

Report of the BOJ High-Level Workshop for EMEAP members 2004

## **Central Banks and Bond Market Development in EMEAP Countries**

**Rie Nishihara<sup>1</sup>**

**Bank of Japan**

**June 18, 2005**

---

<sup>1</sup> Bank of Japan, International Department (email: [rie.nishihara@boj.or.jp](mailto:rie.nishihara@boj.or.jp)).

## **Central Banks and Bond Market Development in EMEAP Countries**

### **Introduction<sup>2</sup>**

The Bank of Japan hosted the EMEAP High-Level Workshop in December 2004 to take stock of individual countries' experiences in bond market development, with primary focus on the government bond markets. The workshop was also aimed at deepening understanding among EMEAP members with respect to the roles that the central bank can play in this area. Fourteen senior officials of all EMEAP central banks and two guest speakers from the FEDNY and ECB<sup>3</sup> participated in this workshop. The venue was the Bank of Japan's Osaka Branch.

The presentations and discussions at the workshop are summarized as follows:

- (1) Since the Asian currency crisis of the late 1990s, all EMEAP countries have identified the development of bond markets as an essential means to secure an additional route for investment and funding. It was intended to reduce the dominance of bank borrowing, thereby diversifying the channels for financial intermediation and risk taking.
- (2) During the past several years, EMEAP central banks have implemented initiatives for bond market development by modernizing settlement infrastructure, improving the benchmark function of government-bond yields, and establishing regulatory infrastructures. These initiatives, coupled with a substantial increase in government bond issuance to boost economies and to rebuild financial systems, marked considerable progress in developing bond markets in the region.
- (3) EMEAP countries aim to further enhance bond market liquidity in order to meet their final goals of establishing stable and efficient bond markets as well as achieving sustainable economic growth.

---

<sup>2</sup> I gratefully acknowledge the comments of all central bankers who participated in the workshop. The views and opinions expressed in this paper are my own, and do not necessarily reflect those of the Bank of Japan nor the participants in the workshop.

<sup>3</sup> Mr. Dino Kos (FEDNY) and Mr. Francesco Papadia (ECB).

## **Contents**

### **Introduction**

#### **1. Bond Markets in EMEAP Countries**

- (1) Market Size**
- (2) Benchmark Function**
- (3) Liquidity**

#### **2. Key Elements of Bond Market Development**

#### **3. EMEAP Central Banks' Roles in Bond Market Development**

#### **4. Initiatives for Bond Market Development in EMEAP Countries**

**APPENDIX 1: Central Bank Bill/Notes: Case of Korea**

**APPENDIX 2: Measures for Bond-Related Markets Development**

## 1. Bond Markets in EMEAP Countries<sup>4</sup>

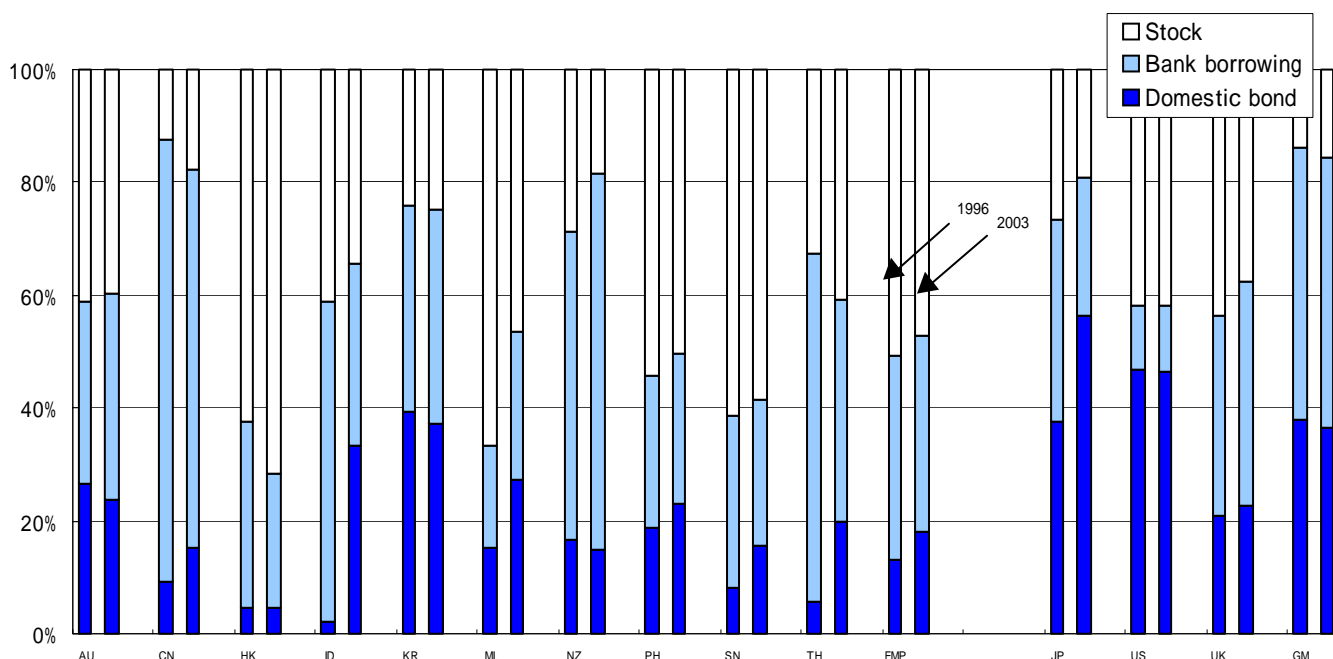
Bond markets in EMEAP countries, especially government bond markets, have achieved considerable developments after the Asian currency crisis. This section reviews some of the main developments of government bond markets in EMEAP countries.

### (1) Market Size

#### Financial Intermediation in EMEAP Countries

One of the salient features of EMEAP countries is that bank borrowing constitutes a sizable part of corporate finance while bond markets are relatively underdeveloped as illustrated in Chart 1. Since the currency crisis, however, the weight of bond markets has expanded while that of bank borrowing has declined.

