A Primer on Bond Markets in Asia:
Ten Years After the Crisis*

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<th>Abbreviation</th>
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<tbody>
<tr>
<td>ABF</td>
<td>Asia Bond Fund</td>
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<tr>
<td>ABMI</td>
<td>Asian Bond Market Initiative</td>
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<td>ADB</td>
<td>Asian Development Bank</td>
</tr>
<tr>
<td>ASEAN</td>
<td>Association of Southeast Asian Nations</td>
</tr>
<tr>
<td>ASA</td>
<td>ASEAN Swap Arrangement</td>
</tr>
<tr>
<td>BIS</td>
<td>Bank for International Settlements</td>
</tr>
<tr>
<td>BOJ</td>
<td>Bank of Japan</td>
</tr>
<tr>
<td>BRICS</td>
<td>Brazil, Russia, India, and China</td>
</tr>
<tr>
<td>BSA</td>
<td>Bilateral swap arrangement</td>
</tr>
<tr>
<td>CMIM</td>
<td>Chiang Mai Initiative Multilateralization</td>
</tr>
<tr>
<td>CGIM</td>
<td>Credit Guarantee and Investment Mechanism</td>
</tr>
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<td>DMO</td>
<td>Debt management office</td>
</tr>
<tr>
<td>EMEAP</td>
<td>Executives' Meeting of East Asia and Pacific Central Banks</td>
</tr>
<tr>
<td>EONIA</td>
<td>Euro overnight index average</td>
</tr>
<tr>
<td>ETF</td>
<td>Early termination fee, European Training Foundation</td>
</tr>
<tr>
<td>Abbreviation</td>
<td>Description</td>
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<tr>
<td>--------------</td>
<td>----------------------------------------------------------------------------</td>
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<tr>
<td>GDP</td>
<td>Gross domestic product</td>
</tr>
<tr>
<td>IFC</td>
<td>International Finance Corporation</td>
</tr>
<tr>
<td>IMF</td>
<td>International Monetary Fund</td>
</tr>
<tr>
<td>JGB</td>
<td>Japanese Government Bond</td>
</tr>
<tr>
<td>MSB</td>
<td>Monetary stabilization bonds</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Cooperation and Development</td>
</tr>
<tr>
<td>OTC</td>
<td>Over-the-counter</td>
</tr>
<tr>
<td>PAIF</td>
<td>Pan-Asian Bond Index Fund</td>
</tr>
<tr>
<td>PECC</td>
<td>Pacific Economic Cooperation Conference</td>
</tr>
<tr>
<td>PDs</td>
<td>primary dealers</td>
</tr>
<tr>
<td>RBC</td>
<td>Risk-Based Capital Ratio</td>
</tr>
<tr>
<td>REPO</td>
<td>REPURCHASE AGREEMENT</td>
</tr>
<tr>
<td>SBI</td>
<td>Sertifikat Bank Indonesia</td>
</tr>
<tr>
<td>STRIPS</td>
<td>Separate Trading of Registered Interest and Principal of Securities</td>
</tr>
<tr>
<td>WB</td>
<td>World Bank</td>
</tr>
</tbody>
</table>
I. Introduction

The main purpose of this study is to identify major policy challenges facing eight East Asian economies (China, Hong Kong SAR, Indonesia, Korea, Malaysia, the Philippines, Singapore, and Thailand). Since Japan has been serving as a role model in the region in developing its government bond market, Japanese experiences are covered where appropriate in the report. In addition to various primary and secondary sources, this report relies also on the accumulated knowledge from eight recent policy dialogues organized by the OECD and supported by generous financial funding from the Japanese Ministry of Finance: (i) the 17th OECD Global Forum on Public Debt Management on 11-12 December 2007 in Amsterdam, the Netherlands; (ii) the 4th OECD/China Forum on Public Debt Management and Government Securities Markets on 13-14 September 2007 in Beijing, China; (iii) the 9th OECD/ADBI Roundtable on Capital Market Reform in Asia on 26-27 February 2008, in Tokyo, Japan; (iv) the 9th OECD/World Bank/IMF Global Bond Market Forum, held on 22-23 May 2007 in Paris, France; (v) the 10th OECD/World Bank/IMF Annual Global Bond Market Forum held on 29–30, April 2008 in Washington, D.C.; (vi) the 18th OECD Global Forum on Public Debt Management, 3-4 December, 2008; and (vii) the 3rd OECD Forum on African Public Debt Management, 4-5 December, 2008; OECD Headquarters, Paris, France; (viii) 19th OECD Global Forum on Public Debt Management, November 2009.

On the basis of the preliminary findings from the on-going research work on “Development of Asian Government Bond Markets” and the recommendations and conclusions
from the previous OECD meetings, the following five areas have been identified as major challenges for market development in East Asia:

1. Promotion of Intra and Inter-Regional Activities in East Asian Bond Markets;
2. Separation of Public Debt Management and Monetary Policy;
3. Macroeconomic Challenges Triggered by Large-Scale Sterilization of Capital Inflows;
4. Promoting Market Liquidity; and
5. Price Discovery in the Government Bond Markets

Two overview sections follow. Section II discusses the impact of global financial crisis on East Asian bond markets and economies. Section III presents a quick overview of East Asian markets and economies. In Sections IV to VIII, this report addresses each of the five policy issues above. The final section provides a brief outlook. This report also contains 5 annexes on special topics. In Annex 1, Takao Chino discusses the importance of bond market development in East Asia.³ Annex 2 presents key policy conclusions for secondary market liquidity in domestic debt markets from the 10th OECD/World Bank/IMF Annual Global Bond Market Forum held on 29–30, April 2008 in Washington, D.C. and Annex 3 presents policy conclusions on the use of derivatives in public debt management and debt market development from the 9th OECD/World Bank/IMF Global Bond Market Forum, held on 22-23 May 2007 in Paris, France. Annex 4 provides a summary overview of primary dealer (PD) systems in OECD countries. The final annex 5 outlines strategic trends and policies shaping OECD government bond markets.

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³ Tadao Chino served as President of the Asian Development Bank and Vice Minister of Ministry of Finance Japan, and Senior Adviser at Nomura Research Institute.
II. Impact of Global Financial Crisis on East Asian Bond Markets and Economies

The ongoing global financial crisis highlights the close inter-connectedness of global financial markets with larger developing markets emerging as key players. At the end of 2008, Brazil, Russia, India, China and South Africa (the so-called BRICS) represent almost 13 percent of global GDP and this figure increases to nearly 18 percent (compared to around 24 percent for the US) when a few more countries including, Korea, Mexico, Turkey, Indonesia, Argentina and Nigeria, are counted for.

The crisis has also pushed to the forefront the key fire-fighting role of government debt managers in the resolution of this crisis, principally their responsibility for raising new funds for governments to recapitalize banks and other financial institutions and, more generally, to finance governmental rescue packages for the financial as well as key manufacturing sectors. In some countries, debt management offices (DMOs) are also playing an important role in helping to implement (or manage) all sorts of guarantees. For example, the issuance of bonds by banks backed by a government guarantee, leading to the emergence of a new asset class (competing with government bonds at the shorter end of the yield curve). Moreover, as explained in a 2005 OECD report, on-lending can be used as an alternative policy instrument, thereby avoiding the use of guarantees. DMOs play a role in executing on-lending operations by raising funds on behalf of financial institutions that are experiencing temporary problems but are considered viable on a ‘going concern’ basis.

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2 This section was drawn from a keynote address by Hans J. Blommestein entitled “Overview of the Global Credit and Liquidity Crisis,” delivered at the 18th OECD Global Forum on Public Debt Management, 3-4 December, 2008; and the 3rd OECD Forum on African Public Debt Management, 4-5 December, 2008; OECD Headquarters, Paris, France.

The crisis demonstrates that a global market and policy perspective is more important than ever. The credit crunch in financial markets that started in 2008 and is continuing to this day was a sharp reminder that financial turbulence in banking or financial markets is usually not an isolated event. In August 2007, a wave of volatility spread across the globe as it became clear that many financial institutions (including bulge-bracket commercial and investment banks) around the world would suffer major losses. In 2008, losses accelerated to the point that a number of large banks went bankrupt (e.g. Lehman Brothers), needed capital injections for survival and/or had to be saved via mergers. This led to a further reduction in the number of primary dealers. Another development of great concern to debt managers is that even traditional safe-havens like government bond market did not escape contagion. Repricing of risk spread to all markets, including government bond markets and debt issued by supra-national and quasi-government agencies. For example, at the end of 2007, extreme risk aversion and lack of trust led to wider than normal spreads in US and European government bond markets. Clearly, these severe bouts of illiquidity were making it more difficult and expensive for many OECD governments to raise funds.\(^4\)

This difficult market situation is continuing to this day, while funding prospects indicate that governments around the world may also face financing challenges in the future. The 2009 gross borrowing needs of governments around the world are likely to be higher than US$5 trillion.\(^5\) Rising European and U.S. government bond sales may have an adverse impact on the funding efforts by sovereigns from emerging markets. Some analysts expect that (some) emerging market economies will face increasing difficulties in renewing maturing debt and

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\(^4\) Kato (2009b) suggests that the recent events in East Asia subsequent to the sub-prime mortgage crisis dismantled three myths about East Asian economies and markets: (i) **Myth 1: Emerging economies in Asia are decoupled from the business cycle of advanced economies**; (ii) **Myth 2: Asian economies are insulated from the global financial turmoil**; (iii) **Myth 3: Large stocks of foreign exchange reserves offer an effective insurance against capital account crisis**.

\(^5\) The OECD is working at more precise estimates for 2009 and 2010.
financing stimulus measures [Lui (2009)]. For example, Asian governments have announced more than $685 billion worth of stimulus measures.

The role of emerging markets (including Asia) in the dynamics of the global crisis is very instructive about the degree of inter-connectivity among bond markets. At the end of December 2007, the following conclusions emerge from Figure 1.

**Figure 1. Yield Spreads of All Emerging Markets by Region (Dec 1994-2007)**

![Chart showing yield spreads of all emerging markets by region](chart.png)


First, the impact of the global credit crisis shock on emerging markets seemed to have been less dramatic than similar global shocks from the past. Although emerging markets were also affected, this was by relatively less than in previous episodes of global financial market turbulence.

Second, even more surprisingly, at the end of last year many emerging markets felt the impact of the credit crisis to a lesser extent than more advanced or mature markets.
Third, although yield spreads widened since the middle of 2007, they were still below the levels of only a few years ago. Compared to emerging markets as a whole, yield spreads in Asian emerging markets continued to be tighter, although the difference was less dramatic than in the past, when very wide spreads in Latin American and African markets skewed the all-emerging market composite.

Emerging markets performed surprisingly well at the end of 2007, both relative to their past performance and also vis-à-vis mature markets. Several analysts argued that truly emerging markets could ‘de-couple’ themselves from adverse events elsewhere, even those originating from major mature markets. Unfortunately, this ‘de-coupling’ hypothesis turned out to be incorrect as exhibited in Figure 2. Figure 2 shows the dramatic impact and fall-out of the collapse of Lehman and the forced take-over of Merrill Lynch in September 2008. Following these events, stock markets in Asia, Europe, and the U.S. dropped sharply. The drop was accompanied by several negative earnings reports and forecasts, especially from large-sized financial institutions. Moreover, recently released GDP data of major OECD countries caused additional concerns about the severity and duration of the global recession. In response, yield spreads for government bonds jumped significantly. Figure 2 also shows that Asian markets have been performing relatively well since September 2008. The disparate performance (and outlook) among emerging markets has also raised questions about the rationale of very diverse asset groupings such as BRICS [Oakley (2009)].
The severity of the on-going economic and financial crises across emerging markets generally is perceived as having a much greater impact than what happened during the Asian crisis.\(^6\) Kato (2009a) explains why: Much of Asia relies for its growth on advanced manufacturing exports. Those countries with a larger share of advanced manufacturing in GDP have been experiencing sharper output declines. Kato (2009a) also suggests that East Asian financial markets were hit by global deleveraging since the second half of 2008 and a few countries in East Asia issued sovereign bonds recently but on quite expensive terms. Accordingly, the global credit crisis is also having a major impact on Asian bond markets. For example, India, Korea, Thailand and Vietnam are on a negative outlook. In discussing the

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\(^6\) Refer to Fitch Ratings (2008), Sovereign Review, International Special report, 17 December.
development of the following three principal sub-markets, we can analyze with more precision the drivers of this impact on Asian bond markets.

**The Expansionary Impact of Government Bond Markets:** The expected increase in the supply of sovereign bonds and bills is having (or will have) a significant impact on the shape of the yield curve in the Asian markets. As a result, government bond issuance continued to dominate the bond market, driven by deficit financing and monetary sterilization. However, on average, sovereign balance sheets are stronger than during the Asian crisis of 1997-98. Another encouraging development is that foreign holdings of in particular East Asian local currency government bonds have increased - a sign of growing confidence and liquidity in East Asia's emerging bond markets.

More recently, however, crisis-related pressures on sovereign ratings are increasing in Asian markets. For example, the outlook on Malaysia’s local-currency debt was cut this year from stable to negative, because of a bigger budget shortfall and the associated additional supply of government securities.\(^7\) Lower liquidity in secondary markets and growing uncertainty is distorting the price discovery process.\(^8\) This in turn has caused unusual shapes of yield curve or perhaps even distortions or dislocations. Growing distortions and dislocations can be observed since the collapse of Lehman Brothers by looking, for example, at JGB’s yield curve, the pricing of the floating rate JGB and inflation-linked JGB, and the swap spread [Shirakawa (2009)].

**The Impact of the Crisis on the Dynamics of Corporate Bond Markets:** In 2008, the volume of corporate bonds issued in Asian currencies rose 18%, mostly bought by local investors. Despite the global turmoil, emerging East Asian local currency bond markets continued to expand in

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\(^7\) Bloomberg.com, Malaysian Bonds Drop on Deficit, Supply Concern; Ringgit Falls, 4 February 2009.

\(^8\) Before the crisis took a turn for the worse, international investors including hedge funds and banks played an important role as market liquidity providers through arbitrage transactions. Since the collapse of Lehman, these arbitrage activities virtually stopped, leading to a major decline in market liquidity.
2008. In the period January 08-January 09, more than $100 billion has been raised from Asian local currency markets [Wozniak (2009)]. However, in some markets the situation has worsened, with new issuance having decreased. For example, issuance of bonds by Japanese firms rated single A or below has virtually been suspended, while the new issuance of samurai bonds, which had been steady up to last summer, remained almost suspended [Shirakawa (2009)]. The Bank of Japan (BOJ) said that it will buy corporate bonds for the first time as part of its credit support measures. The Japanese central bank announced mid-February 2009 that it will buy up to ¥1 trillion (US$10.7 billion) of bonds rated A or higher by end-September. Analysts said that future steps by the BOJ might include buying more government bonds. However, there are very encouraging recent developments in other Asian bond markets, with over US$33 billion raised in local currency markets in the first month of 2009.

**The Development of a New Asset Class:** Financial bonds were issued under the government guarantees. A recent issue in Asia concerns a ¥245 billion multi-tranche Samurai issue by Westpac Banking Group, backed by an Australian government guarantee (the Samurai portion is rated triple A) [Slater (2009)]. Reportedly, other banks are also planning to sell Samurai bond issues. Since these government-backed issues receive, in many cases, the same ratings as the government, these bonds are in direct competition with the government as an issuer.

### III. A Quick Overview of East Asian Economies and Their Markets

#### A. Economic Growth

The sharp depreciation of the Thai baht following its float in July 1997 marked the start of the East Asian crisis. Within a year, the crisis, including its financial contagion effects, had affected macroeconomic performance in Hong Kong SAR, Indonesia, Korea, Malaysia, the Philippines, Singapore, and Thailand. The crisis brought to an end the period of dramatic growth
that had characterized East Asian emerging economies. Thailand experienced its first recession in 40 years, Indonesia its first since 1965, and Korea its first since 1980. The modest growth in the Japanese economy was halted as well. Of the countries that are the focus of this report, China alone did not experience a retrenchment in real GDP. With the exception of the Philippines, the average growth rate of real GDP in the seven-year period after 1998, the key crisis year, fell short of the average in the seven-year period before 1998 as illustrated in Table 1.

Table 1. Real GDP growth in East Asian Economies

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<tbody>
<tr>
<td>China</td>
<td>11.5</td>
<td>7.8</td>
<td>9.4</td>
<td>11.5</td>
<td>10.0</td>
</tr>
<tr>
<td>Hong Kong SAR</td>
<td>5.3</td>
<td>-5.5</td>
<td>5.3</td>
<td>5.7</td>
<td>4.7</td>
</tr>
<tr>
<td>Indonesia</td>
<td>6.9</td>
<td>-13.1</td>
<td>4.4</td>
<td>6.2</td>
<td>6.1</td>
</tr>
<tr>
<td>Korea</td>
<td>7.3</td>
<td>-6.9</td>
<td>5.7</td>
<td>4.8</td>
<td>4.6</td>
</tr>
<tr>
<td>Malaysia</td>
<td>9.2</td>
<td>-7.4</td>
<td>5.4</td>
<td>5.8</td>
<td>5.6</td>
</tr>
<tr>
<td>Philippines</td>
<td>3.1</td>
<td>-0.6</td>
<td>4.7</td>
<td>6.3</td>
<td>5.8</td>
</tr>
<tr>
<td>Singapore</td>
<td>8.6</td>
<td>-1.4</td>
<td>5.7</td>
<td>7.5</td>
<td>5.8</td>
</tr>
<tr>
<td>Thailand</td>
<td>6.7</td>
<td>-10.5</td>
<td>5.0</td>
<td>4.0</td>
<td>4.5</td>
</tr>
<tr>
<td>Japan</td>
<td>1.7</td>
<td>-2.0</td>
<td>1.4</td>
<td>2.0</td>
<td>1.7</td>
</tr>
</tbody>
</table>

Note: Annual percentage change
Source: IMF; author’s calculations

Similarly, per-capita real GDP contracted sharply, notably by 15% in Indonesia, 11.6% in Thailand, 9.5% in Malaysia, and 7.5% in Korea. While Korea regained its level of per-capita real GDP within 18 months, the recovery took five years in Thailand, six years in Malaysia, and no fewer than seven years in Indonesia. The decline in real GDP was accompanied by rapidly accelerating inflation in some cases. In Indonesia, the price level increased by 58% in 1998 and a further 21% in 1999. Less dramatically but still well above the
experience of previous years, the rate of inflation in 1998 was 8.1% in Thailand and 5.3% in Malaysia.

