

The Asia Bond Monitor (ABM) reviews the development of East Asian local currency bond markets. It examines market size and composition, market liquidity, investor profile, and returns and volatility. Recent policy reforms and challenges facing these markets are also highlighted. The ABM covers the 10 Association of Southeast Asian Nations member countries plus the People's Republic of China and the Republic of Korea.

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East Asian Local Currency Bond Markets: Seven Years after the Crisis

Highlights

- East Asian local currency bond markets tripled in size between 1997 and 2003. But there are large variations across countries, and most markets remain small:
 - Thailand registered the fastest growth, Korea has the largest amount of bonds outstanding, while Malaysia achieved the highest ratio of local currency bonds outstanding to GDP.
 - Government bonds led market growth. Corporate bond markets are growing, but are yet to become a significant source of corporate finance.
 - The ratio of local currency bonds outstanding to GDP in East Asia is about 44%, far below those for Japan and the US. The region accounted for only 3% of local currency bonds outstanding worldwide.
- Although trading volume has increased significantly, liquidity in East Asian bond markets is still low:
 - The annual turnover ratio for government bonds ranges from less than 0.5 in Indonesia to 5.5 in Singapore, compared with over 30 in the US.
 - Bid-ask spreads of East Asian benchmark local currency bonds are much higher than those of equivalent benchmark bonds in developed markets.
- The investor profile for East Asian local currency bond markets is widening, but overall it remains narrow. Although holdings by contractual savings institutions are increasing, commercial banks still hold over half of total government bonds outstanding.
- East Asian local currency bonds show large variations in returns. But portfolio holdings of these bonds exhibit attractive risk/return tradeoffs, offering good potential for global bond portfolio diversification.
- Cross-border investment in East Asian bond markets is small. ASEAN+3 invests less than 2% of its total bond investment worldwide in East Asia.
- The development of East Asian local currency bond markets is helping to address the currency and maturity mismatch problem:
 - A number of indicators suggest that East Asia has substantially reduced its reliance on foreign currency borrowings since the 1997 crisis.

Acronyms, Abbreviations, and Notes

ABF	Asia Bond Fund
ABM	Asia Bond Monitor
ABMI	Asian Bond Markets Initiative
ADB	Asian Development Bank
AECM	Aggregate Effective Currency Mismatch
ALBI	Asian Local Bond Index
ASEAN	Association of Southeast Asian Nations (Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Viet Nam)
ASEAN+3	ASEAN, People's Republic of China, Japan, Republic of Korea
CSI	contractual savings institution
EMEAP	Executives' Meeting of East Asia Pacific Central Banks
EU15	Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and United Kingdom (the 15 members of the European Union prior to 1 May 2004)
GDP	gross domestic product
GPF	Government Pension Fund
STRIPS	Separate Trading of Registered Interest and Principal of Securities
WI	When-Issued

Notes:

1. "\$" denotes US dollars unless otherwise specified.
2. Growth rates are year-on-year unless otherwise specified.

The *Asia Bond Monitor* is prepared by the Regional Economic Monitoring Unit of the Asian Development Bank (ADB) and does not necessarily reflect the views of ADB's Board of Governors or the countries they represent.

- Local currency bond markets are increasingly becoming an important source of domestic finance.
- Policy measures implemented by East Asia since the 1997 financial crisis include:
 - Strengthening the legal and regulatory framework,
 - Improving the bond issuing process and pricing mechanisms,
 - Promoting demand for local currency bonds,
 - Improving market infrastructure, and
 - Promoting regional cooperation in developing bond markets.
- Going forward, improving market liquidity is a key challenge. The following measures could be considered:
 - Broadening the variety of fixed-income securities,
 - Introducing When-Issued (WI) trading,
 - Introducing Separate Trading of Registered Interest and Principal of Securities (STRIPS), and
 - Developing derivatives markets.

East Asian Local Currency Bond Markets: Seven Years after the Crisis

Introduction

Since the 1997 financial crisis, East Asia (ASEAN+3¹ excluding Japan) has taken important steps at both national and regional levels to develop local currency bond markets. The objectives of these efforts are (i) to reduce the risks associated with excessive reliance on short-term external financing, thereby mitigating the currency and maturity mismatch problem; (ii) to provide an alternative vehicle for channeling domestic savings into productive investment and reducing dependence on bank lending; and (iii) to support economic and financial integration within East Asia.