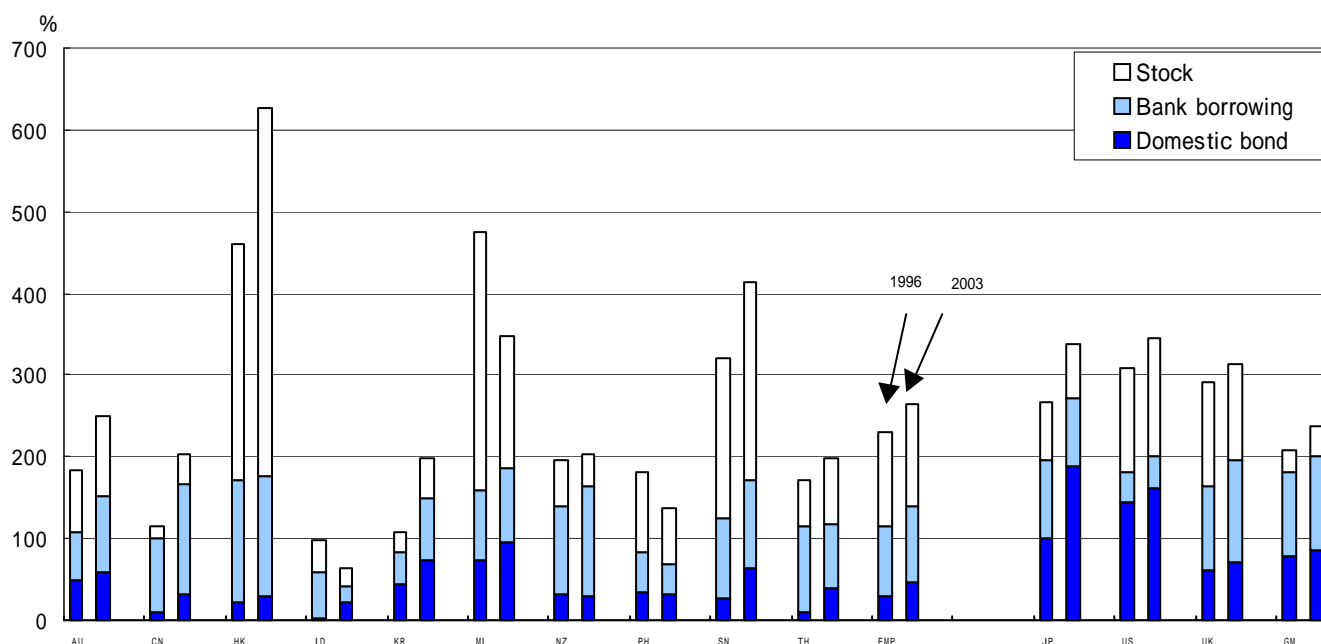
**Chart 1: Financial Intermediation in EMEAP Countries  
(Share of bonds, stocks, and bank borrowings)**



Notes: Domestic bonds are defined as those issued by residents in domestic currency and targeted at resident investors.  
For the Philippines, local issues in foreign currency are also included.  
Source: BIS statistics

<sup>4</sup> Unless otherwise noted, “EMEAP countries” in this note exclude Japan.

**Chart 2: Financial Intermediation in EMEAP Countries  
(Ratio to nominal GDP)**



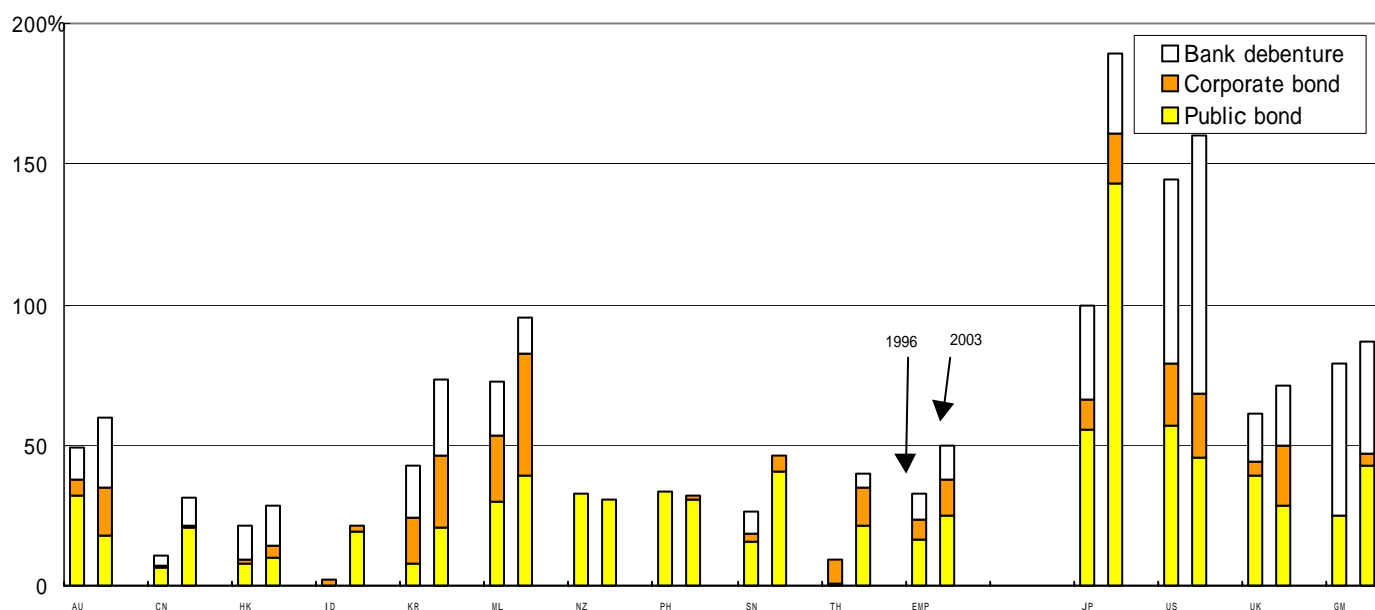
Source: BIS statistics

## **Bond Market**

The bond markets in EMEAP countries have grown, relative to economic size, in recent years, although they are still smaller than those in Japan, the United States, and Europe, with the exception of Korea and Malaysia (see Chart 3 for the ratios of outstanding balance of domestic bonds to nominal GDP; EMEAP averages rose from 30% to 48% between 1996 and 2003). This growth has been driven by government bonds and other public debt markets, reflecting the fact that in some EMEAP countries a large amount of national bonds were issued to stimulate economic growth and to dispose of non-performing loans generated during the currency crisis. By country, half the EMEAP countries e.g., China, Indonesia, Korea, Singapore, and Thailand, have seen bond market developments centering on the public debt market.<sup>5</sup>