Post-mortems concluded that this crisis was in notable respects different from earlier ones. Fiscal and monetary policies had not been excessively lax, with generally low inflation rates, low budget deficits, and moderate government debt levels. Instead, the crisis was brought on by fundamental problems in the banking and corporate sectors of East Asian economies, manifested in substantial balance-sheet mismatches, rather than their macroeconomic policy settings. Banks and corporations, and to a lesser extent governments, had taken on too much exchange-rate risk, through excessive foreign-currency borrowing. The accumulation of short-term debt was concentrated in the banking system. Banks borrowed in foreign currency on a large scale and lent the funds to corporations whose revenues were earned in local currency. This created a mismatch between the currency of denomination of banks’ liabilities and assets, making them highly vulnerable to exchange-rate risk. The build-up in foreign-currency exposure was encouraged by the fixed, and increasingly overvalued, exchange-rate regimes in East Asian economies, which created an illusion of immunity from exchange-rate risk. Tax incentives favoring short-term foreign-currency borrowing through offshore banking centers also contributed to this illusion.

The countries affected by the crisis a decade ago are now fundamentally stronger. Macroeconomic policy has been reasonably prudent but there are rising concerns over increasing fiscal deficits. As illustrated in Figure 3, all East Asian economies show budget deficits with the exception of Hong Kong and Singapore. Debt-to-GDP ratios are declining. Since the late 1990s, most exchange rates in East Asia have moved from being fixed to flexible, or even floating. Inflation has been contained, and several economies have moved to inflation-targeting as the anchor for monetary policy. These changes have made the East Asian

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9 Four recent studies include: Geithner (2007), Ito et al. (2007), Moody’s (2007), and Stevens (2007).
economies more resilient than they were a decade ago. The balance-sheet weaknesses of the 1997-1998 crisis have been transformed into strengths. Substantial financial market reforms have also been undertaken, and stronger legal and institutional frameworks have helped create an environment in which enterprise is thriving. In a recent report on the Asia Pacific regional outlook, the IMF summarized two major challenges for Asia’s policymakers: (i) Forceful countercyclical policies need to be sustained; and (ii) Asia may need to rebalance growth away from exports and toward domestic demand. Because the recovery is likely to be more gradual than in past recessions, the IMF is projecting that the economies of East Asia, excluding China and India, will contract by nearly 3 percent this year before returning to modest growth of about 1½ percent in 2010. Even in China and India, growth is set to slow significantly [Lipsky (2009)].

Figure 3. Fiscal Balance as % of GDP in 2007-2009

Source: Asian Development Bank, Asia Bond Monitor (April 2009)

B. Accumulation of Foreign Exchange Reserves

Among many improvements since the late 1990s, two developments are especially noteworthy. First, East Asian economies have accumulated significant international reserves amounting to US$4.13 trillion as of March 2009. China, in particular, stands out with reserves equivalent to US$1.95 trillion, followed by Japan (US$1.01 trillion) and Taiwan, China (US$0.30 trillion). International reserves are gross international reserves less gold in US dollars at the close of each month.

Table 2. Foreign Exchange Reserves of East Asian Economies as of March 2009

Unit: US$ billion

<table>
<thead>
<tr>
<th>Economies</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singapore</td>
<td>$166</td>
</tr>
<tr>
<td>Malaysia</td>
<td>88</td>
</tr>
<tr>
<td>Indonesia</td>
<td>51</td>
</tr>
<tr>
<td>Thailand</td>
<td>117</td>
</tr>
<tr>
<td>Philippines</td>
<td>39</td>
</tr>
<tr>
<td>Korea</td>
<td>202</td>
</tr>
<tr>
<td>Japan</td>
<td>1,009</td>
</tr>
<tr>
<td>China</td>
<td>1,953</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>186</td>
</tr>
<tr>
<td>Taiwan</td>
<td>300</td>
</tr>
<tr>
<td>Vietnam</td>
<td>22</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$4,133</strong></td>
</tr>
</tbody>
</table>

Note: All reported figures are as of March 2009, except Indonesia (February 2009).

Source: Respective central bank authorities

C. Development of Local-Currency Bond Markets

Second, local-currency bond markets have grown in importance and size. As a share of total domestic financing, domestic credit provided by the banking sector has declined, while local-currency bonds outstanding have increased. The size of local currency bond markets in the East Asian economies, excluding Japan, expanded from $491 billion in 1997, the first year of the Asian financial crisis, to US$3.88 trillion at the end of June 2008, exhibiting an annual growth rate of 22 percent, which is approximately 2.5 times of the average growth rate of the world’s bond markets. Among the East Asian economies, China showed the highest growth rate of 35 percent in local-currency bonds outstanding between 1997 and 2008, followed by Indonesia with 32 percent, Thailand with 29 percent, and Korea with about over 20 percent.
Table 3. Size of Local Currency Bond Markets by Economies

<table>
<thead>
<tr>
<th>Issuers</th>
<th>December 1997</th>
<th>June 2008</th>
<th>Annual Growth Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>83.57</td>
<td>2,001.95</td>
<td>35.3%</td>
</tr>
<tr>
<td>Hong Kong SAR</td>
<td>41.13</td>
<td>50.26</td>
<td>1.9%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>4.29</td>
<td>82.05</td>
<td>32.4%</td>
</tr>
<tr>
<td>South Korea</td>
<td>153.21</td>
<td>1018.73</td>
<td>19.8%</td>
</tr>
<tr>
<td>Malaysia</td>
<td>57.00</td>
<td>194.66</td>
<td>12.4%</td>
</tr>
<tr>
<td>Philippines</td>
<td>16.74</td>
<td>52.59</td>
<td>11.5%</td>
</tr>
<tr>
<td>Singapore</td>
<td>23.75</td>
<td>110.16</td>
<td>15.7%</td>
</tr>
<tr>
<td>Taiwan, China</td>
<td>101.20</td>
<td>222.22</td>
<td>7.8%</td>
</tr>
<tr>
<td>Thailand</td>
<td>10.43</td>
<td>150.12</td>
<td>28.9%</td>
</tr>
<tr>
<td>East Asia ex Japan</td>
<td>491.31</td>
<td>3,882.70</td>
<td>21.8%</td>
</tr>
<tr>
<td>Japan</td>
<td>4148.55</td>
<td>9,468.09</td>
<td>8.2%</td>
</tr>
<tr>
<td>U.S.</td>
<td>11944.01</td>
<td>25,154.50</td>
<td>7.4%</td>
</tr>
<tr>
<td>EU15</td>
<td>7013.13</td>
<td>16,563.55</td>
<td>8.5%</td>
</tr>
<tr>
<td>World</td>
<td>25427.07</td>
<td>60,795.08</td>
<td>8.7%</td>
</tr>
</tbody>
</table>

Source: BIS

The market share of East Asian economies (not including Japan) accounted for 6.4 percent of the worldwide local-currency bonds of $60.80 trillion in 2008. The relative size of East Asian bond markets is illustrated in Figure 4. This number can be easily doubled considering the 12% contribution of East Asian economies to the world’s combined GDP. Another weakness of the Asian local-currency bond markets is the uneven development of corporate bond markets in the region. China, Indonesia, and the Philippines have yet to develop corporate bond markets. Even Hong Kong and Singapore with well-developed financial system have relatively small corporate bonds outstanding, accounting for 4% and 3.6% of GDP, respectively.

The increase in total local-currency bonds has been driven primarily by increases in local-currency bonds issued by the region’s governments as illustrated in Figure 5. In some economies, local-currency bonds were not an important feature of government debt
management before the crisis but since then issuance has become significant. In Indonesia, for example, local-currency government bonds did not exist until 2000. Some countries, such as Singapore, have had minimal, or even negative, government financing requirements, but have issued local-currency government bonds to support the development of the domestic financial market. In Japan, on the other hand, massive deficits have caused local currency government bonds to rise to the equivalent of US$6.85 trillion, or almost 150% of GDP. The materialization of contingent liabilities, explicit and implicit, was another major factor in the build-up of government debt during and after the crisis. Capital injections into the banking system in Indonesia, Korea, and Thailand, for instance, led to substantial increases in the level of government debt as a percentage of GDP. Given the double mismatch problems in maturity and currency faced by the corporate and banking sectors in the East Asian economies during the recent crisis, corporate bond markets should have expanded fastest among the three segments of the bond markets. After all, private sector financing behavior was the main culprit of these mismatch problems, not government fiscal financing.

Figure 4. Relative size of East Asian Bond Markets

Source: BIS
D. Characteristics of East Asian Government Bond Markets

- Local-currency debt dominates the government debt portfolios of East Asian economies. In all economies, except Indonesia, the majority of government debt outstanding is in local-currency.

- Local-currency government bonds are dominated by short-term maturity. On average, one third of local-currency government bonds have ultra-short maturities (one and three years), with a further quarter of bonds outstanding having short maturities.
ranging from three to five years. Two exceptions are Indonesia and Japan, whose authorities made special efforts to introduce bonds with long-term maturities. More than 70% of bonds issued by Korea and Malaysia are short-term while their outstanding volume is large.

- The issue concentration ratios (on the basis of three largest issues) are on average low, implying each issue is too small in size to enhance liquidity. Singapore shows the ratio of 25%, followed by Thailand whose ratio is approaching 20%. All other economies show the ratio lower than 15%.

- Among East Asian economies, only Singapore enjoys AAA credit ratings for both local currency and foreign currency bonds. Indonesia, Philippines, and Vietnam, in contrast, are assigned non-investment grade (junk bond) of BB+ or BB-. Credit enhancement scheme will be needed for the three economies as well as other economies with lower than the AAA rating. Spreads for emerging East Asian credit default swap spreads widened substantially in 2008. East Asian economies fall into three main groups: (i) relatively narrow spreads ranging between 100 bp to 165 bp for Hong Kong SAR and the PRC; (ii) Korea, Malaysia, and Thailand with spreads ranging between 235 bp and 370 bp; and (iii) Indonesia and the Philippines with spreads ranging between 450 bp to just over 700 bp.¹¹

- Commercial banks are major investors in government bonds in China and Indonesia (with the holding of approximately 60% of outstanding bonds), while bank holding is much lower in Korea, Malaysia, and Thailand at around 20% level. Commercial banks in

¹¹ ADB Asia Bond Monitor (November 2008).
Japan are holding slightly less than 40% of government bonds. Contractual savings institutions such as pension funds are the major investors in Malaysia and Singapore.

- Foreign holdings of local government bonds increased substantially in select East Asian economies such as Indonesia and Malaysia with about 18% of outstanding bonds. Korea and Japan follow with about 8% and 7% of foreign holdings, respectively. Thailand reports about 2% foreign holding.

- Hong Kong’s turnover of government bonds is high at greater than 10 times, but all other East Asian economies exhibit the average ratio of 1.0. Market liquidity needs to be enhanced for the whole region.

- The issuance of East Asia’s local currency bonds declined by 15% on a quarter-to-quarter basis in the last quarter of 2008 as central banks and government debt authorities stayed away from the markets which is indication of a reversal in capital flows to the region. Nevertheless, the Asian Development Bank predicts that the issuance will increase because of the public sector’s need for financing economic stimulus packages and the private sector’s demand for refinancing and fund raising.\(^{12}\)

IV. Promotion of Intra and Inter-Regional Activities in East Asian Bond Markets

A. Current Status of Regional Market Activities

\(^{12}\) ADB Asia Bond Monitor (April 2009).
Total cross-border investments in local currency bonds amounted to US$19.19 trillion or approximately one-quarter of total amount of local-currency bonds outstanding worldwide as of 2007 as shown in Table 4.13 Asia’s share of this investment stood at mere US$410 billion or approximately 2% of total cross-border investments in debt securities. Of the US$410 billion, Japan received US$203 billion, while the rest of East Asian economies received US$207 billion or merely one percent of total cross-border investments in local currency bonds outstanding worldwide. Using the respective contribution to World’s GDP by Japan (7.8 percent) and the rest of East Asia (11.54 percent) as a benchmark index, East Asia with and without Japan deserves cross-border investment of US$3.71 trillion and US$2.21 trillion.

Table 4. Cross Border Investments in East Asian Bonds

<table>
<thead>
<tr>
<th>Unit: US$ billion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cross-Border Investments in Bonds Worldwide</td>
</tr>
<tr>
<td>Total Cross-Border Investment in Asian Bonds</td>
</tr>
<tr>
<td>Japan</td>
</tr>
<tr>
<td>Rest of East Asian Economies</td>
</tr>
</tbody>
</table>

Contribution to World’s GDP by

| Japan | 7.80% |
| Rest of East Asia | 11.54% |

East Asia including Japan deserves $3,711
East Asia w/o Japan deserves $2,207

Source: IMF

13 Cross-border investment statistics from IMF are available through 2007.
The EU-15 is the largest investor in Asian bonds with US$195 billion or one-half of the total, followed by the United States with US$70.78 billion or 19 percent. Within the region, Hong Kong is the largest investor in Asian bonds with its total annual investment amounting to US$23.24 billion, followed by Singapore’s US$17.66 billion or 4.45%. Surprisingly, Japan’s investment (US$13.13 billion) in Asian bonds was even smaller than those of Hong Kong and Singapore as shown in Table 5. To place intra-regional investment activities in proper perspective, the size of investments in Asian bonds by each of the East Asian economies relative to its total investment in bonds outside their countries is illustrated in Figure 6. An interesting fact emerges. Japan invests disproportionately a small amount in Asian bond with only one percent, while investment holdings in Asian bonds by Singapore and Thailand amount to 21% each. Insignificant investment activities in Asian bonds should be attributed to the lack of institutional investors’ participation, especially Japanese institutions. The total amount of Japanese financial assets amount to US$13 trillion, which is as large as the U.S. GDP, but Japanese institutional investors (pension funds and bond funds) stay away from Asian bonds because of their concern about investment risk. The uncertainty about investment risk is largely attributed to the lack of information. Japanese institutional investors are bound by minimum credit rating requirement under their investment policies. Unfortunately, many Asian bonds, including government bonds, are not rated high enough to attract Japanese institutional investors. To make the matters worse, the secondary market activities suffer from illiquidity, causing sever concerns among institutional investors who want to move in and out the market as quickly as possible when necessary.

Table 5. Investors in East Asian Bonds (as of 2007)
Figure 6. Investment in East Asian bonds by Asian Economies in Proportion to Total Investments

<table>
<thead>
<tr>
<th>Economy</th>
<th>Investment</th>
<th>Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>EU15</td>
<td>157.84</td>
<td>38.5%</td>
</tr>
<tr>
<td>United States</td>
<td>86.63</td>
<td>21.2%</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>30.70</td>
<td>7.5%</td>
</tr>
<tr>
<td>Singapore</td>
<td>27.21</td>
<td>4.4%</td>
</tr>
<tr>
<td>Japan</td>
<td>17.97</td>
<td>4.4%</td>
</tr>
<tr>
<td>Korea</td>
<td>3.45</td>
<td>0.8%</td>
</tr>
<tr>
<td>Philippines</td>
<td>0.87</td>
<td>0.2%</td>
</tr>
<tr>
<td>Thailand</td>
<td>0.51</td>
<td>0.1%</td>
</tr>
<tr>
<td>Malaysia</td>
<td>0.65</td>
<td>0.2%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>0.23</td>
<td>0.1%</td>
</tr>
<tr>
<td>Other Economies</td>
<td>83.50</td>
<td>20.4%</td>
</tr>
<tr>
<td>World (IMF available)</td>
<td>409.56</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Source: IMF
A recent study by Arner, Lejot and Rhee (2006) and Takeuchi (2004) examine why cross-border investments in Asian bonds remain at an insignificant level by identifying impediments. Four major impediments are identified:

- Numerous legal and institutional impediments
- Concerns about investment risk
- Lack of Investment Information
- Illiquidity

Takeuchi (2004) believes that capital control represents the most critical impediment as it directly limits foreign investors’ market access. Ma and McCauley (2006) show unequal onshore and offshore yields in various Asian money markets due to limitations on arbitrage. They also cite a number of regulatory constraints: (i) tight foreign exchange conversion rules under China’s “qualified foreign institutional investor” scheme governing foreign portfolio inflows; (ii) Indonesian restrictions on domestic banks purchasing local currency instruments from non-resident issuers; (iii) Korea’s ceiling on resident investment in overseas securities and properties; (iv) restrictions on foreign investors purchasing foreign currency from the local banking system in the Philippines; and (v) Thailand’s limits on domestic banks’ local-currency lending to non-residents. The unavailability of hedging instruments (currency derivatives and interest rate derivatives) is another significant impediment. Other critical factors identified include: taxation; market infrastructure (such as disclosure framework and price transparency); creditor protection; and clearing and settlement systems.

Despite the above institutional shortcomings, some East Asian economies report gradual increase in foreign holdings of local currency bonds. Figure 7 below presents the amount of
foreign holdings in 2007 and 2008 in Indonesia, Japan, Korea, Malaysia, and Thailand. With the exception of Korea, all other economies report slight increases in foreign holdings in 2007-2008.

**Figure 7. Foreign Holdings of Local Currency Bonds**

![Bar chart showing foreign holdings of local currency bonds in Indonesia, Japan, Korea, Malaysia, and Thailand.](source: Asian Development Bank, Asia Bond Monitor (April 2009))

**B. Regional Initiatives for Promoting Local-Currency and Regional Bond Market Activities**

In the aftermath of the 1997-1998 financial crisis, East Asian policymakers made concerted efforts to develop local-currency bond markets and to promote cross-border investment activities. Two initiatives are notable: (i) the Asian Bond Market Initiative (ABMI) which has been spearheaded by the finance ministers of the Association of Southeast Asian Nations (ASEAN) plus Three (China, Japan, and Korea) in August 2003; and (ii) the Asian Bond Funds launched by the executives’ meeting of the East Asia-Pacific central banks in June 2003.

**B1. ABMI**
Since the ABMI was launched, local-currency bond markets demonstrated remarkable growth as discussed in Section III “A Quick Overview of East Asian Economies and Their Markets”, but the promotion of regional bond market activities stalled with very little progress made. ASEAN+3 finance ministers agreed on the new ABMI Roadmap during the Asian Development Bank’s annual meeting in Madrid, Spain, in May 2008. It is remarkable that central banks in East Asia-Pacific region managed to launch the ABF I and ABF II to create demand for US$ and local-currency denominated bonds issued by the East Asian economies. Discussed below are two aspects of regional efforts made by ASEAN+3 and EMEAP in reflection of major weaknesses of the two initiatives.

In promoting regional market activities, the ABMI may be characterized by three observations: (i) a strong sense of regionalism; (ii) overemphasis on the public sector’s role; and (iii) preoccupation with the harmonization of rules and regulations.14

The regionalism may be an overreaction to the so-called “Washington consensus” which became the object of resentment during the East Asian financial crisis. Some suggestions that reflect this sense of regionalism include:

- To have Asian bonds rated only by Asian credit rating agencies;

- To create an “Asia only” market where bonds are issued by Asian borrowers and purchased by Asian investors; and

14 This section was drawn from Rhee (2006), a written version of his public speech he delivered as The Tun Ismail Mohamed Ali Distinguished Chair in Investment and Finance of Universiti Kebangsaan Malaysia in Kuala Lumpur, Malaysia, on August 15, 2005.
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- To facilitate transactions among Asian issuers and investors, creating regional-level trading and clearing & settlement systems.

