, yet the rankings of the economies are broadly similar.

The performance of the two indices is broadly similar (Graph A1, left-hand panel). However, the PAIF fared better than the ALBI during the global financial crisis. In 2008, the PAIF increased by 4%, 3 percentage points higher than the HSBC ALBI overall index. The difference in performance could be attributed to the composition of the underlying portfolio they are tracking. Apart from the government bonds of the ABF2 economies, the ALBI overall index also includes Indian and Chinese Taipei local currency government securities. In addition, the ALBI tracks the performance of quasi-government issues in Malaysia and Thailand; and quasi-government and corporate bonds in Hong Kong and Singapore (Graph A1, right-hand panel). Since the ALBI India and Chinese Taipei subindices recorded above average returns for 2008, the ALBI's inclusion of large number of non-government issues (quasi-government and private debt securities) was therefore a more likely cause for its relatively low return in 2008.

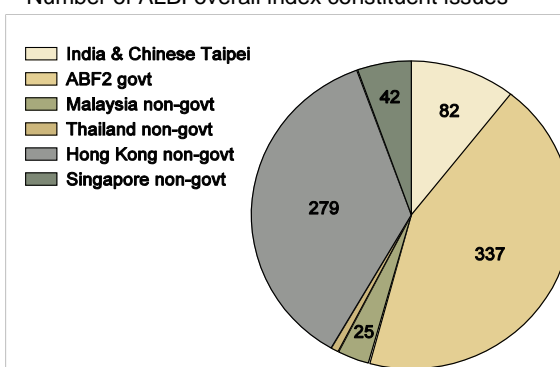
Graph A1

##### ABF2 and HSBC ALBI local currency bond indices

Performance of indices<sup>1</sup>



Number of ALBI overall index constituent issues<sup>2</sup>



<sup>1</sup> 1 January 2008 = 100. <sup>2</sup> As of 1 May 2010.

Source: Bloomberg.

#### 4.5 Participation of non-resident investors

A diversity of investors, one of the objectives of the establishment of ABF2, is also important for liquidity. Foreign investors can often contribute greatly to this diversity. Cross-country

portfolio debt investment data from the IMF's Coordinated Portfolio Investment Survey (CPIS) are often used as a proxy measure of foreign participation in the EMEAP local currency bond markets. The left-hand panel of Table 6 shows that the amounts of debt securities held by foreign investors in the ABF2 markets in 2009 are generally greater than the levels in 2005. Still, foreign holdings represent no more than 25% of the respective size of the total bond markets (Table 6, centre panel), and are a relatively small share of total bonds outstanding, especially in the cases of China and Thailand.

Table 6

**Size of foreign debt securities investment in ABF2 bond markets**

	Foreign debt securities investment				Local currency bonds as % of total bond outstanding	
	In billions of US dollars <sup>1</sup>		As % of total bond outstanding <sup>2</sup>			
	2005	2009	2005	2009	2005	2009
China	15.7	26.6	1.7	1.0	98.2	99.0
Hong Kong SAR	16.7	12.8	16.9	8.8	50.3	68.7
Indonesia	12.2	26.8	20.2	23.0	89.1	83.7
Korea	46.1	117.0	5.2	9.7	91.6	89.7
Malaysia	25.8	32.2	19.6	15.1	82.0	88.5
Philippines	16.9	17.6	24.1	19.4	58.9	60.4
Singapore	27.4	29.5	25.4	17.7	63.2	69.2
Thailand	5.2	6.1	5.8	3.2	88.1	95.5

<sup>1</sup> Data from the IMF *Coordinated Portfolio Investment Survey*. <sup>2</sup> Defined as the ratio of figures in the left-hand panel to the total outstanding amounts of debt securities from the BIS *Debt Securities Statistics*.

Sources: national authorities; IMF *Coordinated Portfolio Investment Survey*; BIS.

Note that these percentages may not give a fair picture of the foreign participation in the local currency markets as the CPIS figures include debt issued by residents in all currency denominations. In Hong Kong, the Philippines and Singapore, the proportion of foreign currency denominated debts issued by the country's borrowers is rather significant.