<sup>5</sup> As for corporate bonds, there has been growth in all EMEAP corporate bond markets against a backdrop of commercial banks' balance-sheet adjustments after the currency crisis. By country, the outstanding balance of corporate bonds is considerable in Korea and Malaysia (see Chart 3: the ratio of corporate bonds to nominal GDP; EMEAP averages rose from 7% to 13% between 1996 and 2003), where developments of mortgage-backed securities and asset-backed securities markets are notable.

**Chart 3: Outstanding Balance of Domestic Bonds in EMEAP Countries  
(Ratio to nominal GDP)**



Notes: Corporate bonds are defined as those issued by residents, excluding governments and financial institutions.  
 For New Zealand, outstanding balances of bank debentures and private sector bonds in 1996 and 2003 are unavailable.  
 For the Philippines, outstanding balance of bank debentures in 1996 is unavailable.  
 For Singapore, outstanding balance of bank debentures in 2003 is unavailable.

Source: BIS statistics

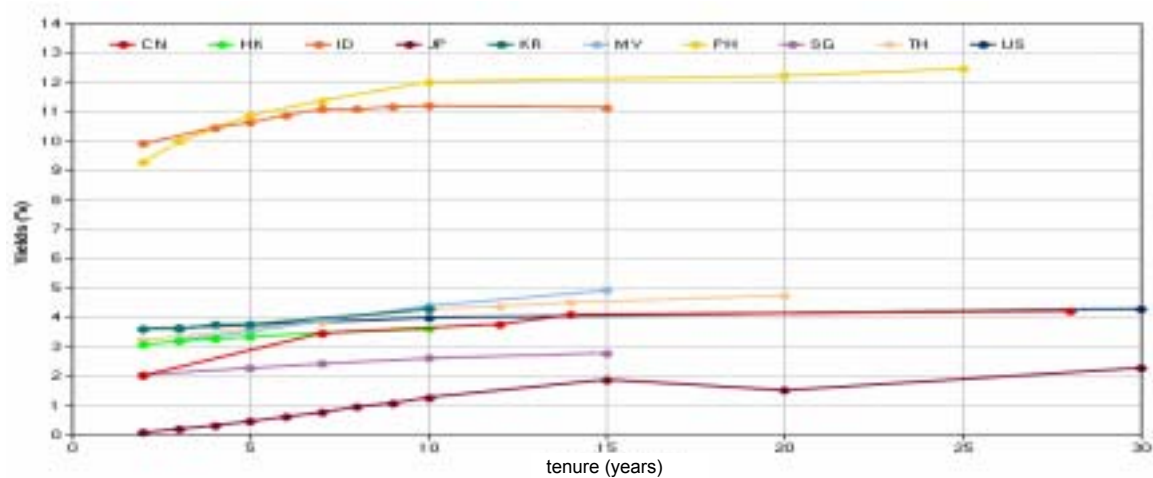
- In Korea, the bond market has grown partly because the public sector has increased bond issuance to inject capital into financial institutions.
- In Malaysia, the bond market has grown significantly due mainly to the government's initiatives to promote private sector bond market growth. Other initiatives such as developments in the settlement systems, bond information system, benchmark yield curve, and streamlined regulatory framework also contributed to the higher issuance of corporate bonds.
- On the other hand, in Hong Kong and Singapore, which have traditionally aimed for a balanced budget, bond markets remain small compared to other markets i.e., equity or derivative markets. In these economies, the government issues bonds in order to maintain the benchmark function of government bond markets.

## (2) Benchmark Function

All EMEAP countries have endeavored to extend government-bond maturities to ten years as shown in Chart 4, and more than half the EMEAP countries have gone further to extend the yield curve to more than ten years.<sup>6</sup> The majority of countries have also diversified maturities at issue to line up with the so-called key maturities, e.g., 3M, 6M, 1Y, 2Y, 5Y, 10Y.<sup>7</sup> However, there is still room to enhance the benchmark function: in some countries government bonds are issued unevenly between short and long term maturities as shown in Chart 5.

**Chart 4: Government-Bond Yield Curve in EMEAP Countries**

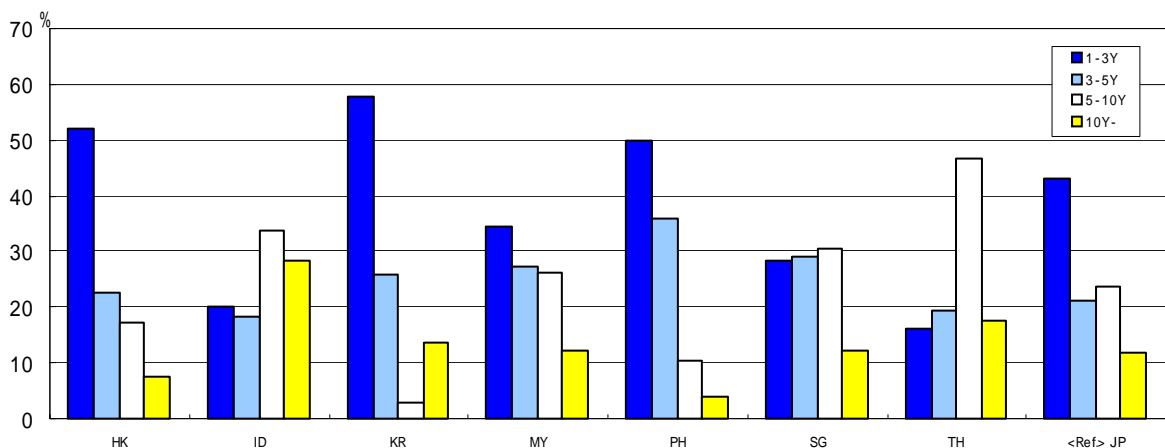
As of June 8 2005, %



Source: ADB online

**Chart 5: Maturity of Government Bonds**

As of September 2004, %



Source: ADB online

<sup>6</sup> The Philippines issue 20 and 25 year bonds, while China has extended the maturity to 28 years.