These efforts have had significant impact on East Asian local currency bond markets. The purpose of this inaugural issue of *Asia Bond Monitor* is threefold: (i) to review the development of local currency bond markets in East Asia over the past seven years by examining market size, composition, market liquidity, investor profile, returns and volatility, and cross-border investment; (ii) to evaluate how the development of local currency bond markets has helped address the dual mismatch problem; and (iii) to review key policy reforms introduced in East Asia to facilitate development of local currency bond markets, and highlight challenges ahead.

East Asian Local Currency Bond Markets: 1997–2003

Size and Composition

East Asian local currency bond markets tripled in size between 1997 and 2003.

Total local currency bonds outstanding in East Asia tripled from \$356 billion in 1997 to \$1.2 trillion in 2003 (Table 1), an annual growth rate of 22.5%. Growth was particularly impressive at 35% in Thailand, 25% in People's Republic of China (PRC), and 23% in Republic of Korea (Korea). These growth rates compare very favorably with 11% in Japan,

¹ASEAN+3 comprises the 10 members of the Association of Southeast Asian Nations (Brunei Darussalam, Cambodia, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Viet Nam) plus People's Republic of China, Japan, and Republic of Korea.

Table 1: Size of East Asian Local Currency Bond Markets, 1997 and 2003

	1997		2003	
	\$ billion	% of GDP	\$ billion	% of GDP
PRC	116.4	12.9	440.4	31.3
Indonesia	45.1 ¹	29.1 ¹	64.4	26.4
Korea	130.3	25.1	445.7	73.6
Malaysia	57.0	56.4	98.8	95.3
Philippines	18.5	22.4	25.0	31.6
Singapore	23.8	24.9	67.2	73.6
Thailand	9.6	6.1	58.4	40.7
Viet Nam ²	—	—	2.9	7.4
East Asia	355.5	19.1	1,202.8	44.3
Japan	4,421.9	110.8	8,201.7	176.7
Hong Kong, China	45.8	26.4	71.8	45.7
US	11,997.5	144.5	17,644.8	160.3
EU15	7,094.7	85.8	10,357.3	98.6

¹Refers to 1999.

²Refers to government bonds only.

Sources: PRC, Korea, Malaysia, Philippines, Thailand (Bank for International Settlements, International Financial Statistics Table 16A and local currency portion of Table 11); US, EU15 (Bank for International Settlements, International Financial Statistics Table 16A); Hong Kong, China (Hong Kong Monetary Authority); Indonesia (Bank Indonesia and Surabaya Stock Exchange); Singapore (Monetary Authority of Singapore); and Viet Nam (Ministry of Finance).

about 7% in the United States (US) and the then 15-member European Union (EU15),² and 2% for Latin America over the same period. In Indonesia and the Philippines, local currency bond market growth was slower, at 9% and 5%, respectively.

Measured as a percentage of gross domestic product (GDP), East Asian local currency bond market growth was just as impressive. At the end of 1997, local currency bonds outstanding as a percentage of East Asia's combined GDP was 19%. This increased to 44% by the end of 2003. Malaysia's ratio (95%) was the highest, followed by Korea and Singapore (74%), Thailand (41%), Philippines (32%), PRC (31%), Indonesia (26%), and Viet Nam (7%).

Government bonds led East Asian local currency bond market growth.

Government bonds grew at an annual rate of 27% (Table 2). Corporate and financial bond growth was slower at annual rates of 18% and 20%, respectively. At end-2003, government, corporate, and financial bonds outstanding in East Asia accounted for 50.4%, 22.5%, and 27.2%, respectively, of total bonds outstanding, compared with 40.5%,

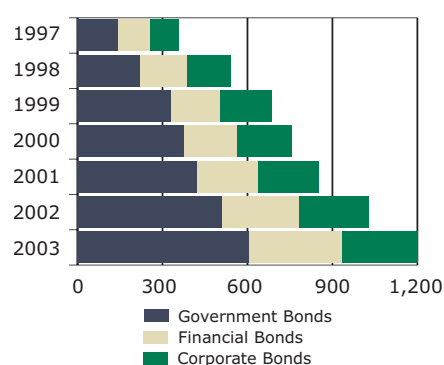
²Before membership expanded in May 2004.