## 5. Market impediments

### 5.1 Impediments to cross-border investment

One objective of the ABF2 has been to broaden the investor base of domestic bond markets. As mentioned in Section 2, the PAIF has been more successful than the single-market funds in attracting capital from investors other than non-EMEAP central banks. One possible reason is that the PAIF is more accessible to foreign investors as it is domiciled in Singapore and listed on the Hong Kong Stock Exchange and the Tokyo Stock Exchange. By

comparison, there remain some cross-border investment barriers in the other ABF2 economies. EMEAP (2006) discusses a number of cross-border investment barriers and how their removal could be stimulated by the ABF2 initiative.<sup>11</sup> This section surveys the changes to these impediments since the launch of the ABF2 and examines in what ways these adjustments could have stimulated the participation of non-resident investors and issuers.<sup>12</sup> Two examples will be used to illustrate the arguments for each case.

At the same time, it must be admitted that the elimination of barriers to cross-border investment – while beneficial to local bond market development – may at times run counter to policymakers' objective of stabilising the financial system and macroeconomy when capital inflows are significant and volatile. While policy-makers may on occasion feel compelled to address such concerns, they should remain aware of the trade-offs involved.

### **5.1.1 Withholding taxes**

*Withholding taxes* reduce the investment yield, and the attractiveness of the investment in local currency securities for non-residents. Four months prior to the announcement of the ABF2, only Hong Kong and Singapore exempted non-residents from the withholding tax. As for the other economies, withholding taxes served as an effective impediment to increasing the participation of foreign investors in local currency bond markets.

There has been some progress on this front since work began on the formation of ABF2. In Malaysia, the creation of the ABF2 hastened the process of review of withholding taxes by the National Bond Market Committee, and exemption for investment income for all government and corporate bonds approved by the Securities Commission was announced in September 2004. Thailand followed by granting withholding tax exemption to all foreign investors in 2005 for both interest and capital gains arisen from government, state agency and state enterprise bonds. In both these cases, the formation of ABF2 was viewed as a catalyst for the governments' actions (EMEAP (2006)). More recently, in 2009, Korea also removed the withholding tax on interest income on government securities for foreign investors, which stimulated investment inflows not least from other Asian countries (see Box B).

That said, there is at present no exemption of withholding taxes in four of the relevant jurisdictions (Table 7). Interviews with market participants suggest that this deters foreign investor participation in government bond markets in those countries. In the case of Indonesia, however, an alleviating factor is that withholding tax can be reduced for residents of countries which have a bilateral tax treaty with Indonesia.

To be sure, as mentioned above, policymakers can face competing financial stability objectives. In October 2010, in response to a surge of capital inflows that were perceived to be destabilising, Thailand reestablished the withholding tax on capital gains and interest payments for government bonds. For similar reasons, Korea reimposed a withholding tax on the interest payments of foreign investors' holdings on government bonds and monetary stabilisation bonds in January 2011.

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<sup>11</sup> For a comprehensive study of the impediments to cross-border bond investment and issuance in Asian countries prior to the launch of the ABF2, see Takeuchi (2006).

<sup>12</sup> However, it should be noted that some of these impediments also hinder the participation of domestic investors.

Box B

**Korean debt securities: reforms and recent cross-border inflows**

The recent Korean experience illustrates how reforms can be useful in attracting new investment from the region. At the end of 2007, listed bond holdings of Korean debt securities by non-Korean Asian nationals registered just short of 6.6 trillion won, or around 17% of total foreign holdings (Table B1). By end 2008, Asian holdings had risen sharply to 13.3 trillion won, or more than one-third of all foreign investors' listed bond holdings. They had advanced to 27.9 trillion won (nearly one-half) by end 2009 and continued to increase significantly through the first quarter of 2010. It is of interest to note that the lion's share of the increase over this period was due to purchases by Thai investors, and the waiving of the withholding tax was mentioned in Thai news reports as an important factor.