<sup>7</sup> In Indonesia, maturity at issue is limited to 10 years, but reprofiling government bonds in 2003 has evenly diversified the remaining maturities.

### (3) Liquidity

Daily turnover of government bonds in most EMEAP countries is less than that in Japan or the U.S., reflecting the dominance of buy-and-hold investors in this region. Even after the currency crisis, market liquidity barely increased in many countries, as shown in Table 1. This was because turnover growth, the numerator in the turnover ratio, was moderate compared to outstanding volume, the denominator.<sup>8</sup>

**Table 1: Daily Turnover Ratios<sup>(1)</sup> of Government Bonds**

	9 /1996	9 /2004	Change between 9/1996 - 9/2004
Australia	3.6	2.9	- 0.7
China	0.1 <sup>(2)</sup>	0.9	+ 0.8
Hong Kong <sup>(2)</sup>	18.5	17.2	- 1.3
Indonesia	0.9	n.a.	n.a.
Korea	0.1	4.0	+ 3.9
Malaysia	0.9	0.5	- 0.4
New Zealand	10.0	7.6	- 2.4
Philippines	0.3 <sup>(3)</sup>	1.6 <sup>(4)</sup>	+ 1.3
Singapore	2.1	5.2	+ 3.1
Thailand	0.1	0.6	+ 0.5
<b>EMEAP average</b>	<b>4.5<sup>(5)</sup></b>	<b>5.0</b>	<b>+ 0.5</b>
<Reference>			
Japan <sup>(6)</sup>	6.9	6.3	- 0.6
U.S.	--	13.4	--

Note: (1) trading volume (daily average) / outstanding volume \*100  
 (2) on the basis of Exchange Fund Paper, which constitutes 64% of public debt  
 (3) as of 2004  
 (4) as of 10-12/1997  
 (5) excludes the figure of Indonesia  
 (6) on the basis of daily trading volume in the OTC market / volume assimilated in the market

Sources: EMEAP central banks

A breakdown of government bond holders in Table 2 shows that financial institutions including institutional investors are the dominant holders in Asian countries. This is due to regulations in a number of EMEAP countries requiring financial institutions to hold government bonds, restrictions on institutional investors' investment diversification, and capital controls to curb investments by non-residents. As a result, non-resident holdings remain small, except in oceanic countries where non-residents are dominant investors. Data for individuals are unavailable in many countries.

<sup>8</sup> Market liquidity of corporate bonds is even lower in most EMEAP countries.



**Table 2: Breakdown of Government Bond Holders**

As of September 2004, %

	Financial institutions <sup>(1)</sup>	Government	Central bank	Individuals	Non-residents	Others
<b>Australia</b>	18.2	12.0	7.2	n.a.	49.7 <sup>(2)</sup>	12.9 <sup>(3)</sup>
<b>China</b>	82.5	n.a.	14.6	n.a.	0.4	2.5
<b>Hong Kong<sup>(4)</sup></b>	84.7 <sup>(5)</sup>	0.3	0.5	n.a.	n.a.	14.5
<b>Indonesia</b>	97.6	0.0	0.0	0.1	1.7	0.6
<b>Korea</b>	91.6	0.0	1.6	n.a.	0.8	6.6
<b>Malaysia</b>	13.4 <sup>(6)</sup>	n.a.	0.0	n.a.	1.0	85.5 <sup>(7)</sup>
<b>New Zealand<sup>(8)</sup></b>	29.6	12.9	15.9	2.3	39.0	0.3
<b>Philippines</b>	55.3	5.3 <sup>(9)</sup>	6.2	n.a.	n.a.	33.1 <sup>(10)</sup>
<b>Singapore</b>	66.6	0.5 <sup>(11)</sup>	9.8	0.2	3.2	19.6 <sup>(12)</sup>
<b>Thailand</b>	73.0	0.0	6.0	14.0	2.0	5.0
<b>&lt; Reference &gt;</b>						
<b>Japan</b>	37.1	40.2	14.5	3.0	4.0	1.2

Note: (1) includes institutional investors

(2) includes foreign financial institutions, institutional investors, governments, and individuals

(3) the sum of domestic institutional investors and individuals

(4) on the basis of Exchange Fund Papers, which constitutes 64% of public debt

(5) on the basis of banks

(6) refers to commercial banks, merchant banks, discount houses, and finance companies

(7) includes institutional investors

(8) on the basis of government bonds and treasury bills

(9) covers government-owned-and-controlled non-financial and non-bank financial corporations

(10) covers tax exempt institutions (TEIs) such as the Government Service Insurance System (GSIS) and Social Security System (GSIS).

(11) refers to statutory boards, Government departments and agencies, and government-owned companies

(12) refers to insurance companies, nominee and trusts, and corporations

Source: EMEAP central banks

## **2. Key Elements of Bond Market Development**

What is essential in enhancing the depth and size of bond markets? At the workshop, the following points are discussed as key elements for bond market development: (1) effective benchmark functioning, (2) ample liquidity and low transaction costs, (3) safe and efficient settlement systems, (4) regulatory systems that ensure low barriers to funding and investment, (5) good availability of reliable information, (6) transparency of accounting, and (7) sound market practices.

Here, point (2) - “ample liquidity and low transaction costs” - includes accurate pricing of credit risk, and development of repo and derivatives markets which facilitate risk management of market players. Point (5) - “good availability of reliable information” - indicates the existence of credible credit ratings and systematic dissemination of price information.

Some EMEAP central banks admitted that the limited issuance of government bonds can be a braking factor in establishing a benchmark function, as a benchmark needs some “critical mass.” Restrictions on investments including capital controls have also slowed progress in lowering “barriers to funding and investment.” Furthermore, weak infrastructure in repo and derivative markets has hampered the “enhancement of government bonds’ market liquidity.”