As long as Asian borrowers issue bonds at a minimum cost wherever it is and the majority of these bonds are purchased by Asian investors, everything else is secondary. It doesn’t matter where they are issued, who rate these bonds, where they are traded, and where they are cleared and settled. Creating an “Asia Only” bond market will limit the number of bond buyers and discourage competition in the primary and secondary markets, causing borrowing cost to increase and market liquidity to deteriorate. Efforts aimed at creating a business environment sheltered from outside competition will eventually force financing activities to move out of the region in search of lower cost funding alternatives.

The public sector does not have to spearhead the creation of a regional bond rating agency, regional clearing and settlement system, and regional trading system. Some argue that a regional bond market is a public good, so the public sector should move in. But this is a misleading argument for a number of reasons. As long as trading volume is justified, the private sector organizations will come in. The justification is not clear why the public sector should involve with bond market activities while cross-border investments are attained in the equity markets without direct intervention of the governments of East Asian economies. The government authorities should simply serve as facilitators, eliminating impediments to cross-border investments.

One lesson from the EU is that achieving financial market integration does not need harmonization of rules, standards, or regulatory integration. Financial market integration should be built on “mutual recognition” and “home country control”. A minimum level of harmonization may be useful but harmonization itself is not necessary for regional integration of financial market activities. In the EU-region, harmonization of rules and regulations are still

15 Shareholding of domestic securities by foreign investors amount to 30% in Korea, 30% in Thailand, 25% in Japan, and 30% in Taipei, China.
debated long after EU financial markets have been substantially integrated. An overemphasis on harmonization can simply delay the progress towards integration. When there are 13 economies with the ASEAN+3 at different stages of bond market development, any effort for harmonization will be tediously cumbersome and slow. So far, the regional efforts have been focusing on harmonization of rules and regulations across the region in creating regional bond markets, while the elimination of impediments to capital flows has been largely overlooked.

B2. ABF1 and ABF2

The EMEAP launched the Asian Bond Fund (ABF) 1 by pooling US$1 billion contributed by its 11 member central banks in June 2003. The ABF1 invested in a basket of US dollar denominated bonds issued by Asian sovereign and quasi-sovereign issuers in EMEAP economies (other than Japan, Australia and New Zealand). The ABF1 is a closed-end fund managed by the Bank for International Settlements. The launch of the ABF1 is an important step in creating demand for Asian sovereign and quasi sovereign bonds in the region. Unfortunately, due to the lack of transparency, very little information was disclosed to publicize the list of Asian bonds purchased by ABF1. No information was made available to market participants regarding the overall performance of ABF1.

ABF2 was launched to promote the development of index bond funds in the regional markets and to enhance the domestic as well as regional bond market infrastructure. ABF2 consists of two components: (i) one Pan-Asian Bond Index Fund (PAIF); and (ii) eight country sub-funds. The PAIF is a single bond index fund investing US$1 billion in local-currency denominated bonds in EMEAP economies, and it is designed to be an open-ended funds in order to encourage private sector participation. It is managed by State Street Global Advisors Singapore Ltd. and listed on the Hong Kong Stock Exchange. The country sub-funds with a combined contribution of US$1 billion invest also in local-currency denominated bonds issued
in the respective EMEAP economies. Of the eight single markets funds, five of them have been traded in the form of exchanged traded funds (ETFs), while Korea, Indonesia, and the Philippines maintained their funds unlisted but open-ended. The most remarkable achievement of the ABF2 was to facilitate market reforms (taxation and cross-border regulatory impediments in Malaysia, Indonesia, and Thailand).\textsuperscript{16} Ma and Remolona (2008) consider the experiment of ABF2 was an excellent process of “learning by doing”.

Although the EMEAP released its Working Group’s Self-Assessment Report dated June 2006, this single report since the launching of ABF2 in 2004 is not an effective vehicle to disclose activities of PAIF and eight single country funds. The EMEAP, BIS, State Street Global Advisors Singapore Ltd, and EMEAP member central banks can do more to disseminate detailed, up-to-date information on PAIF and 8 single country bond funds to widely promote local-currency bonds they invest and the degree of private sector participation. Without active promotion built on financial disclosure, the true mission of promoting regional activities will never be achieved.

\textbf{C. Challenges Ahead}

\textbf{C1. Creation of the Asian Common Currency}

Valuable lessons can be learned from Europe. The elimination of exchange risk, the harmonization of market practices, the re-denomination of government debt issued by each EU member into euro have introduced a bigger, deeper, more liquid, and more homogeneous bond market in Europe. Similar advantages should be gained in the region by introducing an Asian common currency by way of coordinated monetary and fiscal policies among East Asian economies. Girardin and Steinherr (2008) advocate the use of Asian Currency Unit for new issues of Asian bonds. Movements toward an Asian common currency cannot be done by the

\textsuperscript{16} Refer to EMEAP Working Group on Financial Markets “Review of the Asian Bond Find 2 Initiative” (June 2006).
private sector. This is one area East Asian governments should be engaged in actively. So far, public sector initiatives in this direction are missing among ASEAN+3 member economies. The Asia-Europe or ASEM finance ministers’ process would be an ideal forum to discuss the issue of the Asian monetary union and the creation of an Asian central bank.

C2. Chiang Mai Initiative Multilateralization

The Chiang Mai Initiative (CMI) was launched on 6 May 2000 by the ASEAN+3 Finance Ministers to provide short-term liquidity support had two components: (i) an ASEAN Swap Arrangement (ASA); and (ii) a network of bilateral swap arrangements (BSAs) and repurchase agreements among the ASEAN+3 Member Countries. At the ASEAN+3 Finance Ministers’ Meeting in Bali, Indonesia on May 3, 2009, the Chiang Mai Initiative Multilateralization (CMIM) was formalized. The CMIM was designed with two specific purposes to: (i) address short-term liquidity difficulties in the region; and (ii) supplement the existing international financial arrangements and it is to be implemented before the end of 2009.

The total size of the CMIM is US$120 billion with the contribution proportion between ASEAN and the Plus Three countries at 20:80. The maximum amount that each country can borrow is based on its contribution multiplied by its respective borrowing multiplier as shown in Table 6.

Table 6. Country Contribution and Borrowing Multiplier

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17 Refer to The Joint Media Statement of The 12th ASEAN+3 Finance Ministers’ Meeting on 3 May 2009.

18 Hong Kong SAR, was invited to participate.
### C3. Credit Enhancement and Credit Guarantee Agency

Under the original ABMI, one of the six focus areas was credit guarantee mechanism and a possible establishment of Asian Regional Guarantee Facility. The unavailability of relevant information on credit guarantee mechanism from the ASEAN+3 finance ministers’ process makes it difficult to assess any progress that has been made. Miyachi (2008) reports that a regional-level study was done to propose the creation of a new independent...
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Multilateral Development Institution, but details are not available. One of four task forces under the new ABMI Roadmap is supposed to focus on the promoting issuance of local-currency denominated bonds which should involve credit enhancement.

At the Bali meeting on May 3, the ASEAN+3 Finance Ministers endorsed the establishment of the Credit Guarantee and Investment Mechanism (CGIM) as a trust fund of the Asian Development Bank with an initial capital of US$500 million. The specific purpose is to support the issuance of local currency-denominated corporate bonds in our region, with a potential to contribute to the development of regional bond markets. Specific details of the implementation plan have yet to be worked out.

The 2nd Annual Meeting of PECC Finance Forum 2003 in Hua-Hin, Thailand, advocated the establishment of an Asian bond bank modeled after municipal bond banks in Europe, Canada, and the United States. The municipal bond banks represent a financial innovation in municipal financing that began in Canada in 1956 and was adopted in the United States in 1970. Many small municipalities lack knowledge of financial markets. They suffer from low credit rating and need to borrow relatively small amounts of capital. Municipal bond banks operate as credit enhancing organizations by “pooling” borrowing needs of multiple municipalities into a single bond bank debt issuance. Municipal bond banks have good track record of their success as evidenced by the Municipal Finance Authority of British Columbia or the Bond Bank of Alaska. An Asian Bond Bank can share the benefits gained from the economies of scale in borrowing cost and greater liquidity with larger size bond issues. Most important of all, the Asian Bond Bank can re-lend funds raised at its higher credit rating to participating Asian sovereign and quasi-sovereign borrowers through its own credit enhancement programs as municipal bond banks do, including structured debt issuance and bond insurance programs. ¹⁹

¹⁹ Refer to Rhee and Stone (2004),
V. Separation of Government Debt Management from Monetary and Fiscal Policies

Figure 8 illustrates the interdependencies among government debt management, monetary policy, and fiscal policy. In an ideal setting where a country has a well-developed, liquid market for government bonds and its central bank relies on a greater use of market-based monetary policy instruments through open market operations, its fiscal policy determines the aggregate amount of government borrowing while government debt management determines optimal mixes of government liabilities in terms of: domestic vs. external borrowing, short- vs. long-term borrowing, fixed- vs. floating-rate bonds, coupon vs. zero-coupon bonds, and contingent vs. non-contingent liabilities. The government debt management office designs these optimal mixes while paying attention to both revenue and expenditure structure of the government to design a cost-effective cash management program.20

The central bank of this country can expand or contract the amount of reserves in the banking system and ultimately the country’s money supply through open market operations that represent the most important policy instrument. In general, there are two alternatives in setting the central bank’s target: (i) aiming for a target amount of bank reserves (quantity) while allowing the short-term interest rate to fluctuate; or (ii) aiming at a target short-term interest rate (price) while allowing bank reserves to fluctuate [Borio (2001, 1997), Schaechter (2001), and

20 The most comprehensive reference materials are two publications compiled by IMF/World Bank staff. They are: (i) International Monetary Fund/World Bank, 2001, Guidelines for Public Debt Management; and (ii) International Monetary Fund/World Bank, 2002, Guidelines for Public Debt Management: Accompanying Document.
Axilrod (1995)]. With well-developed financial markets especially for government-issued securities where the signaling effect is transmitted efficiently, the central bank of this country sets up a target short-term interest rate, which is known as “passive” open market operations. Continuing with the ideal setting, government debt management can afford to

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21 Schaechter (2001) suggests that a central bank accommodates any temporary shifts in the demand or supply of monetary base to avoid interest rate moving away from its targeted level under price targeting. Base money, therefore, becomes a residual variable, and it is endogenous. Under quantity targeting, on the other hand, a central bank does not accommodate shifts in base money demand but tolerates the resulting interest rate fluctuations as long as this is consistent with the quantity target. Naturally, interest rate becomes endogenous. He further suggests that if a central bank had perfect information about market conditions at all times, targeting the price or the quantity would be the two sides of the same coin.

22 In the United States, Japan, and the euro area, operating objectives of open market operations are the federal funds rate, the uncollateralized call money rate, and the EONIA (euro overnight index average) rate, respectively. In March 2001, however, the Bank of Japan (BOJ) adopted new procedures for money...
focus on market risk without worrying about rollover risk. In contrast, emerging market economies with developing domestic bond markets tend to have only limited access to international capital markets. Hence, these economies should give higher priority to coping with rollover risk.

The central bank’s open market operations in the ideal setting are conducted on the secondary market of government securities to determine the overnight interest rate largely through REPOS and reverse-REPOS, while government debt management should be active in the primary market of government securities.\textsuperscript{23} In this setting, long-term interest rates are determined by the market without the central bank’s intervention by assessing and adding appropriate inflation expectation, term premium, and risk premium to the short-term overnight interest rate which is dictated by monetary policy.

In general, open market operations will function most effectively when a clear division is maintained between debt management and monetary policy operations. Monetary policy’s major objective is price stabilization, whereas government debt management is designed to search for an optimal trade-off between the cost of government debt and the risk involved. Unfortunately, the reality is far from an ideal setting discussed so far. The most critical problem is the lack of well-developed government bond markets and it creates far reaching adverse consequences affecting monetary and fiscal policies.

\textsuperscript{23} Dealers in government securities use repurchase agreements, also called “repos” or “RPs,” as a form of short-term, usually overnight, borrowing. The dealer sells government securities to an investor on an overnight basis, with an agreement to buy back those securities the next day at a slightly higher price. The increase in the price is the overnight interest. The dealer thus takes out a one-day loan from the investor, and the securities serve as collateral. A reverse repo is the mirror image of a repo. Hence, the dealer finds an investor holding government securities and buys them, agreeing to sell them back at a specified higher price on a future date.
In the absence of well-functioning, liquid markets for government bonds, a government in an emerging market economy is unable to issue long-term debt with fixed coupon rate. Therefore, the government tends to issue short-term floating-rate domestic debt, inflation-indexed bonds, and foreign exchange-indexed bonds in combination with foreign currency debt. This type of borrowing mix may be preferred by the central bank of this country because it believes that the credibility of monetary policy can be promoted, while government debt managers of this country fear that this borrowing mix increases rollover risk in view of the double mismatch in currency and maturity. Indeed, rollover risk emerges as a major source of the systemic risk and the country’s financial sector becomes vulnerable to external shocks as we have experienced during the East-Asian financial crisis.²⁴ In the absence of a well-developed market for government bonds, the central bank has to rely on direct monetary instruments such as reserve requirements, interest rate ceilings, credit controls, and sectoral credit allocation. Naturally, this emerging economy has to live with its distortionary effects on government debt servicing cost until short-term money market and long-term government bond market are developed to allow a greater use of market-based indirect instruments. Even if the government bond market is functional, it may take a while before the market becomes efficient enough to strengthen the signaling effect of monetary policy and the credibility of monetary policy operations.

Price stability of monetary policy and the cost/risk trade-off of government debt management are potentially conflicting goals [Mohanty (2002)]. In a developed economy with well-functioning government debt market, the separation of debt management and monetary

²⁴ The single most dramatic element in the recent East-Asian financial crisis was the sudden reversal of private capital flows to Asia. The total amount of reversal was in the neighborhood of $105 to $110 billion for the five crisis-affected economies that include Indonesia, Korea, Malaysia, Philippines, and Thailand between 1996 and 1997. Looking back at the magnitude of domestic savings and foreign exchange reserves accumulated by the five crisis-affected economies plus five leading economies in the region, including China, Hong Kong, Japan, Singapore, and Taiwan, the magnitude of the reversal in private capital flows was less than 5% of pre-crisis combined domestic savings and was about 15% of foreign exchange reserves in the region. This reversal is a good example of an external shock which may trigger a systemic crisis in a country or a region.
policy objectives and accountabilities can be achieved easily. In emerging economies with less-developed government debt markets, the degree of conflicts increases. Furthermore, close coordination between the two policies becomes increasingly difficult and the separation between two policy implementations becomes blurred. An appropriate level and structure of debt, sound debt management operations, a solid framework for risk management of public debt as well as liquid government bond markets, can indeed contribute to reducing macro-economic and financial vulnerabilities. On the other hand, highly expansionary monetary and fiscal policies are likely to undermine the development of a robust local bond markets, in particular, at longer maturities. An important prior condition for the emergence of liquid government bond markets is a sufficient degree of macro-economic stability. Less understood is the insight that sound government debt management policies and practices are an important pre-condition and catalyst for the development of government bond markets.

A classic example of potential conflicts that are aggravated by the absence of efficient fixed-income securities markets is found frequently in emerging economies. In the absence of a well-functioning primary market for government bonds, an easy solution for the government is to rely on captive demanders of government bonds, such as financial institutions and non-bank financial institutions (pension and provident funds). These institutions are forced to subscribe at the yield lower than the market interest rates. Because a substantial gap exists between the primary market yield and the secondary market yield for government-issued securities, these institutions cannot sell unless they are willing to suffer from capital losses. As a result, both primary and secondary markets cannot develop and the government continues to rely on

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25 A recent study by the World Bank (2007) summarizes various challenges facing emerging market economies in public debt management and domestic government debt market based on the experiences of 12 countries (Bulgaria, Colombia, Costa Rica, Croatia, Indonesia, Kenya, Lebanon, Nicaragua, Pakistan, Sri Lanka, Tunisia, and Zambia).

26 Blommestein and Santiso (2007).
captive demanders, creating a significant distortion in the interest rate structure and effectively raising the cost of government debt.

A critical question is what would be the optimal way of making coordinated implementing arrangements among fiscal, monetary, and government debt management policies to minimize potential conflicts. A classical conflict may occur in situations with excessive public debt issuance (due to highly expansionary fiscal policies), that would lead to the monetization of debt and a higher rate of inflation. But even in situations where the monetary authorities do not allow the non-monetary financing of deficits, tensions may occur due to the potential crowding-out effects of excessive deficits (via higher real rates). The consolidated government budget constraint highlights the fundamental links between these three policy areas and also shows in a simple way why these policies need to be coordinated in order to avoid potential conflicts.

### Government Budget Constraint and the Need for Policy Co-ordination

<table>
<thead>
<tr>
<th>Fiscal policy</th>
<th>Debt Management</th>
<th>Monetary Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>( D(t) )</td>
<td>( [B(t) - B(t-1)] )</td>
<td>( [M(t) - M(t-1)] )</td>
</tr>
</tbody>
</table>

**Note:** \( D(t) \) = deficit at time \( t \); \( B(.) \) = amount of issued bonds; and \( M(.) \) = base money.

In general, two representative modes of institutional arrangements are observed: (i) embedded (or implicit) institutional arrangements; and (ii) super-imposed (or explicit) co-ordination arrangements.
The embedded arrangements are determined to an important extent by the degree of central bank independence, the degree of accountability and related degree of transparency of the fiscal authorities, and the degree of operational autonomy of the government debt management. This insight is well-understood for monetary policy since an independent central bank is widely seen as crucial for the credibility of monetary policy. Past empirical evidence has also shown that governments with a high degree of fiscal transparency have better credit ratings, as well as better fiscal discipline, after controlling for other socioeconomic variables [Hameed (2005)]. In the OECD area (and in an increasing number of emerging markets), Blommestein (2002) identifies two core objectives of government debt management: (i) To maintain stable access to financial markets for undertaking the necessary government funding operations; and (ii) To minimize (over the medium-term) government borrowing costs subject to a clearly articulated, preferred level of risk. Liquid bond markets constitute an indirect objective as they are “the means” to reach the two objectives. Government debt management needs a reasonable degree of operational autonomy (as insulation against frequent political pressures) to execute its mandates based on these core objectives. In sum, all three sets of policies are linked, but they are separated on the basis of objectives and associated functions. Credibility of these policies requires that this separation is supported by a clearly articulated accountability framework that entails a high degree of transparency regarding ex ante policies and ex post policy-induced financial market prices. Credible separation arrangements imply, in turn, an institutional framework for implicit co-ordination by virtue of a high degree of transparency of policies and financial market prices. In other words, each policy area has a clear mandate and the respective policymakers (debt managers, monetary authorities) take most of their decisions on the basis of the information generated by the exchange of information and available financial market prices. In normal (non-crisis) circumstances, and when markets are well-developed, the information on policies, market prices and spreads (available via embedded institutional arrangements) are sufficiently reliable and informative to execute in a
credible fashion PDM and MP without the support of explicit co-ordination arrangements [Blommestein and Thunholm (1997)].