Table B1

**Foreign investors' listed bond holdings in Korea**

In trillions of won

	Dec 2007	Dec 2008	Jun 2009	Dec 2009
Total	38.4	37.5	41.2	56.5
Asia	6.6	13.3	15.4	27.9
Thailand	0.9	9.0	8.6	16.7

Source: Financial Supervisory Service, Korea.

Table 7

**Tax treatment on returns from foreign investors' holdings of local currency government bonds<sup>1</sup>**

As of September 2010

	Withholding tax on interest income	Capital gains tax
China	No withholding tax	No capital gains tax
Hong Kong SAR	No withholding tax	No capital gains tax
Indonesia	15–20%, lower if from a country that has a tax treaty with Indonesia	No capital gains tax
Korea	No withholding tax (2009) <sup>2</sup>	No capital gains tax (2009)
Malaysia	No withholding tax (2004)	No capital gains tax
Philippines	20% of income earned	No capital gains tax
Singapore	No withholding tax	No capital gains tax
Thailand	No withholding tax (2005) <sup>3</sup>	No capital gain tax (2005) <sup>3</sup>

<sup>1</sup> A year is entered in parenthesis if the tax was removed subsequent or shortly prior to the announcement of the ABF2 in December 2004. <sup>2</sup> Withholding tax on foreign investors' interest income on government bonds and monetary stabilisation bonds was reimposed in January 2011. <sup>3</sup> The exemption of withholding tax on interest income and capital gains on foreign holdings of government bonds was withdrawn in October 2010.

Sources: Deloitte Touche Tohmatsu; PricewaterhouseCoopers; national sources.

**5.1.2 Restrictions on the convertibility of local currency**

Restrictions on the convertibility of local currency raise the riskiness of investment by making it more difficult for investors to hedge the foreign exchange risk or to repatriate local currency

returns on short notice. In a number of jurisdictions under review, conditions of local currency convertibility have improved considerably over the past five years (Table 8). In Malaysia, in April 2005, non-resident investors were allowed to sell forward FX contracts against ringgit to hedge receipts as well as committed outflows for divestments in ringgit assets. In Korea, the real demand principle for purchases of Korean won was eliminated in December 2007, meaning that there was no longer any need to document an underlying securities trade. In addition, foreign investors are now allowed to engage in forward FX transactions on an unrestricted basis with local counterparty banks. Other jurisdictions, however, have advanced less far. In some cases, forward FX transactions are only permitted to foreign investors if they can document an underlying transaction.

Table 8  
**Overview of currency risk hedging instruments**

	<b>Onshore FX forward</b>	<b>Non-resident access to onshore FX forwards</b>	<b>Offshore market</b>
China	Not as liquid as offshore market	Not allowed	NDF liquid (avg daily turnover over USD 1bn)
Hong Kong SAR	Liquid	No restriction	None
Indonesia	Liquid	Only when supported by underlying trade or investment transactions	NDF liquid (avg daily turnover around USD 400mn)
Korea	Liquid	No restriction with licensed onshore financial institutions. Other institutions need to notify the central bank	NDF liquid (avg daily turnover around USD 3bn)
Malaysia	Not as liquid as spot market	No restriction with licensed onshore banks	NDF illiquid (avg daily turnover about USD 100mn)
Philippines	Liquid	No restriction except for onshore bank selling USD/PHP to non-residents on forward date. Such transactions require prior approval	NDF liquid (avg daily turnover about USD 450mn)
Singapore	Liquid	No restriction	Deliverable forward liquid (avg daily turnover over USD 1bn)
Thailand	Liquid	Restrictions apply	Deliverable forward illiquid (avg daily turnover around USD 300mn)

Sources: ANZ; Barclays Capital (2003b); Deutsche Bank.