### 3. EMEAP Central Banks' Role in Bond Market Development

As Table 3 illustrates, almost all EMEAP central banks serve as administrative agents and providers of settlement infrastructure for government bonds, and as “important” market participants performing money market operations. In addition, some EMEAP central banks, including those that also function as regulatory authorities or government-bond issuers (Hong Kong, Singapore), set regulatory infrastructures or establish benchmark functions for government bonds.

Some EMEAP central banks (China, Indonesia, Korea, Malaysia, and Thailand) issue central-bank bills/notes as an instrument for money market operations while the governments issue government bonds. This fact arguably implies that these central banks are also involved in establishing a risk-free yield curve in each market<sup>9</sup> (see APPENNDIX 1 for the case of Korea)

**Table 3: Responsibility of EMEAP Central Banks for Government Bond Market Development**

		Money Market Operations	Providing Settlement System for Government Bonds	Administration of Government Bonds	Capital Market Supervision	Bank Supervision
<b>E M E A P</b>	Australia	✓		✓ <sup>(3)</sup>		
	China	✓ <sup>(1)</sup>		✓ <sup>(2)</sup>		
	Hong Kong	✓ <sup>(1)</sup>	✓	✓		✓
	Indonesia	✓	✓	✓ <sup>(2)</sup>		✓
	Korea	✓		✓ <sup>(2)</sup>		
	Malaysia	✓ <sup>(1)</sup>	✓	✓	✓ <sup>(4)</sup>	✓
	New Zealand	✓	✓	✓		✓
	Philippines		✓			✓
	Singapore	✓	✓	✓	✓	✓
	Thailand	✓	✓	✓ <sup>(2)</sup>		✓
<b>&lt;Reference&gt;</b>						
	Japan	✓	✓	✓		
	US	✓	✓	✓		✓

Note: (1) Foreign exchange rates are substantially pegged to the US dollar.

(2) Central banks also issue bills/notes.

(3) RBA runs the tenders for the government.

(4) While there is an entity that is in charge of capital market supervision, central bank is also involved in capital market supervision.

<sup>9</sup> There is debate on how central-bank note issuance affects the credibility of a central bank and the economy of the country and whether or not central-bank note issuance is preferable (IMF [1994]).

#### **4. Initiatives for Bond Market Development in EMEAP Countries**

This section highlights specific measures formulated by EMEAP countries in order to realize the key elements in bond market development mentioned in Section 2, focusing on government bonds.<sup>10</sup>

First of all, the majority of EMEAP central banks plays a dominant or significant role in developing settlement systems. In addition, some EMEAP central banks, involved in the supervision of financial institutions or capital markets, promote infrastructure such as a primary dealer system. Other measures taken by central banks and the governments of EMEAP countries include improvement of the public debt benchmark function and establishment of private entities as shown in Table 6.

##### **i) Development of Settlement System**

In developing settlement systems, virtually all EMEAP countries have introduced RTGS systems for government bonds. For the DVP of government bonds, all EMEAP countries have adopted models where both securities and funds are settled on a gross basis (Model 1 DVP). Half the EMEAP countries have achieved T+0 settlement period for government bond transactions (see Table 4: Settlement System for Government Bonds in EMEAP countries). Moreover, in some countries (Australia, Malaysia), both government and corporate bonds are settled through the same system, while in another (Hong Kong), the monetary authority has created a global multi-currency settlement system.

---

<sup>10</sup> See APPENDIX 2 for measures for bond-related markets development.

**Table 4: Settlement System for Government Bonds in EMEAP countries**

	Government bond settlement system	Type of Securities	Owner	Settlement of cash leg	Securities Settlement (delivery)	Delivery lag (t+n)	DVP mechanism (1)
Australia	Austraclear	GB, Others	Private	RTGS	RTGS	t+0, t+3	Model 1
China	CDC	GB	CDC	RTGS	RTGS	t+1	Model 1
Hong Kong	CMU	GB, Others	CB	RTGS	RTGS	t+0	Model 1
Indonesia	BI-SSSS	GB	CB	RTGS	Gross	t+2 (Ave.)	Model 1
Korea	KSD	GB ( OTC )	KSD	RTGS	RTGS	t+1	Model 1
Malaysia	RENTAS	GB, Others	CB	RTGS	RTGS	t+0	Model 1
New Zealand	AustraclearNZ	GB, Others	CB	RTGS	RTGS	t+0	Model 1
	FASTER	GB, Others	SE	RTGS	RTGS	t+1.2 (Ave.)	Model 1
Philippines	BI-SKRIP	GB	CB	RTGS/Net	RTGS/Net	t+0	Model 1, 2
Singapore	MEPS	GB	CB	RTGS	RTGS	t+0	Model 1
Thailand	BAHTNET	GB	CB	RTGS	RTGS	t+2	Model 1

&lt;Reference&gt;

Japan	BOJ-Net	GB	CB	RTGS	RTGS	t+3	Model 1
-------	---------	----	----	------	------	-----	---------

Note (1) Model1 : transfer instruction for both securities and funds are settled on a trade-by-trade basis.

Model2 : securities transfer instructions are settled on a gross basis while funds transfer instructions are settled on a net basis.

Model3 : transfer instructions for both securities and funds are settled on a net basis.

(2) In Korea, OTC transactions can be settled in KSD book entry system (Model 3 of DVP).

## ii) Establishment of Primary Dealer System

After Malaysia and the Philippines adopted a primary dealer system in the 1980s, China, Hong Kong, Korea, New Zealand, Singapore, and Thailand also introduced similar systems.

Table 5 looks at primary dealer systems in Korea, Malaysia, and Thailand. In these countries, member obligations include market making such as two-way price quotation, maintenance of minimum trading volume, regular reporting of positions to the authorities, and supervision by authorities. Member privileges extend to eligibility to participate in noncompetitive tenders and to consult with authorities in formulating a government security debt plan (Thailand). In addition, members also receive lower funding costs (Korea) and preferential status with respect to statutory reserve requirements (Malaysia).