Super-imposed (or explicit) co-ordination arrangements entail formal rules, formal co-ordination committees, as well as ad hoc committees for co-operation or co-ordination among debt managers, central banks and fiscal authorities. These explicit arrangements play a more important role in countries with less developed financial markets (because the information on market prices and spreads is less reliable than in developed markets) and/or when macro-economic policies and functions are not clearly separated (with a low degree of transparency) and/or during periods of extreme market stress.

Given the interdependencies and potential conflicts among three sets of policies, it is important that debt managers, central bankers, and fiscal policy makers share a common understanding of the objectives, functions and institutional arrangements for co-operation and co-ordination. They need also to assess (and perhaps agree on) the level of transparency required for each policy area. This requires the following steps: (i) define the key objectives of each policy area; (ii) identify the core functions related to these objectives; (iii) determine or create the required institutions for executing these functions in an efficient fashion; and (iv) agree on a sufficiently high level of transparency regarding policies and (relevant) financial market prices. Even with well-developed government bond markets and a high level of transparency, potential conflicts or tensions between debt managers and monetary policy makers can arise because the government is usually the dominant player in the market. This means that changes in sovereign borrowing requirements can have a significant impact on interest and/or exchange rates since government debt management operations are relatively large vis-à-vis the size of the various outstanding government instruments. For this reason, consultation and co-ordination issues are important in mature markets as well. Clearly, periods of financial turmoil make coordinated actions of policies (including those related to disclosure with a view to meeting desirable transparency requirements) even more urgent.
Blommestein and Santiso (2007) suggest that risk-based public debt management and liquid domestic bond markets are mutually reinforcing strategies to attain (i) enhanced financial stability, and (ii) successful participation in the global financial landscape. This dual strategy is directly connected to the macro-economic framework: monetary and fiscal policies as illustrated in Figure 9. Government debt management alone cannot solve macroeconomic imbalances or address structural financial sector problems, but it is a key component of a balanced structural policy mix that supports achieving the objectives of the macro-economic framework of monetary and fiscal policies. An appropriate level and structure of debt, sound debt management operations, a solid framework for risk management of public debt as well as liquid local-currency bond markets, can indeed contribute to reducing macro-economic and financial vulnerabilities. On the other hand, highly expansionary monetary and fiscal policies are likely to undermine the development of a robust local bond markets, in particular at longer maturities. An important prior condition for the emergence of liquid local currency bond markets across is a sufficient degree of macro-economic stability. Less understood is the insight that also sound government debt management policies and practices are an important pre-condition and catalyst for the development of local bond markets, both indirectly via a risk-based strategy as well as by putting in place the appropriate market infra-structure as shown in Figure 9.27

VI. Macroeconomic Challenges Associated with Large-Scale Sterilization of Capital Inflows

The 2008 Annual Report of the Bank for International Settlements identifies two major policy challenges facing emerging market economies: (i) conflicting risks of a global slowdown and rising domestic inflation; (ii) pressure on exchange rates from large foreign currency inflows.

Since the 1980s throughout the 2000s, central banks in the East Asian region have been facing a difficult task of sterilization of capital inflows. The “sterilization” typically involves purchasing foreign currencies and adding them to official reserves. Naturally, increasing capital inflows are not necessarily good news for the country. They tend to appreciate the local currency, undermine the competitiveness of export industries, and cause inflation to rise [Lee (1996)]. To maintain the stability of the monetary base, central banks rely on open-market operations and
other measures. They rely on various policy instruments—adjusting interest rates, intervening in foreign exchange markets, changing capital account regulations, adjusting fiscal policy, and tightening prudential regulations. Many of these choices, however, involve difficult trade-offs. The most important consideration for central banks is to ensure that money supply does not grow at the same rate as capital inflows under the condition that this policy produces no adverse effects on economic growth rates.

However, policy responses to increasing capital inflows represent a daunting task. They are difficult to implement because the magnitude, sequencing, and timing of policy actions must be carefully designed to reflect each country’s exchange rate regime, institutional constraints, and the causes of the capital inflows. Haque, Mathieson, and Sharma (1997) classify the causes of capital inflows into three categories: (i) autonomous increases in the domestic money demand function; (ii) increases in the domestic productivity of capital; and (iii) external factors, such as falling international interest rates as summarized in Table 6. Hence, policy measures undertaken should vary depending on the causes of capital inflows. In addition, the exchange rate regime is an important factor. Under a fully flexible exchange rate system, market-based adjustments kick in to mitigate adverse impact on domestic inflation. Therefore, the more flexible the exchange rate is, the less likely capital inflows will have an inflationary effect. In contrast, under a managed float or a fixed exchange rate system, the capital inflows will lead to inflationary pressure if capital inflows are caused by the increase in domestic productivity of capital or falling international interest rates. As has been observed in numerous East Asian economies, capital inflows will expand the monetary base, heighten inflationary pressures, and deteriorate the external position without adequate sterilization.
Table 7. Consequences of Capital Inflows

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Upward shift of money demand curve</th>
<th>Increase in productivity of domestic capital (sustained inflows)</th>
<th>External factors—e.g., falling international interest rates (temporary inflows)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Asset prices</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest rates</td>
<td>Increase</td>
<td>Increase</td>
<td>Decrease</td>
</tr>
<tr>
<td>Yield curve</td>
<td>Flattens</td>
<td>?</td>
<td>Becomes steeper</td>
</tr>
<tr>
<td>Exchange rate</td>
<td>Appreciates</td>
<td>Appreciates</td>
<td>Appreciates</td>
</tr>
<tr>
<td>Equity prices</td>
<td>Decrease</td>
<td>Increase</td>
<td>Increase</td>
</tr>
<tr>
<td>Real estate prices</td>
<td>Decrease</td>
<td>Increase</td>
<td>Increase</td>
</tr>
<tr>
<td><strong>Inflation</strong></td>
<td>Decreases</td>
<td>Increases</td>
<td>Increases</td>
</tr>
<tr>
<td><strong>Monetary and credit aggregates</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real money balances</td>
<td>Increase</td>
<td>Likely to decrease</td>
<td>Increase</td>
</tr>
<tr>
<td>Base money</td>
<td>Increases</td>
<td>Increases</td>
<td>Increases</td>
</tr>
<tr>
<td>International reserves</td>
<td>Increase</td>
<td>Increase</td>
<td>Increase</td>
</tr>
<tr>
<td>Bank credit</td>
<td>Likely to increase</td>
<td>Increases</td>
<td>Likely to increase</td>
</tr>
<tr>
<td>Foreign currency deposits</td>
<td>Decrease</td>
<td>?</td>
<td>May decrease</td>
</tr>
<tr>
<td><strong>Balance of payments</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign direct investment</td>
<td>?</td>
<td>Increases, especially in short-term flows</td>
<td>?</td>
</tr>
<tr>
<td>Portfolio investment</td>
<td>Increases, especially in short-term flows</td>
<td></td>
<td>Increases, especially in short-term flows</td>
</tr>
</tbody>
</table>

? Indicates that the effect is uncertain.

Source: Haque, Mathieson, and Sharma (1997)

Given traditional instruments available that include sterilized intervention, fiscal tightening, exchange rate appreciation, and the combination thereof, no clear-cut policy prescriptions do exist because the level of sophistication of market development for government-issued securities and banking sector infrastructure differ from one country to another. Table 2 below is borrowed from Haque et al. (1997) in which they illustrate appropriate instruments for countries with balanced macroeconomic policies. Table 7 shows that no policy action would be needed if capital inflows are triggered by the money demand function because the expansion of the monetary base would not be inflationary or threaten external viability. In countries with unbalanced financial policies, sterilized intervention
combined with some exchange rate appreciation would be necessary, while the appropriate fiscal and monetary adjustments to rebalance the policy mix is desirable [Haque et al. (1997)]. Nevertheless, in the presence of high sterilization costs, the sterilization policy cannot be sustainable. Central banks face a dilemma in selecting correct policies to meet their objectives of exchange rate stability, controlling inflation, and economic growth. It should be recognized that no single policy is sufficient to cope with increasing capital inflows.

Table 8. Policy Responses to Capital Inflows

<table>
<thead>
<tr>
<th></th>
<th>Upward shift of domestic money demand curve</th>
<th>Increase in productivity of domestic capital (sustained inflows)</th>
<th>External factors—e.g., falling international interest rates (temporary inflows)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sterilization</td>
<td>May be needed to smooth fluctuations.</td>
<td>May be needed to smooth fluctuations.</td>
<td>Is appropriate.</td>
</tr>
<tr>
<td>Exchange rate appreciation</td>
<td>Equilibrium real effective exchange rate does not change.</td>
<td>The warranted appreciation of the equilibrium real effective exchange rate can be achieved partly through nominal appreciation and partly through increases in the prices of nontraded goods.</td>
<td>Equilibrium real exchange rate need not change. Temporary nominal appreciation of the exchange rate may be warranted if there are constraints on sterilization.</td>
</tr>
<tr>
<td>Fiscal policy</td>
<td>No policy response is required.</td>
<td>Fiscal policy tightening is generally required, especially if the absorptive capacity of the economy is limited relative to the size of the inflows.</td>
<td>If the constraints on sterilization are too severe and the external competitive position is weak, then some fiscal tightening may have to be considered.</td>
</tr>
</tbody>
</table>

Source: Haque, Mathieson, and Sharma (1997)

In the absence of well-functioning government bond markets, central banks have to rely on their short-term debt instruments for sterilization, which drive up short-term interest rates, encouraging further capital inflows into the country, to make open market operations a difficult task. Very often, central banks suffer from large losses when the proceeds from open market sale are invested in foreign assets because investment yields in these assets would be typically lower than the rates central banks pay on short-term bills sold through open market...
operations. In addition, sterilization of capital inflows using short-term bills could place heavy burden of debt servicing cost on the governments or central banks. Hence, central banks have to switch to issuing longer-term government bonds [Mihaljek et al. (2002)]. However, without developing long-term government bond markets, this switch is impossible.

In many emerging economies, the central bank issues its own short-term paper for monetary policy operations. The Bank Indonesia’s short-term notes (or known as Sertifikat Bank Indonesia (SBI), the Bank of Korea’s monetary stabilization bonds (MSB), and the People’s Bank of China’s financial bonds were issued to sterilize large capital inflows in the 1990s and 2000s. Korea’s MSBs account for about 20% of the domestic bond market. MSBs have a maturity of less than two years, while that of Korean government bonds shifted to more than three years after government bond market reforms in 2001.\textsuperscript{28} In Indonesia, because of the history of fiscal surplus, the government has rarely issued bonds. Now that the market for short-term government bills are being developed, the question arises as to whether the central bank should continue to issue SBIs. This is another source of potential conflicts between the central bank and the government debt management unit.

VII. Promotion of Market Liquidity

A. Guiding Principles for Promotion of Market Liquidity

The Committee on the Global Financial System of the G10 central banks (1999) released excellent guidelines for designing deep and liquid government bond markets. Even though the guidelines are dated 1999, many of recommendations remain valid and relevant to East Asian economies. The Committee suggested five guiding principles for the design of deep and liquid

\begin{footnote}
\textsuperscript{28} Refer to APPENDIX 1 Central Bank Bills/Notes: the Case of Korea in Report of the BOJ High-Level Workshop for EMEAP members 2004 “Central Banks and Bond Market Development in EMEAP Countries” by Nishihara (2005). 
\end{footnote}
markets and five policy recommendations for the enhancement of market liquidity. The five guiding principles and the five policy recommendations are replicated to facilitate the discussion in this section.

The five guiding principles include:

- Guiding principle 1: A competitive market structure should be maintained.
- Guiding principle 2: A market should have a low level of fragmentation.
- Guiding principle 3: Transaction costs should be minimized.
- Guiding principle 4: A sound, robust and safe market infrastructure should be ensured.
- Guiding principle 5: Heterogeneity of market participants should be encouraged.

Based on the five guiding principles, the Committee made the following policy recommendations:

- Recommendation 1: An appropriate distribution of maturities and issue frequency should be ensured as a means of establishing large benchmark issues at key maturities.
- Recommendation 2: The liquidity-impairing effect of taxes should be minimized.
Primer on Asian Bond Markets

- **Recommendation 3:** Transparency of sovereign issuers and issue schedules should be ensured. Transparency of trading information should be encouraged, with due attention being paid to the anonymity of market participants.

- **Recommendation 4:** Safety and standardization in trading and settlement practices should be ensured.

- **Recommendation 5:** Repo, futures and options markets should be developed.

The first recommendation suggests that a large amount of outstanding homogeneous securities with a common maturity date would be essential in developing benchmark instruments. The second recommendation makes it clear that transaction taxes are an impediment to the deep and liquid market. The third recommendation indicates that transparency is relevant in three important context: (i) the transparency of issuers; (ii) the transparency of the issue schedule; and (iii) the transparency of market information. The fourth recommendation emphasizes the importance of safety in trading and settlement. In addition, a shorter settlement lag and the adoption of delivery-versus-payment practices are important. In addition, standardized trading increases market liquidity. The last recommendation facilitates government bond market dealers to finance long positions and cover short position by providing trading opportunities in the REPO and financial derivatives markets.²⁹

One major factor which is not covered by the Committee recommendations is the expansion of “Investor Base”. A recent IMF working paper by Árvai and Heenan (2008)

emphasizes the importance of “investor base” in developing a deep and liquid market by stating that “the lack of diversified investor base and heavy reliance on captive sources of funding contributes to shallowness and insufficient liquidity in secondary markets”. Árvai and Heenan (2008) identify three basic conditions in any phases of government bond market development. These conditions are: (i) stable macroeconomic environment or sustained implementation of macroeconomic stabilization if a country is at an early stage of economic development; (ii) the minimization of fiscal dominance, and (iii) liberalized interest rates as well as firm commitment to market funding of government borrowing requirements.

OECD studies suggest the following best practices for developing liquid secondary government securities markets. They are based on the experience with leading practices for raising, managing and retiring debt at the lowest possible price and acceptable risk. This experience shows that lower borrowing costs over the medium term can best be achieved through a consistent supply of liquid securities absorbed by a broad investor base of domestic and foreign investors. In most countries, liquid secondary markets are based on the following cornerstones: (i) concentrating issuance in critical tenors; (ii) well-functioning repo markets and ability to short issues; (iii) plain vanilla derivatives markets; (iv) facilitating investor demand and price discovery; and (v) supporting a network of primary dealers. These cornerstones reflect the key policy conclusions from past meetings on public debt management at the OECD. They can be summarized in the form of the following best practices regarding secondary public debt markets:

---


31 Since its creation in 1979, *the OECD Working Party on Public Debt Management (WPDM)* has been a unique policy forum for senior government debt managers and experts from OECD Member countries to exchange their views and experiences in the field of government debt management and government securities markets.


Liquid secondary OECD markets for government securities
Efficient secondary government securities markets are characterised by the following features:

(i) Liquid markets with a large stock of outstanding benchmark issues and repo market financing;

(ii) A safe and sound clearing and settlement systems;

(iii) A transparent and equitable regulatory and supervisory framework;

(iv) The use of a market-making structure based on primary dealers\(^ {32} \);

(v) Liquid futures markets;

(vi) Good access by foreign investors to domestic debt markets resulting in an important investor base with foreign investors.

Based on these best practices there is a convergence of views how to enhance liquidity in secondary bond markets. The key building-blocks of a liquid market are: (i) sound institutions and macro policies (including the banking system and exchanges, as well as macro-financial-, debt management- and fiscal policies); (ii) an efficient and robust infrastructure (payment system, trading, settlement, and clearing); (iii) a well-functioning repo market; (iv) adequate information flows; and (v) a diversified investor base.

These best practices play an important role in meeting the derived or secondary objective of promoting efficient government securities markets. (This objective is ‘derived’ as it is a means to achieving the end of lowest borrowing costs.)

B. Reality Check

\(^ {32} \) Not all issuers have a MM-structure; for example, Germany and the USA. Germany also operates without a formal primary dealer system.
B1. Market Survey

The ADB Asian Bond Monitor conducts an annual survey to assess the perception of market participants regarding what kind of market reforms are important to promote market liquidity of the government bond markets. Over 40 fund managers, traders, analysts, and operations experts in Asia, Europe, and the United States are usually surveyed. The survey results over the 3-year period are summarized in Table 9.

Table 9. Perception of Market Participants on Market Reforms

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Increasing diversity of investors</td>
<td>3.3</td>
<td>3.5</td>
<td>3.6</td>
</tr>
<tr>
<td>Increased availability of hedging products</td>
<td>3.0</td>
<td>3.5</td>
<td>3.2</td>
</tr>
<tr>
<td>Increasing intraday price transparency</td>
<td>3.0</td>
<td>3.1</td>
<td>2.8</td>
</tr>
<tr>
<td>Improving repo markets</td>
<td>2.8</td>
<td>2.9</td>
<td>3.2</td>
</tr>
<tr>
<td>Improvements to clearing and settlement</td>
<td>2.5</td>
<td>2.7</td>
<td>2.6</td>
</tr>
<tr>
<td>Mandatory bid-ask spreads by marketmakers</td>
<td>2.0</td>
<td>2.5</td>
<td>2.8</td>
</tr>
</tbody>
</table>

Source: ADB Asia Bond Monitor (November 2008)

On a scoring system that ranges from 4 (“very important”) to 0 (“don’t know/not applicable”), the category of “increasing investor diversity” remains the most important goal for developing deep and liquid government bond markets. The availability of hedging products and improvement of REPO market along with price transparency also gain relatively high scores. An interesting observation is that there was a distinct decline in the importance of hedging tools in 2008, which may be attributed to the on-going global financial crisis.

B2. Illiquidity in East Asian Bond Market

33 Refer to Asian Bond Monitor (November 2008).
34 Suk Hyun, formerly with the Japan Bank for International Cooperation, contributed to this section.
Market illiquidity in East Asian bond markets may be attributed to fragmentation of the markets, narrow investor’s base, lack of institutional settings, and inadequate market infrastructure facilitating transparency and price discovery. Figure 10 presents turnover ratios of government and corporate bonds in East Asian bond markets. With the exception of Japan, market illiquidity is conspicuous in East Asian economies with the exception of Japan.

**Figure 10. Turnover Ratios (2009)**

![Turnover Ratios Graph](image)

**Source:** ADB, AsianBondsOnline

**Small Size and Fragmentation of Asian Bond Markets:** The small-sized economies of East Asia pose the difficulty in developing bond markets because they cannot take advantage of the economies of to lower the issuance cost and to expand the types of debt instruments available [Eichengreen and Luengnaruemichia (2004)].
**Narrow Investor’s Base:** A broader investor base is a key to further developing bond markets in East Asia. It is particularly important to develop a wide and heterogeneous investor base with different risk preferences and appetite. Contractual savings institutions such as pension and life insurance can affect the development of bond markets because these investors demand a longer time horizon investments. It is also important to develop a mutual fund industry which can cater to individual investors with different needs and risk appetites from institutional investors. As summarized in Table 10, total assets held by pension, life insurance companies, and mutual funds are very small relative to respective GDP in each of East Asian economies with the exception of Malaysia, Singapore, and Korea. Especially institutional investor base in China, Indonesia and Philippines are very low.