### **5.1.3 Ability of non-residents to borrow in the local currency to fund investments**

The ability of non-residents to borrow in the local currency to fund investments is another aspect of FX regime that affects the attractiveness of local currency bonds (ABMI Group of Experts (2010)). The more readily available the local credit for the foreign investors, the lower the funding costs and hence the higher returns for them. In Malaysia, in April 2004, the



limit for overdraft facilities extended to non-resident stockbrokers or custodian banks from authorised dealers for the settlement of the purchase of listed securities was extended from RM 10 to 20 million. In April 2007, the limit was abolished altogether and the scope on the utilisation of overdraft facilities was expanded to include instruments settled through Malaysia's real-time electronic transfer system. Registration requirements on ringgit-denominated loans to non-residents were abolished in October that same year.

In some countries, there are still some significant restrictions. Credit to non-residents is not allowed for "speculative purposes" in securities or commodities in one jurisdiction; in another, overdrafts and loans to non-residents are not permitted, which means that foreign investors must ensure they have enough cash in their account prior to settlement. One other country permits financial institutions to provide overdraft facilities to non-resident entities only up to a fixed limit. Lifting these restrictions could serve to increase further foreign investor participation in local bond markets.

## **5.2 Transaction costs and settlement**

Transaction costs increase with the difficulty in settlements. As was noted in EMEAP (2006), individual country systems for settling debt securities were already "generally efficient" in the markets under review: all had delivery versus payment as their settlement method, a significant number had linkages through local custodian banks with the international central securities depositories (ICSDs) such as Euroclear and Clearstream, which allowed clearing and settlement overseas.

There were nevertheless some added efficiencies that came about in the process of the establishment of ABF2. The global custodian for the PAIF and the eight single-market funds created a custodian network linking up all eight markets. Also, the fact that the bond ETFs were the first such product in many markets led to increased cooperation between the domestic equities and bond clearing systems, most notably in the case of Malaysia.

The effective international integration of clearing systems is greatly influenced by the ability of non-resident investors to use omnibus accounts, in which a local custodian holds the investment of many clients in one account. To the extent that omnibus accounts are restricted – eg the local custodian must handle separate accounts for individual non-resident investors rather than a single global custodian – transactions costs will tend to be higher.

There has been considerable progress over the past few years with regard to omnibus accounts and global clearing system integration in the case of Korea. From 2008, omnibus accounts in the name of international clearing and settlement depositories (ICSDs) were allowed at the Korean Securities Depository (KSD). At first, despite this approval, the ICSDs did not open an omnibus account, because of the ongoing impediment of the withholding tax. However, once Korean government securities were exempted from withholding tax as described above, formal linkages between the KSD and Euroclear were established in October 2009, and individual investors could hold Korean bonds in an ICSD subaccount.

The advantages of these new accounts are highly significant: costly investor registration certificates are no longer required, and settlement between off-shore parties can take place outside the Korean time zone. In addition, the securities held in these international accounts can be used as collateral in international tri-party repos, making it easier to finance the purchase of Korean government securities.

In all of the ABF2 economies with the exception of China, the use of omnibus accounts for non residents is not restricted. It should be kept in mind, however, that because of withholding taxes and other impediments, similar arrangements for international settlements – eg bridges between Euroclear and domestic depositories – have not been established in a number of the other seven countries.

Another improvement in settlement processes that has occurred since the establishment of ABF2 has been with regard to FX settlement. In November 2006, the establishment of a payment versus payment infrastructure for the settlement of interbank ringgit/US dollar FX trades was viewed as helping to greatly alleviate FX settlement risk, through simultaneous settlement of ringgit in Malaysia and US dollars in Hong Kong. The degree to which the ABF2 might have served as a catalyst for these changes in FX settlement processes both in Malaysia and other countries is unclear, however.