Table 2: Size, Composition, and Growth of East Asian Local Currency Bond Markets

	1997		2003		Annual Growth Rate 1997–2003 (%)
	Amount (\$ billion)	% share	Amount (\$ billion)	% share	
Government	143.9	40.5	605.7	50.3	27.1
Corporate	100.2	28.2	270.4	22.5	18.0
Financial Institutions	111.4	31.3	326.7	27.2	19.6
Total East Asia	355.5	100.0	1,202.8	100.0	22.5

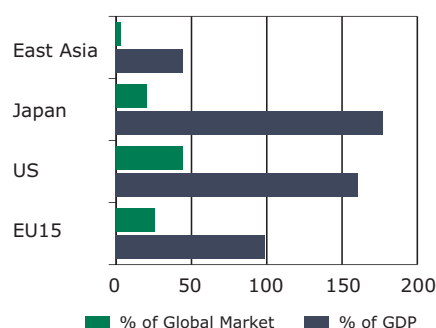
Sources: Bank for International Settlements; International Financial Statistics (Tables 16A and 16B and local currency portion of Table 11), except Indonesia (Bank Indonesia and Surabaya Stock Exchange); Singapore (Monetary Authority of Singapore); and Viet Nam (Ministry of Finance).

Figure 1: Composition of East Asian Local Currency Bonds (\$ billion)



Sources: Bank for International Settlements; Bank Indonesia; Ministry of Finance, Viet Nam; Monetary Authority of Singapore; and Surabaya Stock Exchange.

Figure 2: Size of Local Currency Bond Markets in 2003



Sources: Bank for International Settlements; Bank Indonesia; Ministry of Finance, Viet Nam; Monetary Authority of Singapore; and Surabaya Stock Exchange.

28.2%, and 31.3% at end-1997 (Table 2 and Figure 1). This rapid growth can be attributed mainly to the need in many East Asian countries to finance banking sector recapitalization programs and provide fiscal stimulus to support economic recovery in the aftermath of the 1997 crisis.

Market development varied considerably across countries.

From 1997 to 2003, local currency government bond markets grew by 116% annually in Thailand (Table 3), followed by Korea (30%), PRC (27%), Singapore (19%), Malaysia (13%), Indonesia (8%), and Philippines (5%). As a percentage of GDP, however, it was Singapore's local currency government bond market that ranked first at 41%, followed by Malaysia (39%), Philippines (30%), Indonesia (24%), Korea and Thailand (21%), PRC (20%), and Viet Nam (7%).

Corporate bond market development was also uneven. Annual growth in corporate bonds outstanding during 1997–2003 ranged from 51% for the Philippines to 12% for the PRC. But in terms of percentage of GDP, corporate bond market size in PRC, Indonesia, Philippines, and Viet Nam remains very small, ranging from 1% to 2%. Corporate bond markets in Korea, Malaysia, Singapore, and Thailand are larger, with bonds outstanding as a percentage of GDP at 26%, 43%, 33%, and 14%, respectively.³

East Asian local currency bond markets remain relatively small.

Despite encouraging growth, local currency bond markets in East Asia remain relatively small. Total local currency bonds outstanding worldwide stood at \$40 trillion at the end of 2003, with the US accounting for 44% (\$17.6 trillion), the EU15 for 26% (\$10.4 trillion), and Japan for 20% (\$8.2 trillion) (Figure 2). East Asia's share was

³The figures for Indonesia and Singapore include bonds issued by financial institutions.

Table 3: Size of Individual East Asian Local Currency Bond Markets

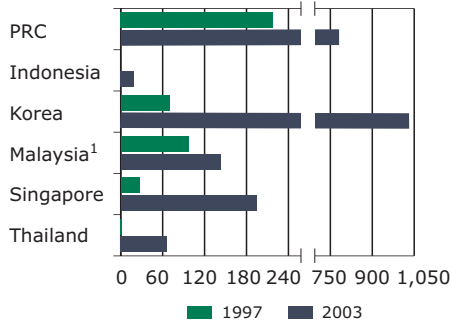
	Annual Growth Rate 1997–2003	Amount in 2003	
		(\$ billion)	(percentage of GDP)
PRC	24.8	440.4	31.3
Government	27.3	287.4	20.4
Corporate	11.6	12.2	0.9
Financial Institutions	22.0	140.8	10.0
Indonesia¹	9.3	64.4	26.4
Government	8.1	58.9	24.2
Corporate and Financial Institutions	28.8	5.5	2.3
Korea	22.7	445.7	73.6
Government	30.3	124.3	20.5
Corporate	19.8	157.3	26.0
Financial Institutions	21.2	164.1	27.1
Malaysia	9.6	98.8	95.3
Government	13.0	40.4	38.9
Corporate	13.7	44.9	43.3
Financial Institutions	-3.6	13.5	13.0
Philippines	5.2	25.0	31.6
Government	4.5	24.0	30.3
Corporate	50.6	1.0	1.3
Financial Institutions	—	—	—
Singapore	18.9	67.2	73.6
Government	19.0	37.1	40.6
Corporate and Financial Institutions	18.8	30.1	33.0
Thailand	35.2	58.4	40.7
Government	116.3	30.7	21.4
Corporate	13.5	19.3	13.5
Financial Institutions	83.0	8.4	5.8
Viet Nam	—	2.9	7.4
Government	—	2.9	7.4
Corporate	—	—	—
Financial Institutions	—	—	—