**Table 10. Assets of Institutional Investors in East Asia (2005)**

<table>
<thead>
<tr>
<th>Economy</th>
<th>Pension US$ billions</th>
<th>% of GDP</th>
<th>Life Insurance US$ billions</th>
<th>% of GDP</th>
<th>Mutual funds US$ billions</th>
<th>% of GDP</th>
<th>Total US$ billions</th>
<th>% of GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>28.0</td>
<td>1.6</td>
<td>136.0</td>
<td>7.9</td>
<td>27.0</td>
<td>1.6</td>
<td>191.0</td>
<td>11.1</td>
</tr>
<tr>
<td>Indonesia</td>
<td>5.4</td>
<td>2.1</td>
<td>19.5</td>
<td>1.2</td>
<td>11.1</td>
<td>0.4</td>
<td>27.0</td>
<td>10.9</td>
</tr>
<tr>
<td>Rep. of Korea</td>
<td>161.0</td>
<td>21.4</td>
<td>133.0</td>
<td>17.7</td>
<td>186.0</td>
<td>24.7</td>
<td>480.0</td>
<td>63.8</td>
</tr>
<tr>
<td>Malaysia</td>
<td>70.0</td>
<td>59.2</td>
<td>21.0</td>
<td>17.8</td>
<td>23.0</td>
<td>19.4</td>
<td>114.0</td>
<td>96.4</td>
</tr>
<tr>
<td>Philippines</td>
<td>7.9</td>
<td>9.2</td>
<td>9.0</td>
<td>5.4</td>
<td>1.4</td>
<td>1.6</td>
<td>12.0</td>
<td>14.0</td>
</tr>
<tr>
<td>Thailand</td>
<td>20.0</td>
<td>12.0</td>
<td>17.0</td>
<td>10.2</td>
<td>19.0</td>
<td>11.4</td>
<td>56.0</td>
<td>33.6</td>
</tr>
<tr>
<td>Hong Kong (China)</td>
<td>38.0</td>
<td>22.9</td>
<td>9.0</td>
<td>5.4</td>
<td>465.6</td>
<td>260.3</td>
<td>512.6</td>
<td>308.6</td>
</tr>
<tr>
<td>Singapore</td>
<td>68.0</td>
<td>61.2</td>
<td>33.0</td>
<td>29.7</td>
<td>28.0</td>
<td>25.2</td>
<td>129.0</td>
<td>116.0</td>
</tr>
<tr>
<td>Total East Asia</td>
<td>390.2</td>
<td>11.8</td>
<td>362.2</td>
<td>10.8</td>
<td>761.0</td>
<td>22.6</td>
<td>1,521.7</td>
<td>45.2</td>
</tr>
</tbody>
</table>

**Source:** World Bank (2006)

Another indication of the narrow investor base in East Asian economies is illustrated in Figure 11 which presents investor profile of government bonds. In East Asia, banks are major investors and contractual savings institutions do not play major role in China. In general, East Asian economies lack a diverse investor base to make the secondary markets quite illiquid.

**Figure 11. Investor’s Profile for Government Bonds**
Lack of Benchmark Yield Curve: Frequent and regular issuances of government bonds can create a reliable benchmark yield curve. Chinese, Hong Kong, Japanese, Korean, Malaysian and Singaporean authorities have been making special efforts in issuing government bonds regularly and continuously to create reliable benchmark yield curves. Benchmark yield curves are not the necessary and sufficient condition for market development, but they are critically important in pricing financial assets in the local markets. Most of the countries in the region, however, have yet to develop reliable benchmark yield curves especially for long-term maturity as illustrated in Figure 12.

Figure 12. Benchmark Yield Curve for Local Currency Bonds
VIII. **Price Discovery in the Government Bond Markets**

From the standpoint of the government as an issuer of debt, efficient price discovery for government securities is critically important because it is expected to encourage investors and intermediaries to participate more actively. Efficient price discovery also supports a more stable, yet innovative, financial market. This section identifies some important considerations in the price discovery process in government securities markets from the perspective of government debt managers. Some of important primary market issues to be covered in this section include: (i) auction systems; (ii) when-issued trading; (iii) the primary dealer system. Secondary market considerations include: (i) the role of electronic trading platforms for price discovery in both wholesale and retail segments; (ii) STRIPS; and (iii) REPO market.

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This section is drawn from Rhee (2004) and Appendix B of *Government Bond Markets in East Asia Ten Years After the Crisis* by Blommestein (2008). A large part of this section was built upon presentations/discussions at the Ninth OECD/World Bank/IMF Global Bond Market Forum held on May 22-23, 2007 in Paris.
A. **Primary Markets**

A1. **Auctions**

In relation to the issuance of government bonds, the auction system must be well-established for the primary market activities. Many practical issues must be assessed, including:

- the design and choice of the auction system from multiple- and uniform-price auction and price- and yield-based auction
- the planning of auction calendars in terms of the frequency, timing lags, and the scope of information published
- the adoption of auction rules such as participation eligibility, allocation limits, reservation pricing.

Although no clear empirical evidence has been presented to confirm which auction design is better between the multiple- and uniform-price auctions, OECD member countries are almost equally divided in adopting one of the two auction methods.\(^{36,37}\) Under the uniform-price auction (also known as the “Dutch” auction), all bidders whose tenders are accepted pay the same price for a given security. This is either the lowest of the accepted prices or the highest of the accepted yields. Therefore, some of the successful bidders may pay a lower price than they actually bid. In contrast, under the multiple-price auction (also known as the “discriminatory” auction), participants submit sealed bids and pay the prices they bid. The

\(^{36}\) A recent OECD survey (2008) reports that 9 member countries (Czech Republic, Denmark, Italy, Mexico, Netherlands, Norway, Spain, United Kingdom, and the United States) have adopted the uniform-price auction methods and the rest of the members are using the multiple-price auction method.

government accepts the bids at gradually lower prices until the price at which the auction is fully subscribed. As a result, successful bidders for a security may pay different prices for that security. These multiple-price awards result in the “winner’s curse,” which means that the highest bidder wins the auction by paying the highest price, only to find that another bidder pays a lower price. In the presence of this curse, bidders tend to shade their bids below the maximum that they are actually willing to pay [Rhee (2004)].

Similarly, although it is difficult to measure empirically the benefits of being a predictable, consistent, and even-handed issuer, it is regarded as sound practice in OECD markets, especially in large markets or in those where the government is the dominant issuer of local-currency debt. This includes, for instance, the timing lags between the announcement of the securities to be auctioned, the auction itself, the announcement of auction result, and settlement.

Although debt managers in emerging market countries increasingly are implementing OECD practices, some of them continue to have unease with adopting a full commitment to market pricing at auctions. This would involve, for instance, always accepting bids up to the pre-announced issuance volume, regardless of price, except in rare instances of unambiguous mispricing or error. An argument in favor of a full commitment to market pricing is that government debt issuance is a multi-period game; investors will penalize issuer behavior that they perceive as arbitrary.

A2. When-Issued Markets and Pre-Auction Price Discovery

In some advanced markets including the United States, trading occurs during the period between the time a new issue is announced and the time it is actually issued (ranging from one- to two-weeks) and the issue is said to trade “when, as, and if issued.”

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functions like trading in a futures market, in which long and short positions are taken prior to the settlement date which is the issue day of the security traded. Prior to auctions, when-issued securities are quoted for trading on a yield basis because a coupon is not determined until after an auction is completed.

Rhee (2004) suggests that the most important benefit of when-issued trading is the minimization of price and quantity uncertainties. As trading on a when-issued basis facilitates the price discovery and distribution, the risk of underwriting becomes smaller and potential revenue from the new issue increases for the government. In the United States, the when-issued market for treasury securities was set up by market participants themselves, without government direction. While attractive in theory, when-issued trading is not a common feature in government securities markets among the OECD member markets. Japan used to consider when-issued trading illegal but after its introduction, the Japanese when-issued market is not active. In practice, governments cannot “mandate” innovation, but they can create a neutral regulatory environment where market innovations (when-issued trading, futures, swaps, etc.) can develop organically, as market participants perceive them useful for risk management.

A3. Primary Dealer System

Primary dealer systems are designed to attain at least three goals in the government securities market: first, efficient price discovery through intense competition among participating dealers; second, provision of liquidity through market-making; and third, distribution of government-issued securities. In addition, primary dealers serve as the counterparts to central banks in open market operations. Most of the advanced economies adopted the primary dealer system (see annex 4). The business models in the US and Japan are based on the philosophy that DMOs have a hands-off relationship with PDs. For example, the US Treasury, through its issuing agent (the Fed of New York), has a hands-off approach with
all its primary dealers; it sees its task ending with the conditions of primary issuance and is therefore only concerned with on-the-run securities. In both the US and Japan, market-making responsibilities in secondary markets are not imposed on primary dealers (see Table 1 in annex 4). However, this hands-off relationship does not preclude a meaningful dialogue with the market. For example, in Japan, primary dealers are being consulted about important debt management policies such as the JGB issuance plan and buy-back programmes. In the case of Germany, banks are not formally designated as primary dealers. Instead, a selected international group of banks, called the Bund Issuance Auction Group, bid in auctions.

Even though the existence of primary dealers does not necessarily guarantee intense competition on the primary market, the important fact of the matter is that primary dealers are experts in pricing, market making, and distribution. Hence, government authorities should make special efforts to capitalize on their expertise in promoting the primary market activities.

B. Secondary Markets

B1. Trading platforms

Trading of most government securities in the OECD area is over-the-counter because market regulation does not require exchange-based trading only. The traditional method of trading in the market has been the voice-assisted network. However, in recent years there has been a shift to electronic network trading that allows dealers to post prices and quantities and execute trade electronically. In the United States, virtually all of the on-the-run securities are traded electronically, while the off-the-run securities trading is subject more customization and goes

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39 Hence, the members of this group of banks are not formally designated as primary dealers. As of 1 October 2009, the number of internationally operating banks stood at 27.
Electronic trading platforms are generally self-regulated. Electronic trading has helped many European countries improve price discovery in the government securities market. Even so, the broker market and telephone-based trading remain important in many countries alongside electronic trading. For instance, primary dealers in Europe are required to quote prices on EuroMTS Ltd., but they may trade however they choose.

B2. Bond-stripping

“Coupon stripping” splits bond income streams into coupon interest and principal repayment. The coupon stripping was devised in 1982 by Merrill Lynch and Salomon Brothers to serve bond investors who were concerned about reinvestment risk. Beginning in 1985, the U.S. Treasury introduced the Separate Trading of Registered Interest and Principal of Securities (STRIPS) program to formalize the stripping of designated Treasury securities. The main appeal of STRIPS is to provide the market with highly liquid zero-coupon Treasury bonds and notes, thereby expanding the bond investor base. The strip market also generates arbitrage activities. Primary dealers continuously check the price of strippable bonds against the sum of the stripped parts (the “whole” versus the sum of “parts”). The existence of zero-coupon yield curve allows a better pricing of traditional coupon bonds.

Bond-stripping is not a feature in many OECD government securities markets. Generally, countries permit government bonds to be stripped, but market participants choose not to do so. A few countries, however, do impose restrictions on stripping because they fear that it would reduce liquidity.

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40 In the U.S. market, the two platforms that compete for the electronic trade are eSpeed and Broker Tec ECNs.
B3. REPO Market

A REPO represents the sale of securities by the borrower to the lender (investor) with an agreement to repurchase the securities at a specified date and price. It is a combination of spot sale and forward purchase of the securities. The difference between the selling and repurchasing prices represents the interest on the transaction. The borrower’s REPO is the lender’s reverse REPO. The REPO market serves numerous purposes. It allows primary dealers to cover their short positions, institutional investors to maximize their investment income by lending their securities, and foreign investors to reduce currency risk through money market hedging. It also facilitates clearing and settlement transactions and enhances market liquidity. Without an active REPO market, the primary and secondary markets cannot develop to their full potentials [Rhee (2004)].

Where stripping is an important feature, an active repo market is typically a precondition. A standard policy prescription is to encourage the development of a derivatives market first, and perhaps a repo market or a securities-lending facility, before introducing stripping. Likewise, a successful strips market is often pre-conditioned on reforms regarding the taxation of coupon payments and gains or losses on principal.

IX. Outlook

From a demand perspective, Asian bonds offer attractive risk-adjusted returns and diversification. Asian bonds, both local currency and dollar, offer excellent Sharpe ratios. Credit ratings range across a wide spectrum, while markets vary in sophistication and size. The majority of Asian countries have low debt-to-GDP ratios (30-50%).

In comparison to the US and Europe, growth prospects are excellent. Many institutional investors are currently assessing their strategic allocations to Asian fixed income. Several analysts have pointed out that the short-end of the local currency curve in emerging Asia
provides a good hedge against the macro risks in the more advanced economies. However, others have noted that dollar debt in Asia has less attractive spreads than similar instruments in other emerging regions.

Many investment managers argue that Asian markets should be considered a long-play for diversification and risk benefits and not as a tactical allocation. Nonetheless, there are important structural obstacles. For example, in many cases Asian debt is hampered by benchmark limitations. In many jurisdictions, further market development is needed, in particular via the creation of sovereign yield curves. Liquid sovereign bond markets are a key ingredient in the development of efficient corporate bond markets. See annex 5 for details.
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Annex 1

Importance of Bond Markets in Asia

Tadao Chino

Since the financial crisis of the late 1990s, Asian countries have addressed underlying structural weaknesses in its economic and financial fundamentals. Today, Asia is again one of the world’s fastest growing regions. Although much has been achieved, Asia still needs deeper and more liquid financial markets. I will highlight how bond markets have evolved and been strengthened in Asian countries, 10 years after the financial crisis. I will also discuss the development of public debt management in emerging Asia since the crisis.

A. Bond markets and the Asian crisis

In 1997, crisis-affected Asian countries, such as Indonesia, Korea, Malaysia, and Thailand, were faced with steep currency depreciations and sharp hikes in domestic interest rates, thereby raising the debt-servicing obligations of corporate borrowers. The rapid rise in non-performing loans led to severe banking crises and output contractions, with recoveries that took several years. The size of the region’s bond markets was very small, so corporate borrowers were highly dependent on bank financing. The under-developed bond markets in

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41 Mr. Tadao Chino is currently Senior Adviser at Normura Research Institute and was formerly President of the Asian Development Bank and Vice Minister of Finance of Japan. This annex is based on an address by Mr. Chino at the 17th OECD Global Forum on Public Debt Management, on 12-13 December 2007, in Amsterdam, the Netherlands. The views expressed in this chapter reflect those of the author and not necessarily those of his current or prior affiliations.
Asia and the heavy dependence on bank financing made these economies highly vulnerable and even facilitated the crisis.

Another important factor behind the crisis was the double-mismatch problem: mismatches in currency of denomination and maturity of liability that most Asian borrowers faced when they tried to raise funds abroad. Corporations and some banks borrowed abroad in foreign currency and on a short-term basis. The result was that money went out of the respective countries quickly, causing steep currency depreciations, inflating the local-currency value of external debt, and driving many corporate and bank borrowers into repayment difficulties. Clearly developing local-currency bond markets is a means of reducing the double mismatch. A diversified financial system, with deep and liquid bond markets, can reduce the problem posed by an over-dependence on the banking system and external financing. The growth of bond markets lengthens the maturities available for debt financing and facilitates the placement of local-currency bonds, which helps avoid corporate balance-sheet mismatches. Well-developed bond markets also encourage corporations to be more transparent, adopt international accounting practices, and enhance corporate governance. In view of this, local bond market development is of utmost importance.

B. Government debt management in Asia

In most Asian countries, the main holders of public debt have largely been banks. Financial intermediation, therefore, has been highly dependent on banks. As banks hold a very large proportion of their assets in government debt, prudent public debt management becomes critical for financial stability. Government debt plays an important role as a benchmark for greater and deeper development of private-sector bond markets. Prior to the crisis, many Asian emerging-market economies had very small, or non-existent, local bond markets. However, these economies, particularly those affected by the financial crisis, suddenly witnessed high levels of public debt during the crisis period and immediately afterward, because they started to issue local-currency government bonds to meet recapitalization needs of domestic banks.
Around 2000, when the economies started to restore stability and growth, public debt-to-GDP ratios for crisis-affected countries began decreasing. The trend in these ratios clearly indicates the changes. For example, the public debt-to-GDP ratio of Indonesia rose from 27% in pre-crisis 1996 to a peak of 87% in 1999, and then declined to 47% in 2005. In Malaysia, it increased from 35% in 1996 to 64% in 1999, and then decreased to 46% in 2005. In Thailand, it rose from 9% in 1996 to 57% in 2000, and then declined to 46% in 2005.

The maturity structure of public debt has improved in these countries, with declining shares of short-term debt. Crisis-affected countries have reduced their reliance on foreign-currency debt, such as in Thailand, and have been able to issue more fixed-rate debt, such as Indonesia. However, public debt-to-GDP ratios in 2005 were still high for several developing Asian countries compared to the levels in 1996. High debt levels may constrain the delivery of public services and the flexibility of fiscal policy, posing a risk for the future. Although the level of indebtedness is still manageable in view of the strong fundamentals and continued high-growth environment, a strong focus on maintaining debt at sustainable levels is critical. To manage public debt effectively and minimize the long-term cost of debt, the governments of these countries need to improve market infrastructure, such as strengthening the legal and institutional structure of the local bond market. A well-functioning bond market is essential for financing budget deficits, smoothening the refinancing of public debt, and reducing the overall cost of public debt through professional debt management.

C. Need for bond market development in Asia

Asia is witnessing an increasing demand for physical infrastructure to support economic growth and development. The sectors in need of infrastructure include energy, telecommunications, transport, and water. The infrastructure investment requirement of developing Asia is estimated to be between US$ 300 billion and US$ 500 billion annually for the next 10 years, greater than for any other developing region.
Asia also faces the new challenge of recycling its excess savings for internal investment. The foreign-exchange reserves of Asian emerging-market countries now account for around two-thirds of the world’s total. The bulk of these reserves are invested in relatively low-yielding, safe, and liquid assets, such as United States Treasury securities. Unless the region’s bond markets become fully developed, many Asian savers will continue to put their money in the international financial centers, notably in North America and Europe, and Asian borrowers will continue to turn to the international financial markets for financing.

The remedy for these problems lies in developing efficient national and regional bond markets in Asia. Vibrant local markets will help address global financial imbalances by encouraging more of Asia’s savings to be invested in the region, and will reduce the reliance of many sovereign and corporate issuers in international capital markets.