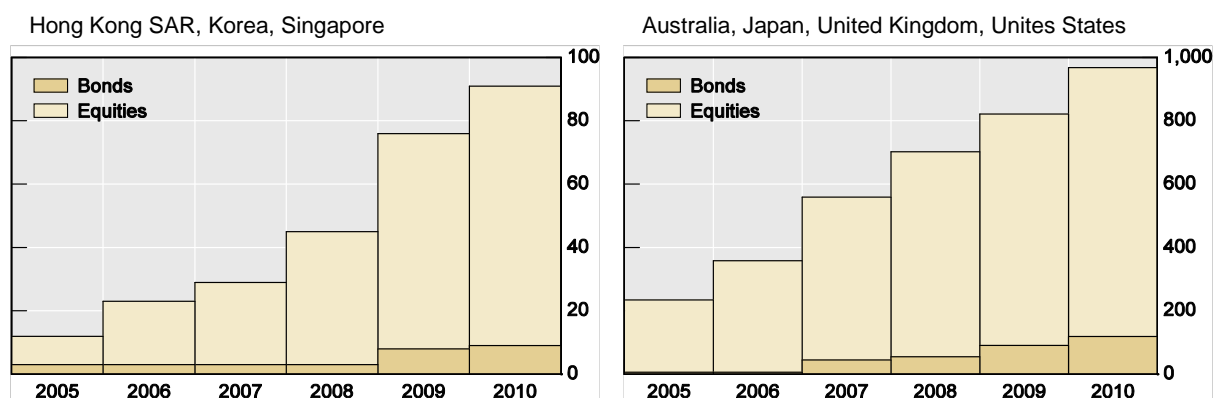
It should be remembered that the ABF initiative encourages the authorities to lower transaction costs by establishing the bond funds as ETFs of domestic bonds. The structuring of the ABF2 funds as bond ETFs raised the transparency of trading, with order flows and trade information made available to participants, the regulatory authorities and to the public. The most notable example is in Indonesia where the ABF2 initiative stimulated a transition from having no index fund into bond ETFs being traded in the exchange. In Malaysia and Thailand, there was initially no regulatory framework governing ETFs; these were instituted only in mid-2005. The Bank of Thailand has further favoured the ETF format by permitting calculation of risk weights for bank capital purposes to be based on underlying assets in the ETFs, and also allowing ETF purchases to be eligible for required capital reserve. In the Philippines, while the listing date of the ABF Philippine Fund as an ETF has yet to be scheduled, utmost efforts have been taken by the Philippine financial authorities to finalise their draft ETF guidelines. A set of draft ETF rules have been posted on the Philippine Dealing Exchange's (PDEX's) website for public consultations. Once approved by the PDEX's Market Governance Board, the draft will then be submitted to the Philippine Securities and Exchange Commission for final approval, after which the fund manager can plan for the listing of the ABF Philippine Fund as an ETF.

For those jurisdictions that have instituted the ABF single-market funds as ETFs during the early stage of the ABF2 project, there has been little progress in stimulating the growth in the number of ETF bond funds. In Singapore, there are now five other fixed-income ETFs in addition to the ABF Singapore Bond Index Fund, whereas in Hong Kong, a fund that tracks a total return index of the US Federal funds effective rate is the only ETF with bonds and money market as underlying other than the ABF Hong Kong Index and the PAIF index listed on the stock exchange. However, the lack of progress in spurring the growth of fixed income ETFs in the ABF economies might simply reflect the general preference of ETF investors for equity funds. Graph 4 shows that the dominance of equity ETFs is in fact a global observation. Furthermore, discussions with market participants suggest that the marketing of government bond ETFs to retail investors has had to cope with an unfavorable environment of low and falling interest rates, making it difficult to attract investors given transactions costs.

### **5.3 Governance**

Improved governance and the adoption of international practice could lower foreign investors' perceived riskiness of investing in local currency bonds. At the time of the creation of the ABF2, it was hoped that the set-up of the governance structure of the fund in line with international best practice would have a demonstration effect on similar funds in the region. For instance, in Indonesia and the Philippines, the manager and trustee of the unit investment trust funds are mandated to be separate entities in the case of the ABF2. At the time of the 2006 EMEAP progress report, all future unit investment-trusts were intended to be aligned with this practice. In the case of Malaysia, guidelines were published by the Securities Commission in October 2006 in which definitions of what constituted fit and proper trustee companies, as well as fiduciary duties, were spelled out.

Graph 4

**Number of exchange traded funds in selected economies**

Source: Bloomberg.