¹ Earliest available data are for 1999. Growth rate is computed over 1999–2003.

Sources: Bank for International Settlements, International Financial Statistics (Tables 16A and 16B and local currency portion of Table 11), except Indonesia (Bank Indonesia and Surabaya Stock Exchange); Singapore (Monetary Authority of Singapore); and Viet Nam (Ministry of Finance).

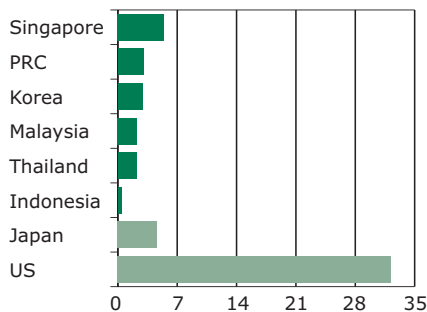
only 3% (\$1.2 trillion), less than half of its 7% share of combined global GDP. In 2003, local currency bonds outstanding as a percentage of GDP was 176% in Japan and 160% in the US, but it was only 44% for East Asia. In the same year, local currency corporate bonds outstanding as a percentage of GDP was 17% in Japan and 23% in the US, while it was 10% for East Asia.

Figure 3: **Bond Trading Volume in East Asia, 1997 and 2003** (\$ billion)



¹Data refer to 2000 and 2003.
Sources: China Securities Regulatory Commission, Surabaya Stock Exchange, Japan Securities Dealers Association, Bank Negara Malaysia, Korea Securities Dealers Association, Monetary Authority of Singapore, and the Thai Bond Dealing Centre.

Figure 4: **Government Bond Turnover Ratios in 2003**



Sources: Based on data compiled from various national sources by AsianBondsOnline. The US turnover ratio is computed using data from The Bond Market Association.

Market Liquidity

Trading volume has increased significantly in recent years.

Trading volume in East Asian local currency bond markets grew rapidly during 1997–2003 (Figure 3). Among East Asian countries where data are available, trading volume grew fastest in Thailand and Indonesia (62% annually), albeit from a low base. They were followed by Korea (47%), Singapore (32%), PRC (20%), and Malaysia (10%). In 2003, the largest trading volume was recorded in Korea (\$1.04 trillion), followed by PRC (\$777 billion), Singapore (\$194 billion), Malaysia (\$143 billion), Thailand (\$66 billion), and Indonesia (\$20 billion).

But markets have low liquidity.

The turnover ratio—the ratio of trading volume (excluding repurchase transactions) to total bonds outstanding—is very low compared with developed markets. Using the turnover ratio for government bonds, East Asian local currency bond markets can be broadly classified into three categories: Singapore, with an annual 2003 turnover ratio of about 5.5; PRC, Korea, Malaysia, and Thailand, with 2003 trading volume ranging from 2 to 3 times the amount of bonds outstanding; and Indonesia with a turnover ratio less than 0.5 (Figure 4). The average annual turnover ratio for East Asian government bonds was about 3 in 2003, compared with about 32 for US Treasuries. Market liquidity is even lower for corporate bonds, with annual turnover ratios below 0.5 for PRC, Indonesia, and Thailand. Korea and Malaysia, two of the largest corporate bond markets in the region, had a higher turnover ratio of about 1.4 and 1.1, respectively, but these are only about half of the respective turnover ratios for government bonds.

Bond derivatives markets are not yet well developed in many countries.