In other countries, e.g. in Singapore, primary dealers enjoy exclusive dealing arrangements for money market and foreign exchange operations, exclusive access to MAS' repo facility, exclusive right to submit applications for auctions and reverse auctions, and higher allocation limits at auctions.

**Table 5: Primary Dealer Systems: the Cases of Korea, Malaysia, and Thailand**

	<b>Korea</b>	<b>Malaysia</b>	<b>Thailand</b>
<b>Name of the system</b>	Primary Dealer System	Principal Dealer System	Primary Dealer System
<b>Number of primary dealers</b>	22	10	9
<b>Date of Adoption</b>	1999	1989	2002
<b>Appointer (MOF or central bank)</b>	MOFE	Bank Negara Malaysia (BNM)	Bank of Thailand
<b>Obligations</b>			
<b>Market making in secondary markets</b>	✓ <KSE> <ul style="list-style-type: none"> <li>• To trade the benchmark in the KSE.</li> <li>• Two-way price quotations</li> <li>• To maintain minimum trading volume</li> </ul> <OTC> <ul style="list-style-type: none"> <li>• To maintain minimum trading volume</li> </ul>	✓ <ul style="list-style-type: none"> <li>• To maintain minimum market share</li> <li>• Two-way price quotations</li> <li>• To participate in money market auctions and repo/reverse repo auctions by BNM.</li> </ul>	✓ <ul style="list-style-type: none"> <li>• Two-way firm price quotation for 4 particular benchmark gov't bond issues</li> <li>• To maintain minimum trading volume in gov't bonds and t-bills</li> </ul>
<b>Tender offer</b>	✓ To underwrite a minimum of 5%	✓ To bid at least 10% in the primary issue of BNM-specified securities, money market tender and repo auctions.	✓ To maintain the minimum amount allotted in the primary market auction for gov't bonds and t-bills.
<b>Report of trading conditions</b>	✓		✓
<b>Supervision/monitoring by authorities</b>	✓	✓ To periodically reappoint based on performance	✓ To periodically reappoint depending on function
<b>Privileges</b>			
<b>Eligibility to take part in noncompetitive tenders</b>	✓ Exclusive participation in noncompetitive tenders		✓ Eligible to attend summit NCB
<b>Meeting with monetary authorities</b>	✓	✓	✓ Opportunity to consult with the MOF in formulating the government security issuance plan.
<b>Others</b>	✓ Lower finance costs to underwrite or trade in the primary and secondary market.	✓ Can deduct holdings of specified securities for computing Statutory Reserve Requirement. <ul style="list-style-type: none"> <li>✓ Can participate in Securities Borrowing and Lending Program as a borrower/lender for BNM-specified securities.</li> <li>✓ Can on-sell/on-repo selected securities received via reverse repo to hedge committed treasury activities.</li> <li>✓ Can amend customer's original bids submitted through the tendering system subject to certain conditions.</li> <li>✓ Eligible to borrow securities from BNM's Securities Lending Facility</li> </ul>	✓ Can borrow 4 particular issues of benchmark gov't bonds (of which PDs are required to quote 2-way firm prices) through the BOT facility (SPAf <sup>11</sup> )

<sup>11</sup> Securities Position Adjustment facility.

### **iii) Relaxation of Regulatory and Taxation Measures**

Furthermore, some EMEAP countries such as Indonesia, Korea, and Malaysia eased restrictions on institutional investor investments or banks' mandatory holdings of government bonds, while others have introduced tax incentives for government bond trading (Hong Kong, Philippines, Singapore) or for non-resident investors (Malaysia, Singapore, Thailand).

### **iv) Improving Benchmark Function**

Governments and public-debt-issuing central banks in EMEAP countries emphasize the role of the benchmark function given a limited volume of public-debt issuance. Some central banks and governments endeavor to maintain market size despite surplus fiscal positions (Australia, Hong Kong, Singapore, Thailand). The governments have also issued bonds of longer maturity (Korea, Singapore), consolidated maturities (Australia), consolidated several types of government bonds (Korea), increased the volume and frequency of benchmark issues (Malaysia, Singapore, Thailand), introduced the re-opening (Malaysia, Singapore), and introduced buy back off-the-run government bonds (Malaysia).

### **v) Institutional Building**

A number of authorities of EMEAP countries have established institutions such as the Bond Market Committee and self-regulatory organizations to strengthen partnership among authorities as well as foster private sector initiatives and improve market practices.

**Table 6: Government Bond Market Development Measures in EMEAP Countries**

### **(1) Development of Settlement Systems**

- Regarding DVP for government bonds, all EMEAP central banks have adopted gross-basis settlement methods (Model 1) for settlement of bonds and funds per individual trade.
- Australia and Malaysia have integrated their government bond and corporate bond settlement systems. Thailand is planning to integrate its government bond and corporate bond settlement systems as part of its “Five Year Plan” launched in 2002.<sup>12</sup>
- Hong Kong has created a multi-currency settlement system by linking CMU (Central Monetary Unit) to the government and corporate bond settlement systems<sup>13</sup> of other countries.
- Singapore will be enhancing its MEPS system for greater integration with external systems.

### **(2) Establishment of Primary Dealer System**

- The Philippines established a primary dealer system in 1986 along with the adoption of an auction system of securities trading. Malaysia introduced a primary dealer system in 1989 and annually reappoints dealers based on their performance. Korea introduced a similar system in 1999, and Thailand also introduced a system for outright trading in 1999 and mandated two-way quotations in 2004. Indonesia is studying the introduction of a primary dealer system.
- Singapore has increased the number of primary dealers. Korea is considering reducing the number of primary dealers as there are too many primary dealers in relation to its market scale.

### **(3) Relaxation of Regulatory and Taxation Measures**

#### **■ Lifting or Relaxing Restrictions on Investment**

- Indonesia and Malaysia eased restrictions on institutional investor investments or rules on banks’ mandatory holdings of government bonds.