To strengthen governance, the EMEAP progress report also recommended that independent supervisory committees be established for each fund. Establishment of such committees was proposed so that they could represent the interest of all unit-holders including EMEAP, in the performance of their monitoring functions. At present, most ABF 2 funds, as well as the PAIF, have indeed established such independent committees to oversee the fund manager and trustee, from which the committees are empowered to request information.

However, according to our interviews with market participants, further progress on governance in bond markets in the region is desirable. Our interviews have not yet uncovered any cases of improved governance practices at other funds in a result of the demonstration effect.

Another problem area identified by the ABF2 process had to do with valuation of securities. While in some EMEAP markets, fund managers were allowed to value assets, ABF2 insisted that valuations must be verified by trustees or third parties. It is not clear the degree which this practice has spread to other funds.

ABF2 also adopted international practices in the drafting of the trust deed and prospectus. The ABF2 trust deed imposed limits on dealings between PAIF and connected parties of the manager – so-called arms length transactions. Again, it remains to be seen the extent to which these practices will spread.

#### 5.4 Outright barriers to entry

Outright barriers to entry of non-resident investors remain the most direct impediment to cross-border participation in regional bond markets. In the wake of ABF2, prohibitions on the investor side were lifted in some cases and most notably in China where bond market investment by foreigners was restricted to the so-called Qualified Foreign Institutional Investors in the exchange-traded market. With the launch of the ABF2 PAIF, foreign investors, who had previously not been allowed to invest in interbank traded bonds in China; could then trade in those bonds via investing in the fund.<sup>13</sup> On the other hand, investment quotas still apply to the PAIF and can be binding.

<sup>13</sup> In addition, in August 2010, the People's Bank of China announced a pilot program in which three types of overseas institutions could invest their RMB holdings in China's interbank bond market.

In some cases, restrictions on cross-border investment stem from the restrictions in the investor's jurisdiction. In the case of Thailand, regulations on foreign bond portfolio investment by residents were eased in 2005, when authorities extended the list of allowed foreign investments by institutional investors to include the ABF2 products.

## **5.5 Impediments to cross-border borrowing**

Some impediments also serve to directly constrain the activity of cross-border borrowers, even though their impact works in slightly different ways. A number of such obstacles were lifted around the time of the formation of ABF2.

### **5.5.1 Barriers to entry**

Barriers to entry have the most observable and direct impact on foreign issuers. In some markets, new foreign issuers that had previously not been allowed to issue in the local currency were brought into the market. In Malaysia, for example, the regulatory framework was liberalised in 2004 for issuance of ringgit bonds by multilateral development banks and multinational financial institutions. In Thailand as well, the government allowed foreign governments, financial institutions and corporations to issue Thai baht bonds subsequent to the launch of ABF2.

### **5.5.2 Foreign exchange derivatives**

The lack of a liquid foreign exchange derivatives market also discourages issuers from borrowing in domestic bond markets. Very often, these foreign borrowers will wish to convert the proceeds to finance their investment project in the home currency while locking in the home currency value of interest rate payments through forward and swap markets. This highlights the importance of liquid markets for derivatives such as cross-currency swaps and interest rate swaps. Onshore markets are generally more liquid when non-residents have access as well. In Malaysia, in April 2005, non-residents were allowed to buy forward FX contracts against ringgit to hedge payment, which has stimulated foreign issuance in ringgit (see Box C).

## **6. Conclusions**

Over the past five years, authorities of the EMEAP economies have continued to implement various measures to promote local currency bond markets. These include the ABF and ABMI initiatives. To be sure, the initiatives overlap to a certain extent. Improving the infrastructure of bond markets, including foreign exchange markets and settlements, is common to both initiatives. More recently, the new ABMI "roadmap" published in 2008 explicitly identifies the need to increase liquidity in government bond markets as had the ABF2's objectives earlier (ASEAN+3 (2008)). But in those areas where the ABF2 and the ABMI initiatives have overlapped in specific intent, the two sources of pressure for reform have been complements rather than substitutes.