Active bond futures markets help enhance bond market liquidity, as futures contracts provide a vehicle for hedging exposure to long- and short-term interest rate risk. Korea, Malaysia, and Singapore have exchanges offering long- and short-dated interest rate futures contracts in local currencies. But other East Asian countries with local currency bond markets do not have bond futures exchanges. Even in countries with bond futures exchanges, futures trading volume and open interest are small compared with developed markets, with the exception of Korea (Table 4). The low levels of futures trading volume and open interest in most East Asian local currency bond markets suggest that

Table 4: Government Bond Futures Markets: Trading Volume and Open Interest, 2003

	Open Interest ¹ (no. of contracts)	Futures Trading Volume ² (no. of contracts)	Ratio of Futures Turnover to Bonds Turnover (%)
Korea	57,118	10,450,701	208.73
Malaysia	5,271	119,427	5.16
Singapore	280	14,598	0.48
Japan	6,534	6,465,000	44.85
Hong Kong, China	95	2,012	0.01
US	2,379,665	288,429,139	26.81

¹Open interest is the average of end-of-month open interests for the year.

²Futures trading volume is the sum of futures trading for the year.

Sources: Futures open interest and trading volume from the Korea Futures Exchange, Malaysia Derivatives Exchange, Singapore Exchange, Tokyo Stock Exchange, Hong Kong Exchange, and the Chicago Board of Trade. Bonds trading volume from the Korea Securities Dealers Association, Bank Negara Malaysia, Monetary Authority of Singapore, Japan Securities Dealers Association, Hong Kong Monetary Authority, and The Bond Market Association.

futures are not being used as tools for hedging interest rate exposure in the corporate sector, or as an aid for pricing esoteric derivative products. In Korea, futures trading volume and level of open interest were higher than other regional markets. Foreign participants accounted for about 16% of total trading volume in Korean bond futures, which is significant compared with foreign investment in government bonds (less than 0.5%). This is partly due to the active role foreign participants play in the creation of over-the-counter derivative products denominated in Korean won.

Low liquidity is also reflected in large bid-ask spreads.

Tight bid-ask spreads imply lower transaction costs, allowing investors to take an active approach in managing fixed-income portfolios, thereby helping to improve market liquidity. Large spreads lead to higher transaction costs and force investors to take a more passive approach to portfolio management. Bid-ask spreads in East Asian local currency bond markets are significantly larger than spreads in developed markets. A 2004 survey by AsianBondsOnline⁴ shows that the normal spread of local currency benchmark bonds in East Asia is significantly higher than spreads of equivalent benchmark bonds in the US and UK (Table 5). Large bid-ask spreads are both a cause and a consequence of low market liquidity. The survey also shows significant variations in bid-ask spreads among East Asian countries. The normal spread is generally

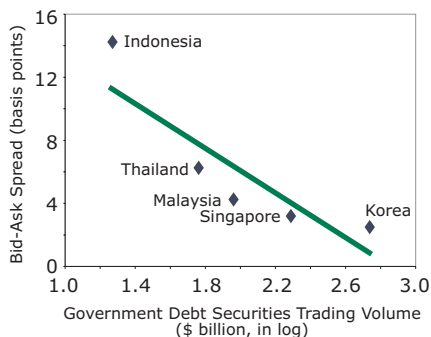
⁴To arrive at a consistent proxy for bid-ask spreads across markets, AsianBondsOnline compiled actual pricing data for benchmark issues with maturities above five years from leading market makers of Asian local currency bonds as well as UK and US bonds of similar maturities. For the purpose of liquidity analysis, this proxy is preferred to Reuter's and Bloomberg's largely indicative pricing spreads.

Table 5: Bid-Ask Spreads of Local Currency Benchmark Bonds, 2004 (Q3)

	Normal Spread (basis points)	Variation of Spread (no. of trading days/quarter)
Korea	2.5	0–3
Singapore	3.2	0–3
Malaysia	4.3	over 10
Thailand	6.3	>3–10
Indonesia	14.3	over 10
Philippines	30.0	over 10
Japan	2.0	—
US	0.4	—
UK	0.5	—

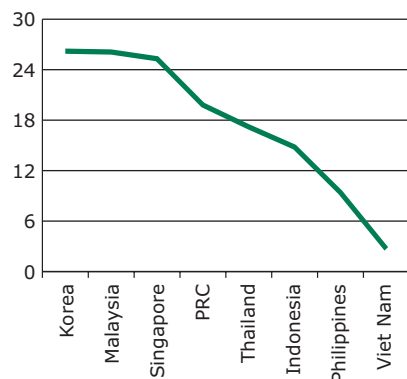
Notes: The normal spread is the average of bid-ask spread quotes by various banks in September 2004 for Korea, Singapore, Malaysia, Thailand, Indonesia, and Philippines; and in November 2004 for Japan, US, and UK. Variation of spread is the number of trading days when the quoted spread deviated from the normal spread in the third quarter of 2004. Source: AsianBondsOnline.