#### **■ Tax Incentives for Trading**

- Singapore introduced withholding tax exemption on the following: interest income payable to non-residents, income derived by Primary Dealers from SGS trading, government-bond swaps, and income by arranging, underwriting and distributing debt securities. A concessionary tax rate now also applies to interest income payable to residents and to income from arranging, underwriting and participating in syndicated facilities.
- Hong Kong and the Philippines also reduced taxes on government bond trading, and Malaysia and Thailand introduced tax benefits for non-residents.

#### **■ Regulatory Incentives for Trading**

- Malaysia eased regulations to deduct holdings of Ringgit Marketable securities in the trading book from eligible securities in the computation of Statutory Reserve Requirement (2004).

### **(4) Improvement of Benchmark Function**

#### **■ Measures for Maintaining Market Scale**

- Thailand enacted the New Debt Management Law enabling issuance of government bonds for refinancing debt in addition to financing fiscal deficits (2004).<sup>14</sup> Australia issues government bonds even under fiscal surpluses to maintain circulation volume of issues that matched strong futures demand.

<sup>12</sup> Following integration of the government and corporate bond settlement systems, Thailand is studying the possibility of outsourcing settlement of government bonds on the condition that the financial system stays stable.

<sup>13</sup> Austraclear ( Australia, New Zealand ) , KSD ( Korea ) , CDC ( China ) , EuroClear, etc.

<sup>14</sup> Even the new law prohibits regular issuance of government bonds during periods of fiscal surplus.



— The Hong Kong government issued global bonds for the first time in 2004 (HK\$20 billion, of which 50% was denominated in US\$).

— Singapore increased its authorized borrowing limit, i.e., the outstanding amount of government bonds (2004).

#### ■ Issuing Bonds of Longer Maturity

— Korea suspended the issue of one-year government bonds and started to issue ten-year bonds (2000). Singapore started issuing ten-year (1998) and 15-year (2001) bonds, while the Philippines started issuing 20 and 25 year bonds.

#### ■ Improving Benchmark Function

— Australia has consolidated redemption dates to concentrate volumes of government bonds issued in key redemption years. Korea has integrated its foreign exchange stabilization bonds and grain bonds into its government bonds (KTB) (2000, 2003).

— Malaysia, Singapore, and Thailand have increased the volume and frequency of benchmark issues. To increase the liquidity of benchmark issues, Singapore has introduced, and Malaysia is introducing the re-opening, while Korea has adopted a system<sup>15</sup> to increase issuance volume of bonds with the same maturity and coupon rates (2000).

— Malaysia is retiring off-the-run government bond issues through purchase. Singapore conducted a buyback (2000).

#### ■ Changes in Bidding Systems

— Korea changed its bidding system from a conventional to a Dutch bidding system to address the problem of the “winner’s curse” (2000). Singapore introduced non-competitive bidding for T-bills in addition to SGS bonds (2002). Singapore also changed from a multiple-price auction to uniform-price auction format for SGS bonds.

### (5) Institutional Building

— To strengthen partnership among authorities, Malaysia created the Securities Commission (SC) (1993) and the National Bond Market Committee (NBMC) (1999), Thailand created the Domestic Bond Market Development Committee (1998), Indonesia launched the project for Architecture on Indonesia Financial System (ASKI).

— Malaysia created the Institute of Bond Dealers (1996), while Thailand established the Thai Bond Dealing Centre (ThaiBDC). Korea also created a bond-pricing institution (2000), and Indonesia created the Inter Dealer Market Association (2003).

### (6) Others

#### ■ Changes of Monetary Policy Operations

— Malaysia announced the used of repos as a monetary policy instrument which will encourage banks to move towards collateralized inter-bank transactions (2005).

#### ■ Development of Electronic Trading Systems

— Indonesia (2004) introduced, and Singapore and Thailand are planning to introduce electronic trading systems for more efficient execution of trades. Following the BOK-Wire government-bond electronic bidding system (1998), Korea developed an electronic government-bond trading system for KSE (1999). The Philippines have recently established the Fixed Income Exchange (FIE).

#### ■ Development of Electronic Information Systems

— Malaysia developed its electronic information system in 1997, while Thailand is currently developing a similar system in cooperation with the Thai Bond Dealing Centre (ThaiBDC). Singapore prepared a comprehensive database and search function on its website (2002), and automated data collection and auction submission from Primary Dealers (2001 with

---

<sup>15</sup> Fungible issuance system.

enhancement in 2004).

■ **Introduction of Custodian System**

— Malaysia introduced the Institutional Custodian Program (ISCAP) to encourage institutional investors to participate in securities lending transactions (2004). The Philippines recently introduced a third party custodian system.

■ **Dissemination of Bidding Calendar**

— Malaysia and Singapore already release annual bidding calendars on the issuance schedule (since 2000). Thailand considers extending the period covered by its bidding calendar, which is currently four months.

## References

APEC [2004]: “Developing Bond Markets in APEC: Moving forward through Public-Private Sector Partnership,” Conference Report, September and May 2004.

BIS [1999]: “CGFS Issues Recommendations for the Design of Liquid Markets,” BIS CGFS Publications No.13, October 1999.

Dalla, Ismail [2003]: “Harmonization of Bond Market Rules and Regulations in Selected APEC Economies,” Asian Development Bank, November 2003.

EMEAP Working Group on Payment and Settlement Systems [2002]: “Payment Systems in EMEAP Economies,” July 2002.

Mahonty, MS [2002]: “Improving Liquidity in Government Bond Market: What Can Be Done?” BIS Papers No.11, pp. 49-80, 2002.

McCauley, R [2003]: “Capital Flows in East Asia since the 1997 crisis,” BIS Quarterly Review, June 2003.

Quintyn, Mark [1994]: “Government Securities Versus Central Bank Securities in Developing Open Market Operations- Evaluation and Need for Coordinating Arrangements,” IMF Working Paper No.94/62, May 1994.