With those points in mind, I draw four conclusions. First, Asian bond markets can provide alternative sources of financing for public and private investment, as well as alternative modes of wealth holdings for Asian households. This is very important for Asian economies, which are gravely in need of both viable funding schemes for infrastructure and fixed-asset investment, plus attractive options for retirement financial arrangements and pensions in rapidly ageing societies. Second, Asian bond markets can make the region’s financial systems more resilient by putting in place two balanced wheels: sound banking sectors and liquid bond markets. Bond market development contributes to greater competition in the financial system and greater diversification of financial risks across banking sectors and bond markets. Third, bond market development in Asia can reduce the double-mismatch problem. Finally, better mobilization of Asian savings for Asian investment can contribute to a reduction in global payments imbalances. Well-developed, liquid, transparent local-currency bond markets can help mitigate the information asymmetry that exists between investors and borrowers by identifying “bankable” projects and desirable investment opportunities in the region for potential investors.
D. Growth of bond markets in emerging-market East Asia

Asian bond markets witnessed considerable growth since the financial crisis. According to estimates from the Asian Development Bank (ADB), total local-currency bonds outstanding in emerging-market East Asia increased from US$ 400 billion in 1997 to US$ 3 trillion in mid-2007, more than a seven-fold increase, and from 12% to 57% of emerging-market East Asia’s GDP. The share of local-currency bonds in emerging-market East Asia’s financial systems rose from 12% in 1997 to 19% in mid-2006, while the share of bank financing declined from 61% to 51%. Despite this growth, local-currency bond markets in emerging-market East Asia still remain small and only a fraction of total local-currency bonds worldwide (more than US$ 40 trillion).

Governments remain major issuers of local-currency bonds in emerging-market East Asia, although corporations and financial institutions are becoming more active, particularly in Korea and Malaysia, where non-government entities are the largest issuers. Bond holdings by commercial banks are still large but have been declining, while holdings by contractual savings institutions and fund managers, such as pension funds, life insurance companies, and mutual funds, have been rising. Although issuer and investor bases have expanded, more efforts are needed in that regard.

E. Recent initiatives for Asian bond markets

In recent years, the national governments of Asian countries have made serious efforts to encourage the development and deepening of local-currency bond markets by removing policy distortions that affect the efficient allocation of domestic savings, providing sovereign and quasi-sovereign issues to establish benchmark yield curves, and strengthening the regulation and supervision of capital markets. In addition, the actions of regional groups have also
supported the development and deepening of Asian bond markets. Two such initiatives are the Asian Bond Fund (ABF), under the aegis of the Executives’ Meeting of East Asia-Pacific Central Banks (EMEAP), and the Asian Bond Markets Initiative (ABMI), under the auspices of ASEAN+3 finance ministers. The Asia-Pacific Economic Co-operation Finance Ministers’ process and the Asia Co-operation Dialogue process have also been strongly supportive of Asian bond market development.

The EMEAP-led central bank process established the ABF in June 2003 to facilitate local-currency bond issuance. The idea at the time was to help expand bond markets through the purchase of sovereign or quasi-sovereign bonds issued by eight EMEAP members by using all eleven members’ foreign exchange reserves. The initial attempt, ABF-1, involved purchasing US$1 billion of United States dollar-denominated bonds. Recognizing that local-currency bonds needed to be promoted in order to address the double-mismatch problem, the central bankers introduced ABF-2 in December 2004, which involved purchases of the equivalent of US$2 billion of bonds denominated in Asian currencies. The Pan-Asian Bond Index Fund (PAIF) was also introduced. PAIF is a single bond index fund investing in sovereign and quasi-sovereign local-currency bonds issued in eight economies.

The main objectives of the ABMI launched by the ASEAN+3 finance ministers in August 2003 are to facilitate market access to a diverse issuer and investor base and enhance market infrastructure for bond market development. This will create robust primary and secondary bond markets in ASEAN+3 countries. Four working groups under the AMBI are currently focusing on the issuance of new securitized debt instruments, the establishment of a regional credit-guarantee agency, an exploration of the possible establishment of a regional settlement and clearance system, and the strengthening of regional credit-rating agencies.

The ADB has supported this initiative by issuing local-currency bonds to promote local bond market development. Starting in 2004, the ADB completed 16 bond issues denominated
in local currencies in China, Hong Kong SAR, Malaysia, the Philippines, Singapore, and Thailand. Total local-currency bond issuance during 2004 to 2006 amounted to approximately US$2.1 billion.

F. Policy recommendations

Public debt management is crucial for financial stability in Asia. A strong focus on maintaining debt at sustainable levels is of utmost importance. The governments of developing Asian countries need to have in place proper institutional programmes for effective public debt management. Further broad reforms, including strengthening legal and institutional structures and developing secondary markets, are required to manage Asian public debt effectively, particularly to minimize overall economic costs.

Asian bond markets face many challenges and, therefore, a more strategic approach is required. Broadening the issuer base can help address the shortage of corporate investment paper in Asia, but it is not the whole answer. Enabling environments need to be offered for corporate bond market development, through the removal of regulatory, legal, tax, and other impediments. Market infrastructure needs to be improved through the creation of an effective credit-guarantee mechanism and an efficient settlement system directly linked to fixed-income exchanges, and through the development of hedging and derivatives instruments. The corporate governance of firms should be improved through better accounting standards and disclosure requirements, so that corporate issuers become subject to sufficient checks and balances.

Regional cooperation is a useful way of achieving these objectives. The launch of ABF-2 is an excellent example. The listing of exchange-traded funds and the creation of a well-structured Asian index has created a benchmark against which all investment vehicles can evaluate their performance in Asian bonds. It has also opened the markets to a wider class of investors.
investors. The ABMI, which focuses on strengthening national and regional market infrastructure, is another good example. The Asian authorities have been working on these initiatives in collaboration with the private sector.

G. Concluding remarks

In early 1998, when I was chairman of the Board of Councilors of Nomura Research Institute, I was appointed as the head of a Japanese government delegation to Jakarta to discuss Japan’s further effective financial assistance to Indonesia. At his private residence in Jakarta, we had hours of dialogue with President Suharto. On the basis of our report, the Japanese government decided on positive financial assistance. I have never forgotten when the president talked of Indonesia’s development and rising prosperity over the previous three decades, with per-capita income rising from US$100 to roughly US$1,000. Then suddenly, the economic crisis assaulted Indonesia, severely affecting all segments of the economy. As one example, the president cited how since the sudden depreciation of the Indonesian rupiah to only one-quarter of its pre-crisis level, poultry farmers who raised mainly chicken faced a sudden four-fold jump in the price of imported mixed feed. Poultry farmers could not afford to buy those mixed feeds, and most had gone bankrupt. Egg and chicken-meat production declined sharply, leading to protein-deficiency and other nutrition problems, especially in small children.

Since that time, I have devoted myself to the development of the poverty-reduction strategy of the ADB, which is based on pro-poor sustainable economic growth, social development, and good governance. Financial issues, including bond market development, are essential for that. To reduce poverty and avoid a recurrence of financial crises that bring mass poverty, and to achieve a vision of more integrated, prosperous, poverty-free, and peaceful region, we need local bond markets in Asia.
ANNEX 2

SECONDARY MARKET LIQUIDITY IN DOMESTIC DEBT MARKETS:

KEY POLICY CONCLUSIONS

Hans Blommestein, Alison Harwood, Phillip Anderson and Ceyla Pazarbasioglu

A. The impact of different market structures and policies on liquidity

A key policy problem is that liquidity is not very well-understood in terms of a robust link between theory (analytics) and data. Liquidity is a rather complex concept with different dimensions – micro liquidity vs. macro liquidity, market liquidity vs. funding liquidity, endogenous vs. exogenous liquidity, and so on. Moreover, liquidity is distributed in complex ways within an ultra-connected financial landscape. These difficulties make it hard to measure liquidity in a straightforward way, especially for relatively illiquid bonds, and various proxies that are being used. Against this backdrop, the most promising direction for identifying the

42 Authors’ affiliations are: Hans Blommestein of OECD, Alison Harwood of World Bank, Phillip Anderson of World Bank, and Ceyla Pazarbasioglu of IMF. Annex 2 presents key policy conclusions for secondary market liquidity in domestic debt markets from the 10th OECD/World Bank/IMF Annual Global Bond Market Forum held on 29–30, April 2008 in Washington, D.C. The views expressed herein are those of the authors and do not necessarily reflect those of their affiliated organizations. The authors are solely responsible for any errors.
drivers of relative liquidity within and across markets (including extreme events such as ‘liquidity freezes or squeezes’) is to focus on the market’s institutional structure, in particular the architecture of electronic trading platforms, the importance of over-the-counter-trading, the nature and width of the investor base, disclosure requirements, valuation methods, the role of primary dealers (PDs) including market-making requirements or conventions, tax factors, and the role of issuers of government bonds and other fixed-income instruments in primary and secondary markets.

Liquidity in cash and derivatives markets can therefore vary due to differences in market structures, also for the most developed government bond markets. The cash government bond market is the most liquid in the United States, with cash instruments used for pricing reference and as hedging tools. In contrast, the futures market for government bonds is the most liquid segment in Europe. Swaps and German Bunds have a shared role in pricing benchmarks and the futures market, while the futures market is the main tool to short the market. Japan’s secondary market, however, is less liquid than one would expect on the basis of the size of its market.

Liquidity in the secondary market can be affected by size, heterogeneity of instruments, fragmentation and lock-in effects. There may well be minimum thresholds for the size of both issuance and the market to ensure the liquidity premium. However, size alone cannot be used as a reliable liquidity measure since it does not incorporate ageing-induced declines in liquidity, resulting in the familiar spread between on-the-run government securities and off-the-run ones. A wide diversity of instruments is generally not conducive to creating and maintaining liquid markets. The number of electronic networks that do not display liquidity (‘dark pools’) has grown strongly, especially for equity. These fragmented trades in dark pools are popular because buyers and sellers (in particular big institutional investors) are matched anonymously, while orders can be bigger than those done on public exchanges. Dark liquidity issues are further amplified by a fragmented market structure with a multiplicity of issuers (e.g., Eurozone), different electronic trading platforms and lock-in-effects by investors.
The shift to electronic trading platforms in mature markets has contributed to improving liquidity and price transparency but with caveats. Electronic platforms have eased access and reduced cost of trading. The experience so far in the U.S. and Europe show that electronic platforms have a lower adaptability to extreme volatile conditions while also complex trading strategies and off-the-run trading are more difficult to accommodate than via conventional trading channels.

Policies undertaken by debt managers can play a significant role in facilitating or supporting market liquidity. There is a clear role for debt management offices (DMOs) to the extent liquidity can be seen as a public good. For example, in Japan, a relatively low turnover ratio and wide bid-offer spreads indicate that the secondary market, relative to its size, is not very liquid. The authorities have taken several initiatives to enhance liquidity, including “auctions for enhanced liquidity” and “buy backs.”

Debt managers are generally rewarded with a liquidity premium if they can provide predictability of supply through a set auction schedule and transparent decision making, benchmark issuance, while promoting a network of dedicated dealers and a broad investor base. While some debt managers follow opportunistic issuance, the experience in OECD markets shows that lower borrowing costs can be achieved over the medium term through a consistent supply of liquid securities absorbed by a broad investor base of domestic and foreign investors. In most countries liquid secondary markets are based on the following cornerstones: (i) concentrating issuance in critical tenors; (ii) well-functioning repo markets and ability to short issues; (iii) plain vanilla derivatives markets; (iv) facilitating investor demand and price discovery; and (v) supporting a network of primary dealers.

Primary dealers (PDs) provide an important dimension to liquidity provision but there is a dichotomy in the approach in how DMOs interact with PDs in enhancing liquidity. The main
objective of the DMOs has been to reduce uncertainty for the market makers. The business model in the US, Germany as well as in Japan is based on the philosophy that DMOs have a hands-off relationship with PDs. For example, the U.S. Treasury, through its issuing agent (the Fed of New York) has a hands-off approach with all its primary dealers where it sees its task ending with the conditions of primary issuance and is therefore only concerned with on-the-run securities. That said, the current credit-cum-liquidity crisis has shown that the Fed may have to play a more proactive role vis-à-vis PDs in times of great market stress. In contrast to a general hands-off approach, several DMOs (e.g., in the EU) play a more activist role by giving PDs direct incentives or privileges in return for market-making (MM) obligations. This approach may reflect the difficulties faced in a fragmented and/or a small size of the market. In some jurisdictions, however, the effectiveness of MM-obligations is under discussion. This debate is in part fuelled by the ongoing credit crisis and may lead to changes in the current market infrastructure. However, in all cases, by being the intermediary of the DMO (or the Fed in the case of the US), PDs do have a more privileged access to trading and information.

The case of smaller DMOs provide an issuer’s perspective on why a PD system with direct incentives can be successful in creating better liquidity than would be expected by market size alone. For example, in Sweden this has been achieved by committing to issuer support through securities lending in the government bonds to PDs by the DMO. This active support of the Debt Office and its role in reducing uncertainty has fostered market making, interbank market, broker trading, pricing, and risk management. Furthermore, the DMO has concentrated on the funding of a few benchmarks, (obligatory) participation in electronic interbank trading, sound risk management and adequate price transparency and discovery.

In the EM universe, several local government bond markets provide interesting examples how good levels of liquidity by international standards can be attained through reforms in its market micro-structure. For example, in Mexico local instruments accounted for 28 per cent of local markets turnover of all local emerging market trading, while Brazilian and
South African local debt activity accounted for 15 per cent and 11 per cent, respectively. Of interest in this context is that the Mexican Ministry of Finance has made improvements in the microstructure of the local market that included: (i) modification of auction schedule; (ii) modification of Bond re-opening scheme; (iii) new regulation for repo and securities lending markets; (iv) introduction of Strips Programme for government securities; (v) exchange programme for fixed rate bonds; (vi) exchange programme for inflation linked bonds; and (vii) buyback programmes for government securities. More in general, several EMs made notable improvements in the following key areas: (a) legal and regulatory framework; (b) clearing and settlements; (c) price transparency; and (d) market making programmes.

Securities lending facilities have had a positive liquidity impact on government bond market. For example, recent efforts by several countries to develop a securities lending market for government securities have shown positive results. Local investors’ understanding of the importance and profitability of securities lending has improved. An increasing number of pension funds and insurance companies have started to lend.

B. Key challenges for strengthening liquidity and the way forward

A key challenge is a better understanding of liquidity. The concept of liquidity is complex and not well understood, although empirically it is often related to a single dimension such as the ability to trade a security with minimal impact on its price. While there are clear differences between funding and market liquidity, they are mutually reinforcing. The issue of liquidity risk has become more complex, especially with liquidity problems appearing during the credit crisis in unexpected ways. Another complicating factor is that issuers, policymakers and investors may have different perspectives on liquidity. Nevertheless, DMOs and market makers have important potential roles in enhancing market liquidity in the government bond markets, be it directly or indirectly.
But, there is a convergence of views how to enhance liquidity by strengthening the institutional structure of bond markets. The key building-blocks of a liquid market are: (i) sound institutions and macro policies (including the banking system and exchanges, as well as macro-financial-, debt management- and fiscal policies); (ii) an efficient and robust infrastructure (payment system, trading, settlement, and clearing); (iii) a well-functioning repo market; (iv) adequate information flows; and (v) a diversified investor base.

The current turmoil in mature credit markets has highlighted the importance for EM policymakers and market participants of a strong institutional structure for local currency bond markets. On the funding side, EM countries that have been able to diversify their funding base and have actively used liability management, have seen relatively lower volatility and have enjoyed continued market access at competitive spreads. Countries that continue to develop deep and liquid local bond markets are likely to be better placed to sustain shocks from the risks of a protracted global credit crisis. Many EM countries like Brazil, Mexico, Poland, South Africa, Thailand and Turkey have already made marked progress in implementing reforms to foster the development of local currency bond markets. Secondary market liquidity has improved in countries that have provided an enabling environment for local bond market development. The development of repo and derivatives markets has been an important step in countries like Mexico, Brazil and Korea. E-platforms in some of these countries have helped in price discovery.

The rapidly changing investor base with sizable growth in assets under management and a decline in their home bias has significant implications for liquidity. The more diversified investor base in EM also underscores the importance of understanding their behavior by EM policymakers. Hedge funds behave in a different way compared to real money investors. For example, hedge funds often prefer to access EM via offshore derivatives instruments. This helps local players arbitrage local and offshore markets, while diverting some of the trades abroad. Whether or not this helps or hinders liquidity is an open question. The Mexican experience indicates that this does help the liquidity in the local market. However,
deleveraging by hedge funds can often mean that they sell the most liquid instruments, which can result in a downward spiral in asset prices.

Liquidity management challenges posed by capital inflows to EM are symptomatic of the lack of a broader and deep domestic capital markets. The development of corporate bond markets in EM can enhance the absorptive capacity of the economy while providing a more diversified funding source for corporations. There could be emphasis on building the infrastructure asset class including public-private partnership that could bring more assets to the market. Furthermore, securitisation and other modes of credit enhancements can help broaden the asset base of good quality paper that investors may invest in. Judiciously relaxing regulatory constraints on domestic institutional investors such as pension funds can also alleviate liquidity pressures.
Annex 3

Policy Conclusions on the Use of Derivatives in Public Debt Management and Local Debt Market Development

Hans Blommestein, Udaibir Das, Alison Harwood, Ceyla Pazarbasioglu, and Anderson Silva (WB)43

A. Recent trends in fixed income derivatives

There has been a sharp growth in derivatives in both mature and emerging markets. This includes transaction volumes, types, and users. Public debt managers in most mature markets already use derivatives to some extent, and many emerging market debt managers have begun to use them as well. They use primarily interest rate and currency swaps, futures, and forward transactions to achieve strategic objectives. The use of credit derivatives, in particular, is increasing rapidly. This is leading to a transformation of debt markets in the same way that the use of derivatives transformed interest rate markets in the 1980s. The availability of credit derivatives is facilitating the broadening of the investor base for public debt managers, especially in emerging market countries. Growth has been robust in both exchange-traded and over-the-counter (OTC) derivatives. The two markets have their respective benefits. Exchange-traded derivatives reduce counterparty and operational risk through centralized

43 Authors’ affiliations are: Hans Blommestein of OECD, Udaibir Das (IMF), Alison Harwood (IFC), Ceyla Pazarbasioglu (IMF) and Anderson Silva (WB). Annex 3 presents policy conclusions on the use of derivatives in public debt management and debt market development from the 9th OECD/World Bank/IMF Global Bond Market Forum, held on 22-23 May 2007 in Paris, France. The views expressed herein are those of the authors and do not necessarily reflect those of their affiliated organizations. The authors are solely responsible for any errors.
clearing mechanisms, and are considered more transparent, liquid, and accessible to a broader range of market participants. OTC derivatives, which are easier to develop, grow organically, do not require underlying cash markets, and are more customized.