Figure 5: Trading Volume and Bid-Ask Spreads, 2004 (Q3)



Sources: Data on bid-ask spreads are from AsianBondsOnline. Data on trading volume are for 2003, and from Bank Negara Malaysia, Korea Securities Dealers Association, Monetary Authority of Singapore, Surabaya Stock Exchange, and Thai Bond Dealing Centre.

Figure 6: Government Issue Concentration Ratio, 2004 (Q3) (% share of three largest government bond issues to total outstanding)



Source: AsianBondsOnline.

tighter where trading volume is higher (Figure 5). Markets with higher bid-ask spreads tend to have larger variations. Markets with lower bid-ask spreads (Korea, Malaysia, and Singapore) also have local currency bond futures markets and/or allow short selling.

Measures are being taken to improve market liquidity.

To develop local currency bond markets, East Asian countries have taken various measures to improve the market liquidity of government bonds. Singapore introduced tax incentives for underwriting Singapore dollar bonds. An active underwriting market was considered to encourage more banks to operate government bond trading desks, adding extra competition that led to tighter spreads. Thailand has set a high standard for reporting bond transactions through the Thai Bond Dealers Centre. Added transparency and transaction scrutiny may explain tight spreads in that market relative to turnover.

In 2000, Korea introduced a reopening system to make bonds with identical maturities and coupon rates fungible. It also imposed mandatory exchange trading requirements for primary market dealers, with a view to increasing trading volume of benchmark government bonds. After these two measures were implemented, government bond trading volume jumped 250% between 2000 and 2001, and the bid-ask spreads narrowed from 18.1 to 6.7 basis points. As the trading volume by primary dealers jumped, the volume by non-primary dealers also increased.

The reopening system has now been adopted by Indonesia (2003) and Malaysia (2000). Figure 6 shows that markets operating a reopening system tend to have a higher issue concentration ratio for

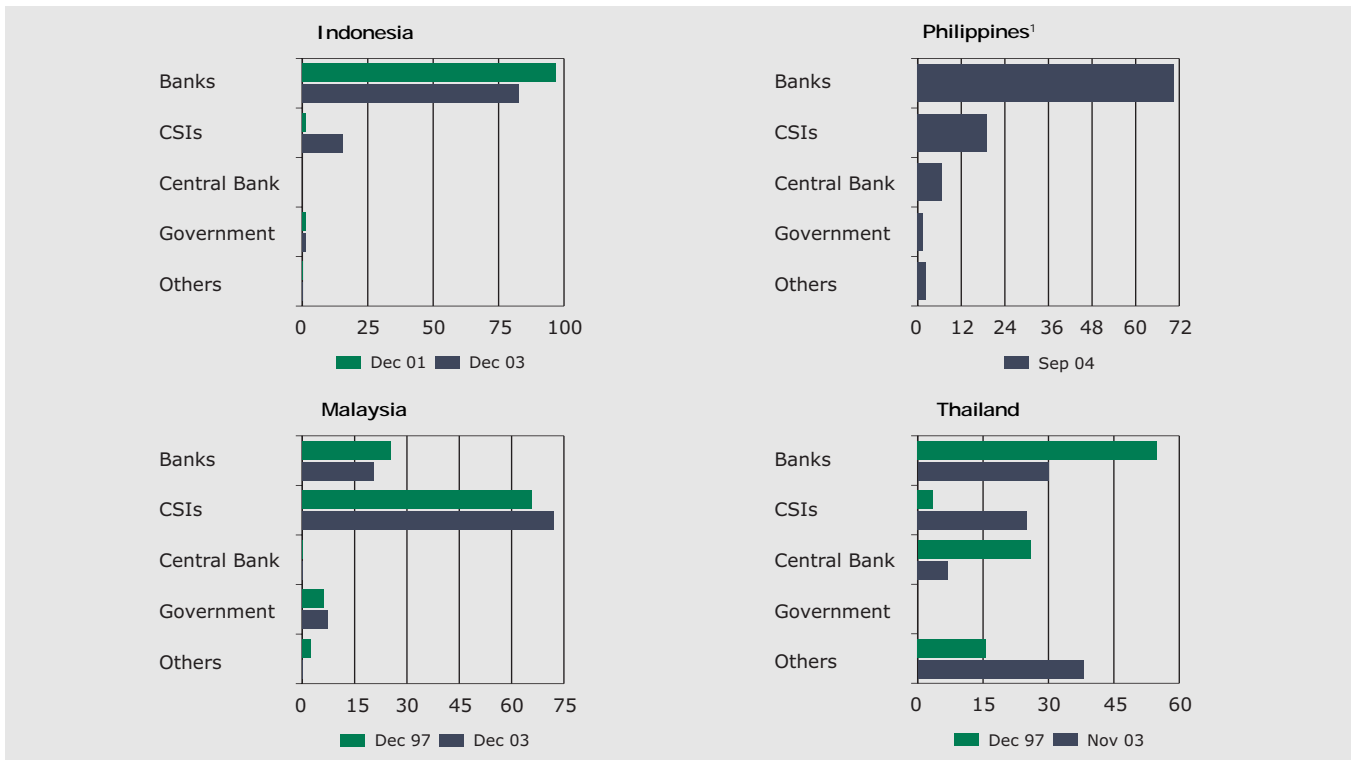
government bonds (defined as the share of the three largest government bond issues to total government bonds outstanding). A high issue concentration ratio is generally considered positive because it helps improve market liquidity by allowing investors to purchase large market parcels.