Consequently, the size of the markets has grown considerably, driven by the strong increase in government debt securities. In fact, apart from Hong Kong, Korea, Malaysia and Singapore, the public sector remains the dominant issuer, with more than three-quarters of all debt securities outstanding in each of the other EMEAP jurisdictions. Government bond issuance, especially over the past few years, has reflected in large part the need to address internal monetary conditions arising from strong capital inflows and have largely taken the form of issuance by the central banks.

Box C

**Malaysia: promoting the derivatives markets and foreign issuers**

The case of Malaysia is an example of how capital market reforms can prove useful in attracting non-resident borrowers to the local markets. The regulatory and foreign exchange reforms allow non-resident banks (initially applied only to multilateral development banks and other international financial institutions) to issue ringgit denominated bonds (Putra bonds) and Islamic securities (Wawasan bonds). Under the new rules, issuers of these ringgit-denominated bonds are allowed to hedge their foreign exchange and interest rate risks in the derivatives markets. In May 2005, Bank Negara Malaysia further liberalised the foreign exchange administration rules to allow other residents and non-residents to enter into hedging arrangements with licensed offshore banks.\* At the same time, the publication of daily cross-currency swap fixings is available in Bloomberg to increase market transparency.

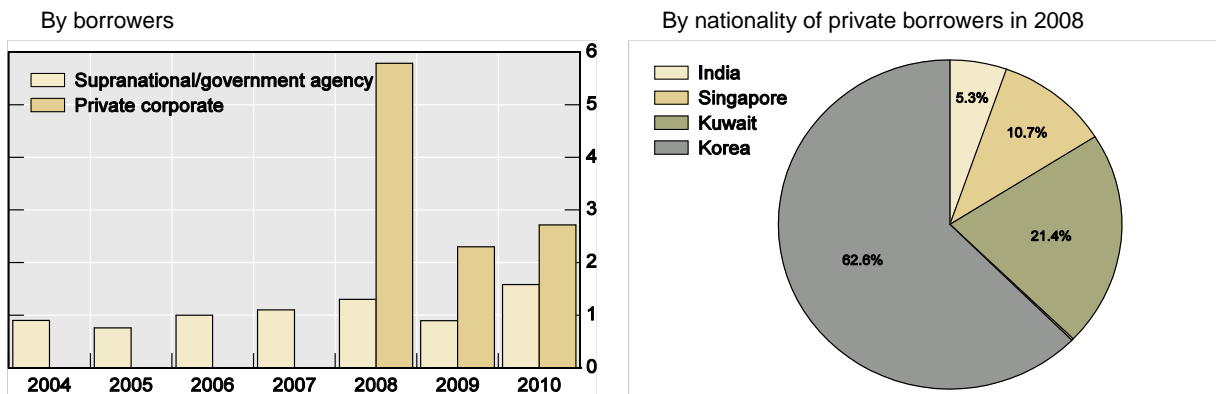
Table C1 shows that borrowers other than multilateral banks began to raise funds in the Malaysian local currency bond markets in 2008. In that year, a total of 7 firms from 4 different countries raised a total of RM 5.8 billion, compared to the total of RM 1.3 billion by the Islamic Development Bank and Korean Export-Import Bank (Graph C1). In 2009, all borrowers were from Korea, of which RM 2.3 billion were by private firms. To a certain extent, as in most cross-border debt issuance, the borrowings by the Korean corporations in Malaysia reflected differences between the two countries in macroeconomic and financial markets conditions. However, according to market participants, these non-residents would not have been able to tap the Malaysian markets a few years earlier as the local derivatives markets were not well developed enough to help them convert their proceeds back to their own currencies. Even among those bonds issued over the past two years, the later issues were more expensive as the cumulative sum started to stretch Malaysia’s still developing derivatives markets. Malaysia’s experience serves as an argument for the importance of developing other financial markets alongside the local currency bond market.

\* Bank Negara Malaysia, “Liberalisation of the foreign exchange administration rules”, Press Statement, 23 March 2005.

Graph C1

**Issuance of ringgit bonds by non-residents**

In billions of ringgit



Source: Dealogic.