There may be a stronger symbiotic relationship today between exchange-traded and OTC derivatives. Exchange-traded markets face pressure from their OTC counterparts, where important investments in new electronic platforms are developing rapidly and can now provide a legal confirmation of the deals within minutes of their execution. Similarly, there are now several models of exchanges offering clearing services to OTC participants. It is the operational aspects of clearing, trade matching, and confirmation that make clearing by exchanges attractive. Risk mitigation resulting from centralized and multilateral clearing is secondary. These two markets, however, are not pure substitutes from the perspective of institutional funds, where investment guidelines may dictate that products be exchange-listed. Similarly, OTC derivatives can offer public debt managers greater flexibility to customize risk-reduction transactions to the specific risks in their portfolios. Thus, debt managers that use derivatives are likely to benefit from having both OTC and exchange-traded products available for their portfolio management operations. Emerging market countries may benefit from the strengthening of OTC markets. Providing the enabling environment, including an adequate legal and regulatory framework, helps protect against counterparty risk in OTC trades and improves transparency and disclosure. Such efforts could enable emerging market countries to introduce derivatives at an earlier stage in their development, as they would not have to wait until cash markets are liquid enough to support an exchange-traded derivatives market.

B. Use of derivatives by public debt managers

For public debt managers, the use of derivatives is largely strategic, with clear objectives. Debt managers should first consider whether the use of derivatives is in line with achieving their risk and cost objectives within a well-specified debt strategy, and with other
goals, such as developing and maintaining an efficient market for government securities. Within this framework, the implementation of the debt strategy may include the use of derivatives to separate funding decisions from the optimal portfolio composition decision, reduce the cost of borrowing, and manage risks in the portfolio (in particular, interest rate refixing risk and refinancing risk).

Debt managers should determine the purpose of transactions in order to select the appropriate instrument(s) and structure(s). For many debt managers in emerging market countries, the priority should remain on developing a credible and well-functioning issuance program, deepening the debt market, and building a diverse investor base. Well-developed derivative markets may benefit public debt managers, even when they are not direct users of such instruments. Derivative instruments contribute to overall market efficiency and liquidity. These benefits include the ability for market participants to hedge positions effectively, the ability to trade in and out of markets at any time, continuous price updates and market intelligence through trading in the derivative asset class and, last but not least, the maintenance of market liquidity. In turn, these factors can contribute directly to lower funding costs for the government, with more competitive participation in auctions (by investors and intermediaries) and better market-making in the secondary market. Use of derivatives by public debt managers should be considered only after certain preconditions are satisfied. Initially, priority must be given to establishing a credible debt issuance program, a diversified funding base, and adequate market infrastructure for the primary and secondary markets. Debt managers need to possess adequate internal capacity (including personnel and systems) for front-office execution, middle-office strategic analysis, and back-office settlement for managing derivative transactions and their associated risks. Capability is built over time, and in the meantime, if the case for using derivatives is strong, steps can be taken to facilitate their use, such as outsourcing or appointing agents for particular aspects of transaction execution, settlement, collateral management, and ongoing risk management.
In terms of risk management and reporting, several pre-requisites are needed by public debt managers. Real-time market information is needed for evaluating potential new transactions, periodic rate resets, determining required collateral movements, and remunerating posted collateral. Independent calculation and bilateral confirmation of cash flows is essential. For debt managers, there are sometimes inconsistencies in the accounting treatment of derivatives (often mark-to-market) and underlying bonds (often book value). This complicates communication and evaluation of the risk reduction that derivatives were intended to help achieve. Derivatives entail credit risk to the counterparty and operational challenges with valuation and day-to-day management. Common controls include transacting only with counterparties with a minimum credit rating and applying exposure limits to individual counterparties. Collateralization is increasingly common. This helps reduce credit risk, but raises further challenges with valuation, posting, and remuneration. Lower-rated sovereigns face additional complexity in that they themselves may have to pledge collateral, which also affects the cost-effectiveness of using derivatives in debt management. There is no clear consensus on the optimal degree of transparency for derivative transactions. Fear of front-running or squeezes may limit ex ante transparency, while the reasons for limited ex post transparency around derivatives are less well articulated. For public debt managers, their policy regarding derivatives, however, should not undermine the benefits trying to be achieved through high transparency in respect of securities issuance and the cash market for government securities.

C. Importance of derivatives for market participants

Derivatives help complete the market by increasing investment, trading, and asset management opportunities. An economically complete market supports the willingness of investors to hold assets or take positions in particular securities. Investors need to have certainty that they can finance, adjust, and liquidate their positions efficiently; reduce or smooth the risks of volatility through hedging or risk management strategies; or extract
exceptional gains through speculative strategies to the extent possible, at the lowest
transaction cost, continuously into the future.

Derivatives are clearly needed by market participants, dealers, and investors in the
government securities markets. A liquid, reliable futures market supports the ability to hold
assets. It provides a means for forward price discovery, enhancing the likelihood that risks can
be transferred when and as desired, and permits market makers to hedge their net exposures.
OTC and futures markets support hedging needs. Stock loans and repurchase transactions
support financing of cash market activity. Market participants attribute significant value to
futures market liquidity. Liquidity is the primary driver of futures market success. It translates
into low transaction costs and tight spreads, which are key to whether market participants are
willing to use a futures market to minimize risk.

Market participants will prefer to use a standardized product (that is, an organized
market), provided the basis risk (the risk that the price of a future will vary from the price of the
underlying cash instrument as expiry approaches) is not high. There must also be sufficient
two-way trading interest to assure that positions can be assumed and disposed of at the
market’s projected price with the least cost or price slippage. A more tailored product will
be preferred if the basis risk is too high. A number of pre-requisites are essential for
government securities market participants to benefit from derivative markets. These include,
notably, operational aspects such as a well-functioning clearing, trade matching, and
confirmation infrastructure and an adequate legal and regulatory framework. Market
participants, through government and self-regulation, should ensure transparency, product
suitability, prevention of market abuse, and best execution. Risks associated with the use of
derivatives, in particular operational risk, should be identified and managed adequately,
notably through the use of appropriate stress-testing type methods. Investors need to be
educated about the use of derivatives for hedging and more broadly for risk management. The
current positive and stable global environment can discourage market participants from buying
the insurance that derivatives provide. Buying insurance typically entails some degree of opportunity cost, but ensures adequate risk management by limiting downside risks especially in times of sharp volatility or distress. At the same time, market participants would also benefit from understanding the risks of using certain types of derivatives. The practice of separating origination from distribution risk by using credit derivatives raises some concerns. Regulators, and market participants, may not always understand where risks are hidden, or may lack the information to accurately assess credit risk. Operational risk is another key concern with using derivatives. Regulation, both self-regulation and by government, can help reduce the risks associated with using derivatives. New regulatory developments, such as Basel II Pillar 2, will help address these issues from a regulatory and supervisory perspective, but stress testing techniques are not uniform among banks, which puts pressure on supervisors to compare results across different banks.

D. Developing derivative markets in emerging market countries

Emerging market countries can benefit from derivative products. Investors need to be able to translate their views on financial conditions into transactions in order to protect themselves from anticipated changes that might harm their positions. Derivatives can provide this protection and help prevent minor changes, such as in monetary policy, from turning into systemic shocks. In addition, derivatives can reduce the cost of issuing bonds and help lengthen the yield curve. They can also be a way to address the lack of investible assets and provide more investment opportunities. In many emerging market countries, the growth of institutional investors, including pension funds and insurance companies, has outstripped issuance of investible domestic assets creating a supply/demand imbalance. Derivatives can help fill this gap. Emerging market countries face several challenges in developing derivative markets. These include relatively underdeveloped markets for the underlying assets; lack of adequate legal, regulatory, and market infrastructure; and restrictions on the use of derivatives by local and foreign entities. Low liquidity in bond and equity markets is a particular problem. Limited
trading may reflect information asymmetries on account of insufficient disclosure standards, lack of transparency, poor corporate governance, and limited participation due to entry restrictions. Countries need to focus on addressing these challenges and creating the conditions to help build both cash and derivative markets. Statutory barriers and uncertainty surrounding legal and accounting requirements specific to the structure, trading, and enforcement of derivatives have inhibited development in many emerging markets.

Derivative contracts in mature markets are usually structured under broadly accepted norms of market practice and are governed by a developed legal regime. In many emerging market countries, legal codes and accounting rules are silent on all or certain types of derivatives, fail to identify the regulatory jurisdiction over derivatives, or make derivative contracts unenforceable. Regulators in emerging market countries should develop appropriate policies on the operational and credit risks of trading derivatives. Regulators often fear that derivatives will increase, rather than reduce, risk and, as a result, they adopt a conservative stance. Several risks can be reduced and controlled; for example, counterparty risk can be reduced with exchange-traded derivatives through central counterparties with strong risk management systems, including margining and membership rules. In addition, price transparency can be increased through trading platforms, while disclosure provides additional information of importance to users. Many of these mechanisms are now being used in OTC derivative markets, most notably requiring collateral and allowing only highly rated entities to engage in OTC transactions, using OTC trading platforms to display price information, and copying disclosure practices used for futures markets. Regulations on the suitability of use can help ensure that derivatives are used appropriately. Liquidity in cash and derivative markets can be mutually reinforcing, but the lack of liquidity in underlying cash markets is a particular concern in emerging market countries. The availability of reliable pricing benchmarks across the term structure helps avoid concentration of trading at certain maturities (usually short-term). In some emerging markets, only futures contracts on a limited range of maturities are liquid, while contracts on other (usually longer) tenors have been restricted by limited short-
term benchmarks and sluggish secondary market trading. Derivative markets have also developed out of foreign exchange-driven interest in the absence of a developed bond market. In other emerging market countries, liquid and long-maturity swaps trading pre-dated a liquid bond market.

There are also emerging markets where low levels of Treasury bill liquidity have impeded development of interest rate derivative markets, making foreign exchange swaps the choice for investors to take liquid interest rate positions. Countries should take action to increase market liquidity (such as through making issues fungible and creating market benchmarks), by allowing their bonds to be traded OTC, as that typically results in higher liquidity than exchange-trading of bonds. It is unclear whether exchange-traded or OTC derivatives are preferable for emerging market countries. Exchange-traded derivatives reduce counterparty risk and make price and information transparency more accessible to a wider range of market participants, but they require cash market liquidity to develop. On the other hand, OTC derivatives are not so dependent on cash market liquidity, but entail more counterparty risk and are less accessible. As noted, counterparty risk can be reduced through the use of collateral, which is increasingly being done. Transparency can be helped by using electronic trading platforms that support OTC trades and by strengthening documentation.

While a diverse investor base is essential for the sound development of derivative markets and for efficient price discovery in underlying cash markets in many emerging market countries there are serious constraints. Pension funds and insurance companies are subject to stringent investment guidelines, often requiring substantial holdings of government debt. At the same time, derivative market regulations and reporting requirements limit the participation of institutional investors and their ability to hedge cash market exposures to interest rate and exchange rate volatility. Policymakers need to allow two-sided markets to develop. Two-sided derivative markets can be constrained because investors seek to buy and hold cash market assets when the supply of assets is limited relative to the demand for them. As a consequence,
all investors hold long assets and want to hedge their holdings. Policymakers need to allow participants in the market to sell derivatives, educate them so as not to see that activity as undesirable speculation, and encourage foreign participation (since foreign participants often perform this function). Regulators should allow short sales and fails, and allow market participants to take positions without having the underlying security. Otherwise, a two-sided market cannot develop. In some emerging markets, capital account restrictions have shifted derivatives trading by foreign investors to offshore markets. This has several implications. It reduces the ability to monitor the transactions, and limits many smaller investors, such as small- and medium-sized companies, from hedging their risks, due to higher transaction costs and limited market access. In some countries, offshore non-deliverable forwards have provided an effective way to hedge foreign exchange exposures. As emerging market countries liberalize capital controls, activity can move onshore and to deliverable forward markets. It should be noted that the lack of a clear legal framework and restrictions on the use of derivatives by corporate and institutional investors have slowed the development of onshore derivative markets.
Primary dealer (PD) systems in OECD countries

Primary dealer (PD) systems in the various OECD countries are quite different in terms of obligations/requirements, either in technical detail or even in broad terms. For example, market making (MM) rules in secondary markets are often part of the set of PD requirements, but not in all jurisdictions. In addition, some OECD countries either do not possess PD systems or dealers are formally (or de jure) not recognised as such by the issuer. See Table 1 for an overview of requirements imposed on (candidate) primary dealers in the OECD area.

Tough issuance conditions are the reasons why existing PD arrangements have not always been working as efficiently as before the crisis. This raises the question of whether requirements as summarised in Table 1 need to be revised, temporarily or on a more permanent basis.

Another primary market issue is whether the broader business model of co-operation with PDs needs to be changed. The business models in the US and Japan are based on the philosophy that DMOs have a hands-off relationship with PDs. For example, the US Treasury, through its issuing agent (the Fed of New York), has a hands-off approach with all its primary dealers; it sees its task ending with the conditions of primary issuance and is therefore only concerned with on-the-run securities. In both the US and Japan, market-making responsibilities in secondary markets are not imposed on primary dealers. However, this hands-off relationship

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Note that also MM rules may vary in terms of technical detail.
does not preclude a meaningful dialogue with the market. For example, in Japan, primary dealers are being consulted about important debt management policies such as the JGB issuance plan and buy-back programmes. In the case of Germany, banks are not formally designated as primary dealers. Instead, a selected international group of banks, called the Bund Issuance Auction Group, bid in auctions.

In contrast to a more general hands-off approach, several DMOs played a more activist role by giving PDs direct incentives or privileges in return for market-making (MM) obligations. This approach may reflect the challenges faced in fragmented and/or smaller markets. In some jurisdictions, however, the effectiveness of MM-obligations is under discussion. This debate is in part fuelled by the ongoing financial crisis and may lead (or has led) to changes in the current market infrastructure, including via the introduction or presence of multiple electronic trading platforms.
### Table 1. Primary market requirements for becoming a Primary Dealer

<table>
<thead>
<tr>
<th>Country</th>
<th>Minimum participation in every auction</th>
<th>Minimum average annual/quarterly participation in auctions</th>
<th>To bid in each auction</th>
<th>To ensure placement of debt</th>
<th>To avoid distortion to auction prices</th>
<th>To allocate sufficient resources to support issuer</th>
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</table>
Annex 5


By

Hans Blommestein

OECD
I. Introduction and Executive Summary

This study provides an overview of the major strategic trends and policies shaping the development of government securities markets in the OECD area. Attention is focused on best practices in primary and secondary markets covering strategic issues such as the structure of debt portfolios and the role of benchmarks, the growing importance of electronic trading systems, importance of the more wide-spread use of more sophisticated risk management systems, and the role of derivatives in public debt management.

II. Strategic decision to strengthen the role of market principles in government debt management in the OECD Area

Market-based financing of OECD budget deficits has been a major factor behind the growth of domestic sovereign securities markets in the 1980s and 1990s. A large number of OECD governments adopted measures to strengthen the role of market principles in government debt management by improving primary and secondary market arrangements. Along with an improved infrastructure -- including advanced clearing and settlement systems and modernisation of the regulatory framework -- as well as deregulation, the flow of government bonds helped to establish more liquid benchmark issues. Both corporate- and sovereign issuers (at national-, regional- and local levels) became important players in international bond markets.

Liquid government bond markets also facilitated issuance by private sector borrowers since the yield curve associated with government securities markets is important for the correct pricing of corporate bonds. As a result, in an increasing number of OECD markets the larger corporate entities stepped-up issuance of bonds and shorter-dated paper such as commercial paper.

Almost all OECD countries have developed their markets for T-bills and T-bonds pressed by the need to finance sizeable fiscal deficits. Easy access to government
securities markets is essential for the minimisation of borrowing costs over the medium-term. In many countries, the government is the dominant player. As a result, most OECD fixed-income securities markets are dominated by public debt markets.

The trend in OECD countries to improve the depth and liquidity of government debt instruments that began in the 1980s continues till to-day. The share of marketable debt in total central government debt increased from 84% in 1998 to 90% at the end of 2008. [Chart 1]. These trends are to an important degree the result of measures taken to strengthen the role of market principles in government debt management by improving primary and secondary market arrangements, including by more transparency and predictability in primary markets.

These structural changes contributed, in turn, to a decline in long-term borrowing rates [Chart 2]. But clearly, there are other factors shaping these longer-term rates; for example, the developments since 2007-2008 reflect also the global financial crisis and the associated policy response. The surge in budget deficits led to a rapid and massive increase in government issuance. This in turn can be expected to push prices of government debt down and yields up. Also higher debt levels can be expected to exert an upward pressure on longer-term rates45. Moreover, country-or region specific structural factors can play a role; for example, the introduction of the Euro in 1999 and market turmoil in Greece in the first few months of 2010 [Chart 2].

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Chart 1 - Marketable and non-marketable central government debt in the OECD area (Amounts outstanding at the end of 1998 and 2008)

Total OECD Central Government Debt in 1998
(in USD trillions and percentage)

- Non-Marketable Debt, USD 2.1 tr, 16%
- Money Market Instruments, USD 1.6 tr, 12%
- Bonds, USD 9.6 tr, 72%
Total OECD Central Government Debt in 2008*
(in USD trillions and percentage)

- Money Market Instruments, USD 3.8 tr, 16%
- Bonds, USD 17.3 tr, 74%
- Non-Marketable Debt, USD 2.4 tr, 10%

*estimate for Japan

Source: OECD Statistical Yearbook on Central Government Debt, 2009

Chart 2 - Long Term Interest Rates on Sovereign Borrowing in OECD area: 1998-2010

*Note: GDP-weighted average
III. Strategic objectives of sovereign debt management

Surveys among OECD debt managers show that the strategic policy objectives of debt managers can be summarised as follows:

1. Ensuring stable access to markets to meet the financing needs of governments;
2. Minimising borrowing costs;
3. Keeping market risk at an acceptable level; and
4. Supporting the development of domestic government securities markets.

Objectives 1-3 are primary objectives, whereby borrowing costs are minimised subject to the government’s tolerance for risk (this may also include credit risk when derivatives are involved). Objective 4 is a secondary (or derived) objective as it is a means to achieving the primary objectives. Surveys by the OECD WPDM\(^46\) on policy objectives show that:

- Debt managers pay increasingly attention to the various risks associated with government debt management\(^47\). The increased use of more sophisticated risk management systems and financial derivatives support this policy trend.
- Liquidity plays an increasingly important role in government debt management. Efforts to increase market liquidity are part of secondary objective 4.

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\(^{46}\) The OECD Working Party on Public Debt Management (WPDM).