Investor Profile

Bond holdings by banks are declining while those by contractual savings institutions are increasing.

A narrow investor base impedes the development of a liquid secondary bond market. Since the 1997 financial crisis, there have been encouraging developments in the investor profile for local currency bond markets in East Asia. There has been a shift away from buy-and-hold bank holdings towards more institutional and retail investment in government bonds, particularly as annuity-based pension fund products gain in popularity (Figure 7). The most significant shift was in Thailand,

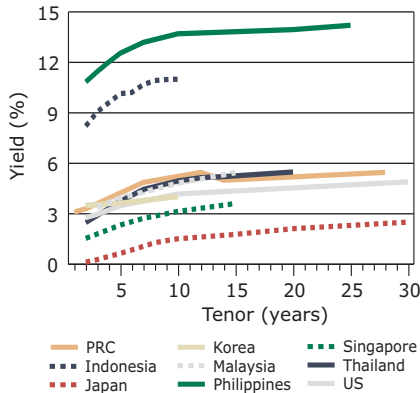
Figure 7: Investor Profile: Government Bond Holdings (% of total government bonds outstanding)



¹Philippine data unavailable for 1997.
 Note: Contractual Savings Institutions (CSIs) include insurance companies, and pension and mutual funds.
 Sources: Indonesia—CEIC Database; includes all government bonds except those issued to Bank Indonesia. Malaysia—Bank Negara Malaysia; all financial institutions are classified under "Banks," which may include mutual funds; "Others" comprise foreign holders only. Philippines—Bureau of the Treasury. Thailand—Bank of Thailand (Dec 97), Securities and Exchange Commission (Nov 03); "Others" for November 2003 includes private funds, individuals, university and temple endowments, and other financial institutions.

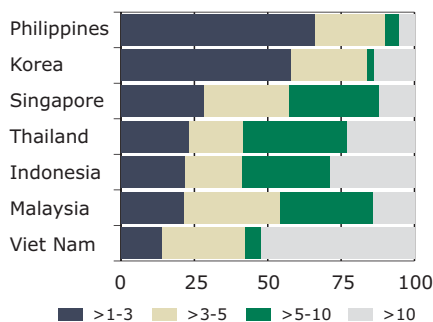
where commercial banks' holding of government bonds fell from about 55% of outstanding bonds in 1997 to 30% at the end of 2003. In Indonesia, government bond holdings by banks fell from over 97% in 2001 to about 83% in 2003. Moreover, contractual savings institutions, such as pension and mutual funds, have become significant investors in Indonesian government bonds, rising from 1.4% in 2001 to 15.3% in 2003. In Malaysia, the Employees Provident Fund is the largest investor in government securities, holding 65% of these bonds in 2003, largely because of statutory requirements that oblige provident funds, insurance companies, and financial institutions to invest in government bonds.