Table C1  
**Issuance of ringgit bonds by non-residents**  
 In millions of ringgit

Year	Deal type	Issuers	Amounts (MYR, mn)
2004	Supranational/ Government Agency	Asian Development Bank, International Finance Corp	900
2005	Supranational/ Government Agency	World Bank	760
2006	Supranational/ Government Agency	Asian Development Bank, Kreditanstalt für Wiederaufbau	1,000
2007	Supranational/ Government Agency	Kreditanstalt für Wiederaufbau, Asian Development Bank	1,100
2008	Supranational/ Government Agency	Export-Import Bank of Korea, Islamic Development Bank	1,300
	Corporate	<b>India:</b> State Bank of India; <b>Korea:</b> Hyundai Capital Services; Industrial Bank of Korea, National Agricultural Cooperative Federation, Woori Bank; <b>Kuwait:</b> Gulf Investment Corporation; <b>Singapore:</b> Overseas-Chinese Banking Corporation	5,785
2009	Supranational/ Government Agency	Export-Import Bank of Korea	895
	Corporate	<b>Korea:</b> Hana Bank, Industrial Bank of Korea, National Agricultural Cooperative Federation	2,300
2010	Supranational/ Government Agency	Export-Import Bank of Korea, National Bank Abu Dhabi	1,580
	Corporate	<b>Korea:</b> Hyundai Capital Services, Woori Bank, Industrial Bank of Korea; <b>UAE:</b> Abu Dhabi Commercial Bank Finance Ltd.	2,716

The authorities have also played an active role in improving the liquidity of the government bond markets. The growth of bond issuance in general and the consolidation of issuance in a few benchmark maturities have allowed governments to take advantage of economies of scale in market making. However, other private sector elements – especially the development of interdealer markets and the advent of interdealer brokers – have also contributed to the increase in market making activity and hence boost overall market liquidity.

The ABF2 initiative has acted as a catalyst for regulatory reforms and improvements in market practices and infrastructure in the region. However, it is difficult to know what the counterfactual would have been. Restrictions to the convertibility of local currency have in many cases been gradually dismantled, and in a number of jurisdictions they are under review. Local currencies have become more convertible over the past 5 years. Liberalisation of foreign exchange administration rules have facilitated the entering into hedging arrangements by resident and non-resident investors. Meanwhile, the lowering of barriers to

the development of FX swap or derivatives markets, which allows foreign borrowers wishing to convert proceeds to finance their project in the home currency, has been a boon to issuance in some local currency jurisdictions.

Regulatory frameworks in the region have been enhanced to facilitate the listing of ETFs. Provisions of the PAIF trust deed and prospectus were used as models for the documentation of the single-market funds, and have contributed in promoting the adoption of best international practices and harmonisation of fund documentation across the ABF2 markets, while allowing for regional diversity. At the same time, interviews with market participants suggest that the marketing of government bond ETFs to retail investors has had to cope with an unfavorable environment of low and falling interest rates, making it difficult to attract investors given transactions costs.

While the above regulatory reforms and improvements in market practices have done much to bring depth and liquidity to the government bond markets, the corporate bond markets have remained poorly served. One measure that is potentially useful for the development of the latter markets is the introduction of a set of credible, representative and transparent bond indices. In the form of the iBoxx ABF Indices, these have enabled private sector investors to adopt and customise the indices as benchmarks for other fixed income or derivative products in the region. That said, many private sector indices have much greater market recognition, which is perhaps inevitable given the complementarities to the marketing of private sector indices and other banking business, as well as the ability to tailor the indices to the demand of market participants.

More importantly, EMEAP authorities continue to lower barriers to entry for foreign participation. Foreign investors are now exempt from withholding taxes in a few more economies than before 2005; though the risks of destabilising capital inflows led Thailand to reimpose these taxes in October 2010. Conditions of local currency convertibility have improved notably, as has the ease with which foreign investors can finance purchases in the local currency. Transactions costs associated with settlements and clearing has improved, as has the ability to hedge local currency receipts. In each of these cases, it can be argued that the ABF2 played an important catalytic role, though the significance of that role relative to other general factors is hard to quantify.

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