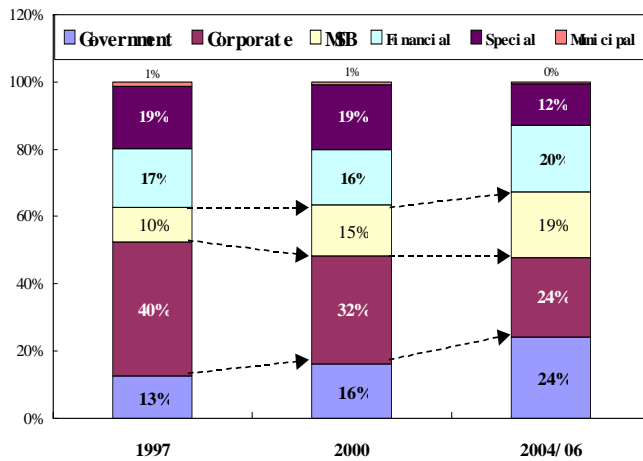
Shirakawa, Masaaki [2000]: “The reforms in the Japanese government securities market,” BOJ Working Paper Series, April 2000.

Turner, Phillip [2002]: “Bond Markets in Emerging Economies: An Overview of Policy Issues?” BIS Papers No.11, pp. 1-12, 2002.

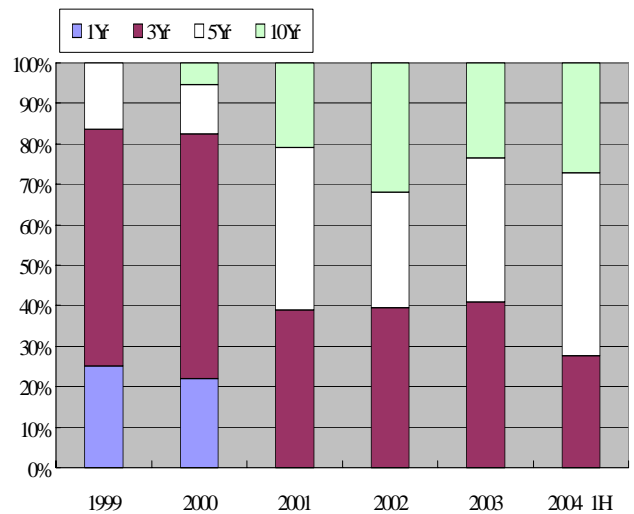
**APPENDIX 1 Central Bank Bills/Notes: the Case of Korea**

Charts A1 to A3 depict the situation in Korea: monetary stabilization bonds (MSB) which are issued by the Bank of Korea to absorb excess liquidity supplied through foreign exchange interventions. According to these charts, MSB constitutes a sizable 20% of the domestic bond market. MSB has a maturity of less than two years, while that of Korean Treasury Bonds (KTB) has shifted to more than three years after government bond market reforms were implemented in 2001, and both the MSB and KTB currently form a risk-free yield curve in Korea.

**Chart A1: Domestic Bond Market in Korea**



**Chart A2: Government Bond in Korea**



Source: Bank of Korea

**Chart A3: Volume and Maturity Composition of MSB <end of 10/2004>**

(bill. KRW)					
91 days	182days	364days	546days	2 years	total
6,000	6,454	14,595	13,820	86,435	127,304
(4.7)	(5.1)	(11.5)	(10.9)	(67.9)	(100.0)

\* ( ) shows shares of volume (%)

Source: Bank of Korea

**APPENDIX 2 Measures for Bond-Related Markets Development in EMEAP Countries**

<b>Repo</b>	<ul style="list-style-type: none"> <li>■ Revision of administrative guidelines on repo trading (<u>Thailand</u>).</li> <li>■ Use of repo trading as a tool in money market operations (<u>Malaysia, Singapore</u>).</li> <li>■ Encouragement for market participants to enter into master agreements (<u>Indonesia, Thailand</u>).</li> <li>■ Central banks' supply of repo facilities to primary dealers (<u>Singapore</u>).</li> <li>■ Lifting of repo trading restrictions on institutional investors (<u>Malaysia, Singapore</u>).</li> <li>■ Creation of repo market (<u>China</u>).</li> </ul>
<b>Bond Futures</b>	<ul style="list-style-type: none"> <li>■ Support for the viability of bond futures contracts by issuing despite no funding need and issuing at maturities that best support the functioning of the bond futures contracts (<u>Australia</u>).</li> <li>■ Easing of restrictions on institutional investors for trading in government bond futures (<u>Korea</u>).</li> <li>■ Listing of government-bond futures trading on exchanges (<u>Korea</u>).</li> <li>■ Extending the range of government bond issues for futures trading (<u>Malaysia</u>).</li> <li>■ Enactment of laws and ordinances for derivatives markets (<u>Thailand</u>).</li> </ul>
<b>Securitized Products</b>	<ul style="list-style-type: none"> <li>■ Research on new products (<u>China</u>), and education programs (<u>Malaysia, Thailand, Singapore</u>).</li> <li>■ Issuance of securitized products by the government and public housing corporations (<u>Hong Kong, Korea, Malaysia</u>). <ul style="list-style-type: none"> <li>— <u>Hong Kong</u> government has issued securitized products backed by income from tunnel and bridge tolls (HK\$6 billion, 2004).</li> <li>— <u>Malaysia</u> has issued MBSs backed by home mortgages. <u>Hong Kong</u> is marketing its first MBS to individual investors (2004).</li> <li>— <u>Malaysia</u> launched collateralized bond obligations (CBO) and collateralized loan obligations (CLO) early on. <u>Korea</u> established a CBO market in 2000, and the Korea Housing Finance Co. (KHFC) issued MBS in 2004.</li> </ul> </li> <li>■ Licensing of international institutions to issue domestic-currency denominated bonds. <ul style="list-style-type: none"> <li>— <u>Thailand</u> is planning to expand its bond markets by licensing and encouraging the World Bank and other international institutions to issue domestic-currency denominated bonds.</li> <li>— <u>Malaysia</u> liberalized foreign exchange regulations, allowing multilateral development banks (MDB) and multilateral financial institutions (MFI) to issue Ringgit denominated bonds in the Malaysian market (2004).</li> </ul> </li> <li>■ Listing of corporate bonds on exchanges to enhance market liquidity (<u>Indonesia, Korea, Thailand</u>).</li> <li>■ DVP settlement of corporate bonds (<u>Australia, Malaysia, New Zealand, Singapore</u>).</li> </ul>