IV. Strategic debt management framework based on best practices and benchmarks

As noted, over time, OECD debt managers have developed best practices for raising, managing and retiring debt at the lowest possible price and acceptable risk. While some debt managers may be tempted to follow opportunistic issuance, the experience in OECD markets shows that lower borrowing costs over the medium term can best be achieved through a consistent supply of liquid securities absorbed by a broad investor base of domestic and foreign investors. In most countries, liquid secondary markets are based on the following cornerstones: (i) concentrating issuance in critical tenors; (ii) well-functioning repo markets and ability to short issues; (iii) plain vanilla derivatives markets; (iv) facilitating investor demand and price discovery; and (v) supporting a network of primary dealers. These cornerstones reflect the key policy conclusions from past meetings on public debt management at the OECD. They can be summarized in the form of the following best practices regarding primary and secondary public debt markets:

Primary markets
Efficient and liquid primary markets for government securities are characterised by the following best practices:

(i) An issuing strategy primarily based on regular auctions;

(ii) The issuance of benchmarks;

(iii) Abolition of privileged access by governments;

(iv) A transparent and predictable debt management strategy (and framework);

(v) A primary dealer framework with the capacity to develop markets.

48 Since its creation in 1979, the OECD Working Party on Public Debt Management (WPDM) has been a unique policy forum for senior government debt managers and experts from OECD Member countries to exchange their views and experiences in the field of government debt management and government securities markets.
Secondary markets
Efficient secondary government securities markets are characterised by the following features:

(i) Liquid markets with a large stock of outstanding benchmark issues and repo market financing;

(ii) A safe and sound clearing and settlement systems;

(iii) A transparent and equitable regulatory and supervisory framework;

(iv) The use of a market-making structure based on primary dealers;49

(v) Liquid futures markets;

(vi) Good access by foreign investors to domestic debt markets resulting in an important investor base with foreign investors.

Based on these best practices there is a convergence of views how to enhance liquidity in secondary bond markets. The key building-blocks of a liquid market are: (i) sound institutions and macro policies (including the banking system and exchanges, as well as macro-financial, debt management- and fiscal policies); (ii) an efficient and robust infrastructure (payment system, trading, settlement, and clearing); (iii) a well-functioning repo market; (iv) adequate information flows; and (v) a diversified investor base.

Naturally, best practices may have to be up-dated or re-fined over time. For example, electronic systems may reduce the importance of primary dealers (for example, by allowing institutional investors direct access to auctions) or countries may wish to relax mandatory MM-obligations. Nonetheless, the above best practices can be expected to continue to play an important guiding role in achieving the principal objective of meeting the financing needs of the government at lowest medium-term cost and at an acceptable level of risk. These best practices are:

49 Not all issuers have a MM-structure; for example, Germany and the USA. Germany also operates without a formal primary dealer system.
also play an important role in meeting the derived or secondary objective of promoting efficient government securities markets. (This objective is ‘derived’ as it is a means to achieving the end of lowest borrowing costs.)

**Strategic choices as to the financial structure of the public debt portfolio and benchmarks**

Debt managers need to articulate a strategic view on the optimal structure of the public debt portfolio. Ideally, they should be able to assess how a portfolio should be structured on the basis of cost-risk criteria so as to hedge the government’s fiscal position from various shocks. The optimal debt *composition* is derived by looking at the relative impact of the risk and cost of the various debt instruments on the probability of missing a well-defined stabilisation target (e.g., the stabilisation of the debt ratio at some target value, thereby reducing the probability of a fiscal crisis). This framework would allow the pricing of risk against the expected cost of debt service. This price information makes it possible to calculate the optimal combination along the trade-off between cost and risk minimisation.

This means that the preferred choice of debt instruments that a government should issue depends in large part on the structure of the economy, the nature of economic shocks, and the preference of investors. For example, fixed-rate nominal debt (expressed in local currency) would help hedge the budgetary impact of supply shocks, while inflation-indexed debt are better hedges than nominals in case of demand shocks.

Against this backdrop, the government needs to specify a *strategic benchmark*, representing the desired structure or composition of a liability (and asset) portfolio in terms of financial characteristics such as currency and interest mix, maturity structure, liquidity, and indexation. It functions as a management tool that requires the government to specify its risk tolerance and other portfolio preferences concerning the trade-off between expected cost and risk.
For a debt manager a strategic benchmark represents the structure of the debt portfolio the government prefers to have, given also risks at the (financial) asset side. Strategic portfolio benchmarks have two key roles:

1. They provide guidance for the management of costs and risk.
2. They define a framework for assessing portfolio performance in relation to cost, return, and risk.

**Market liquidity**

As a result of implementing these strategic choices concerning the optimal debt portfolio and related best practices, liquidity in OECD public debt markets increased significantly and a yield curve of benchmark bonds was established. Market liquidity tends therefore to be concentrated in the large benchmark issues by borrowers that use regular and predictable issue calendars, in secondary markets where trading costs are lowest, and in instruments that can satisfy the preferences of a wide range of different investors (including foreign ones). In particular the internationalisation of markets and investor bases played a major role in making OECD debt markets more efficient, liquid and transparent. As an asset class, government securities are assessed as virtually free from credit risk. These characteristics distinguish most OECD government debt markets from private debt markets. As a result, government bonds have been increasingly used for pricing corporate debt. Market participants started to use them also for hedging operations and positioning in both duration and volatility, as vehicles for managing liquidity, as instruments for investment, as collateral for secured borrowing, as a basis for futures market contracts, and as a safe-haven during periods of market turmoil\(^5\).

\(^5\) In recent history, during periods of severe international (or regional) financial market turmoil, investors have
Trends in the issuance of government debt instruments

Longer-term instruments account for the larger and, until recently, increasing part of the stock of government debt as debt managers sought to minimise re-financing risk as well as interest risk. In 1999, for the OECD area as a whole, the share of government bonds in total central government debt stood at around 72 percent, while in 2007 it had increased to more than 77 percent [Chart 3]. However, in 2008 the share of longer-term debt fell to around 74 percent. This reflects the tougher issuance conditions in OECD markets. Auctions are held more frequent than before, with extra supply of short-term debt, notably bills. Debt managers noted that in times of extreme risk-aversion and high uncertainty, short-term issuance is the major vehicle for governments to raise extra funds at short notice while providing liquid and secure instruments to the market. The share of short-term debt in the total borrowing had jumped from 65 % in 2007 to nearly 70 % in 2008. For the OECD area as a whole, it is estimated that around 63 % of gross borrowing needs for 2009 and a little bit more than 62 % for 2010 will be covered by issuing short-term debt.\(^5\)

The share of marketable debt varies significantly across OECD countries. In 2008, the share of total (long- and short-term) marketable debt is higher than 90 percent in around two-thirds of the OECD countries [Chart 4]. Central government debt as a percentage of GDP is higher than 60 percent in almost one-third of the OECD countries [Chart 5].
Note: Due to the high level of liquid assets at the end of 2008, the outstanding non-marketable debt of Ireland has a negative sign

Source: OECD Statistical Yearbook on Central Government Debt, 2009

Chart 5 - 2008 Central Government Debt as a percentage of GDP in OECD countries (as a percentage of GDP)
Most of the outstanding instruments are fixed (nominal). However, an increasing number of governments have been issuing index-linked bonds, including Australia, Canada, France, Iceland, Mexico, New Zealand, Sweden, the United Kingdom, and the United States. Indexed debt is issued to assist with the overall debt management objective of raising, managing and retiring debt at the lowest possible price and acceptable risk. Specific objectives related to indexed debt include an opportunity to diversify and the provision of a real rate that is useful for policy makers and market participants. However, indexed markets tend to be less liquid, have fewer participants and have a narrower investor base than nominal markets. However, there has been an improvement in liquidity in some markets, while the investor base broadened.

V. The growing importance of electronic systems in primary and secondary markets

Increasingly, debt management procedures and techniques are supported by sophisticated electronic systems, both in primary and the secondary markets.

Source: OECD Statistical Yearbook on Central Government Debt, 2009
Electronic primary markets

The use of electronic systems in the primary market consists of their use in (1) auction systems (in some cases also handling buy-backs and switching operations); (2) syndication; and (3) direct issuance to retail investors. An increasing number of issuers use electronic auction systems. Automation of auction procedures increases efficiency vis-à-vis the use of manual procedures, as it enhances speed, reliability and cost-effectiveness. Moreover, together with the publication of auction calendars, the introduction of electronic auction systems has increased transparency. All these improvements in the structure of primary markets are important for sovereign issuers because they are facing a stronger competitive environment. Three types of primary market systems are usually distinguished: competitive bidding systems (issuer to dealers), online selling systems (dealer to clients), and direct primary issuance systems (issuer to clients).

Auctions are the most commonly used issue method. However, after the introduction of the Euro a number of EU countries (in particular the smaller ones but more recently also larger issuers) have introduced syndication as a supplement to auctions. This issue method is effective in rapidly building-up an outstanding volume of considerable size. Electronic book-building typically supports syndication. However, experiences thus far indicate that the contacts between the sales team and the investors remain very important, although there is the technical possibility to enter bids directly into the system.

Electronic secondary markets

Fixed-income e-trading has been growing dramatically, in the particular for the most liquid products such as government bonds. The advance of electronic trading

systems (ETS) is reshaping the fixed income markets with a significant impact of electronic systems on secondary markets. They are improving national markets by extending access to, and awareness of, the markets. The penetration of fixed-income trading is higher in North-America and Europe than in Asia.

Various types of ETS can be distinguished, including dealer-based ones, matching systems, competitive bidding and auction systems. When choosing a system, issues to consider include participation, market-making obligations, vendors, international alliances and consultation of primary dealers. Two types of secondary trading systems are usually distinguished: single and multiple (co-mingled) dealer systems (to clients), and cross-matching systems (between dealers and client to client). ETS are used on both inter-dealer markets (D2D) [or business-to-business (B2B)] and dealer-to-customer markets (D2C). Also single-dealer platforms (proprietary systems) play a significant role.

This is an extremely fast-moving area. The explosive growth of e-platforms was followed by a (still ongoing) process of consolidation and concentration. Factors that shape this process include technological progress, the financial capacity of the platform providers, the profitability of platforms, as well as economies of scale and scope considerations. E-platforms support and facilitate globalisation of markets, while allowing the creation of cheaper communications networks for both B2B (e.g. MTS and E-Speed) and B2C systems (e.g. Bloomberg and Reuters). ETS support the development of more sophisticated pricing engines and enhanced security, while also making the transfer of information cheaper and timelier. A second driving force is transparency. Previously, fixed-income markets were not highly transparent as dealers preferred having privileged access to information. ETS improve access to information, reduce information asymmetries, and allow market-wide integration of real-time trading information. A third important driving force is cost-reduction. ETS cut resource costs of
Primer on Asian Bond Markets

all parties – sales and trading (lower transactions costs), and back-office (STP). They are most attractive in commoditised securities markets such as those for government bonds where access can be offered at minimal costs.

Some types of securities are traded on several electronic platforms. As a result, it is sometimes hard to assess the market penetration of ETS. However, the available evidence shows that the voice traded OTC-market has still an important market share.\footnote{Jens Andersen (2005) reported that for the EU market the average daily trading volume on B2B (or D2D) platforms is around EUR 55 billion (with a voice traded OTC volume of a little bit more than EUR 40 billion), while the trading volume on D2C platforms is more than EUR 20 billion (with a voice traded OTC volume of nearly EUR 30 billion). Jens Verner Andersen, Development of the European Electronic Bond Markets: Danish Perspective, Paper presented at the Seventh Annual OECD-World Bank Global Bond Market Forum, held on May 23-24, 2005 in Washington, DC.} This may in part be due to impediments to market access, but also preferences play a role (e.g. for large, complex transactions, institutional investors seem to prefer to voice trade directly with dealers).

ETS are mostly focused on dealers. Institutional investors have in many jurisdictions no direct access to electronic platforms in primary and secondary markets. However, in the US large end-users do have direct access, while in Europe a debate about broader access is ongoing in the context of the MTS system. Most OECD debt managers are of the opinion that the role of intermediaries (dealers) will remain important as ETS are not a complete substitute for committed dealers in secondary markets, while also participation by committed dealers in primary markets is likely to remain important.

VI. Increased emphasis on risk management

Lately, the trend to more autonomous debt management agencies is accompanied by an increased emphasis on risk assessment and risk management. The risk management function is now a central feature of debt offices in many OECD
countries. This risk control function is in many debt offices organised in the form of separate risk management unit and as part of the middle office.

OECD surveys show that the extent of risk management varies widely across countries, with some debt managers conducting very limited risk management and others engaged in extensive activities in this regard. The majority of OECD countries are actively engaged in risk management, with risk typically not managed on a consolidated basis across all government entities. Sources of risk exposure are tied to the domestic debt management activities of the central governments, which include management of the domestic treasury bill and bond programs, and associated asset cash management operations. Sources of risk exposure can also arise from management of the national foreign currency reserves in those countries where the reserves are not managed separately by the central bank. Derivative operations related to either the domestic or foreign reserve activities of the central government provide sources of risk exposure, as well.

In general, risk management tolerances and policies are approved (and often set) by the Ministry of Finance (or appropriate Ministry). The actual risk management operation is often run at a separate agency responsible for management of the sovereign debt or at the central bank if it manages the debt, and is typically segregated from other treasury operations.

Market risk, credit risk, liquidity risk and refunding risk are the risks most likely to be managed. Operational risk and legal risk are less likely to be formally managed. Historically, most OECD debt managers have played only a small role in managing the risks associated with contingent liabilities. More recently, government debt managers in a greater number of OECD countries are becoming involved in the monitoring of explicit contingent liabilities, designing contingent-based instruments and for making recommendations to the government on appropriate provisioning. Several different measures are typically used in combination to monitor market risk and credit risk. In general, OECD countries with active risk operations update market risk and credit risk positions on a daily basis. Risk management systems
VII. The use of derivatives by debt managers and market participants

Derivatives have become important instruments for many sovereigns to manage the risks related to debt management operations as well as for improving the profile of the debt. Market participants and debt managers are increasingly using derivative instruments to gauge market sentiments, while they also use them to construct yield curves. Their use by market participants adds to the liquidity in secondary government securities markets. In general, derivatives and risk management instruments can be used by both debt managers and market participants to protect the value of an investment or transform the characteristics of assets or liabilities into alternative, more desirable forms.

Reasons for use of derivatives by governments

Derivatives are often used by sovereigns to reduce expected borrowing costs. Derivative transactions are also employed to modify the level and type of risks incurred by governments. The following more specific reasons have recently stimulated the use of derivatives by debt managers.

First, derivative use got a push from the period in the recent past with budgetary surpluses and the related reduction of debt, as it made the objectives of optimal risk management and liquidity-building more distinct. Also the increasingly important role of the euro facilitated the use of derivatives by debt managers. Finally, the trend to more autonomous DMOs and use of benchmark portfolios are also encouraging a more active use of derivative contracts.

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Strips

However, not all OECD debt managers participate actively or directly in the derivative market activity. For example, the United States introduced in 1985 its Separate Trading of Registered Interest and Principal of Securities (STRIPS) programme. Strips are a zero-coupon Treasury derivative securities instrument. But the United States Treasury neither issues nor sells STRIPS directly to investors. Although United States Treasury derivative contracts are actively traded over the counter and on organised exchanges, it is the exchanges, bond dealers and investors that are directly involved in issuing, buying or selling them.

STRIPS can be used to improve the functioning of primary and secondary debt markets. Currently, many debt managers in the OECD are using them. By separating future coupon payments and principal payment at maturity from a treasury bond, investors can purchase separate series of coupon payments or principal separately. This feature of strips is creating more demand for government securities because by buying them some institutional investors (e.g. pension funds) can generate a stream of future cash flows that matches better their liabilities.

Overview of key derivative instruments

Futures and forward contracts provide the ability to hedge risks. Also options have become indispensable risk management tools. The generally strong correlation between yields on sovereigns and on private debt securities means that government securities can be used to hedge general interest rate risks. A special type of forward transaction is the when-issued market, where government securities are sold before and immediately following the auctions, but before settlement. As dealers can distribute primary issues before their participation in the auction, this contributes to deepen the primary market. Also the functioning of the secondary market can be improved by opening new avenues for pre-auction distribution and encouragement of price discovery leading into auctions.
Swaps are simple but important tools of risk management, which have long been used by debt managers. For example, in Denmark the central government has been using swaps to reduce the costs of borrowing, and to manage the currency composition and interest rate risk on the stock of debt. Canada is regularly using cross-currency swaps of domestic obligations as part of its management of international reserves.

VIII. Summary conclusions

Standardisation and convergence of debt policies and instruments

Standardisation of government debt policy, driven by the international integration of financial markets and the resulting increase in competitive conditions to achieve the cheapest funding, has led to a growing degree of convergence of OECD debt management policies. This means that an increasing number of OECD debt managers are implementing best practices in primary and secondary markets.

Also debt instruments have converged to an important degree, as a result of greater competition, the desire to secure stable funding sources and the objective of maintaining liquidity at key benchmarks.

Structure of the debt portfolio and strategic benchmarks

OECD debt managers have increased their capacity to assess how a portfolio should be structured on the basis of cost-risk criteria. This means that an increasing number of debt offices are now in the position to calculate the optimal combination along the trade-off between cost and risk minimisation.

This means that governments are better able to specify informative and well-articulated strategic benchmarks. Accordingly, the value of benchmarks as management tools (both as guidance for the management of costs and risk as well as for assessing portfolio performance) has increased.
Electronic primary markets

Electronic systems are increasingly used in primary markets. Automation of auction procedures increases their efficiency vis-à-vis the use of manual procedures, as it enhances speed, reliability and cost-effectiveness. Improved electronic auction systems are therefore important for streamlining the process of submitting bids so that auction results can be faster processed and disseminated. These more sophisticated systems are also key for making it easier for institutions to bid directly in auctions. Broad and deep primary markets would help lower the cost of borrowing for the government. Moreover, together with the publication of auction calendars, the introduction of electronic auction systems has also increased the transparency of primary market.

Electronic secondary markets

There is also a strong expansion in the use of electronic trading systems (ETS). This reduces the costs of trading government bonds, and at the same time it increases liquidity. The move to multi-dealer and cross-matching systems is having a centralising effect. This is leading to a bigger pool of liquidity. Competition for liquidity, in turn, is stimulating fewer trading systems and strengthening the centralisation trend.

Composition of investor base

There is a growing focus on the composition of the investor base. A broader domestic and international investor base of primarily major institutional investors will contribute to lower borrowing costs and facilitate the sale of future issues.

Risk management

The extent of risk management by financial asset and liability managers varies widely across OECD countries, with some conducting limited or no risk management and others engaged in extensive activities in this regard. The majority of countries are actively engaged in risk management, with risk typically not managed on a consolidated basis across all government entities. However, to what extent and how debt managers should manage overall
government’s balance sheet risk, is moving to the forefront of current risk management work or thinking in OECD countries. Also the development of a framework for monitoring contingent liabilities, designing contingent-based instruments, and calculating provisions for expected losses in the government budget, is getting a higher policy priority.

**Derivatives**

*Derivatives* have become important instruments for many sovereigns to manage the risks related to debt management operations as well as for improving the profile of the debt. Derivatives are often used by sovereigns to reduce expected borrowing costs. Derivative transactions are also employed to modify the level and type of risks incurred by governments.

**References**