Figure 8: **Benchmark Yield Curves—Local Currency Bonds (%)**



Source: Bloomberg LP, as of 29 October 2004.

Figure 9: **Maturity Profile of East Asian Government Bonds in 2004 (% of total outstanding)**



Notes:
 1. Maturity buckets >5-10 and >10 for Korea refer to >5-7 and >7, respectively.
 2. As of Q3 except Indonesia and the Philippines (Q2).
 Sources: Bank Indonesia, Bank Negara Malaysia, Bureau of the Treasury, Korea Stock Exchange, Monetary Authority of Singapore, Thai Bond Dealing Centre, and Vietcombank Securities.

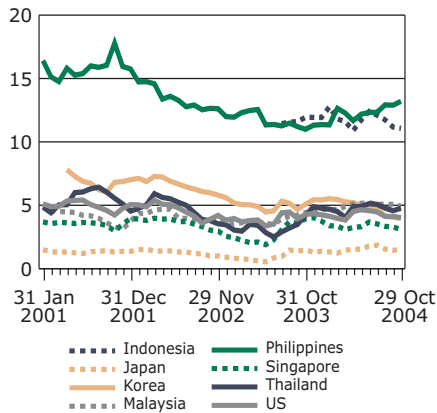
The maturity of government bonds has been lengthening.

As the role of contractual savings institutions in the region's capital markets has increased, the maturity of government bonds has become more important. Pension and provident funds prefer long-term instruments for their investment portfolios, whereas mutual funds prefer short-term instruments. Several countries have lengthened the maturity of government bonds to build benchmark yield curves, out to 10 years for Korea, 15 years for Singapore, 20 years for Thailand, 25 years for the Philippines, and 30 years for PRC (Figure 8). In 2004, the maturity profiles of government bonds in Indonesia, Malaysia, Singapore, and Thailand show a relatively even distribution (Figure 9). Viet Nam has a higher concentration at the longer end of the yield curve, while Korea and the Philippines have a higher concentration at the shorter end. In Korea, investor preference for 3- and 5-year bonds explains the high concentration at the short end of the maturity profile. Long-dated instruments have only recently been introduced in large volumes. In Viet Nam, retail investors are buying longer-dated bonds for savings because of an absence of formal contractual savings institutions.

Overall the investor base remains narrow.

Despite the increasing role of contractual savings institutions in East Asia, over half of local currency bonds are still held by commercial banks. This is significantly higher than the US (11%), Japan (35%), and Germany (42%). The high proportion of bonds held by banks is partly the result of statutory requirements. Increased participation by foreign and institutional investors will reduce investor concentration and increase liquidity. Foreign investors from outside Asia invested about \$28 billion in East Asian bond markets, or only 2.3% of total local currency bonds outstanding. This is much lower than overseas holdings in Germany (40.4%), US (33.9%), and Japan (3.2%).

Figure 10: 10-Year Government Bond Yields (%)



Source: Bloomberg LP, as of 29 October 2004.

Returns and Volatility

Yields on East Asian local currency bonds have risen since mid-2003.

Yields on 10-year local currency benchmark bonds declined from 2000 to mid-2003. Since then, yields have risen partly in response to the expected increase in US interest rates. Despite this, East Asian 10-year local currency bond yields remain generally lower than in 2001. As of November 2004, the Philippines had the highest yield with 10-year local currency bonds priced at a yield of 13.61%, or 950 basis points above equivalent US Treasuries. Singapore 10-year bonds yield 3.12%, or 99 basis points below equivalent US Treasuries (Figure 10).

Asian local currency bonds show large variations in returns.

Using the HSBC Asian Local Bond Index (ALBI) as a base, annual returns were computed for seven East Asian countries in both local currency and US dollar terms from January 2001 to September 2004 (Table 6). In absolute terms, Indonesian bonds performed best with annual returns of 23% in rupiah terms and 24% in US dollars. Philippine bonds ranked second, with a 13% annual rate of return in peso terms and 10% in US dollars. Exchange rate volatility, perceived credit risk associated with these markets, and high inflation partly explain the high return. Bonds in PRC, Malaysia, and Singapore had annual returns below those of US Treasuries of comparable maturities, possibly because of excess liquidity in the banking system.

East Asian local currency bond portfolios offer good risk/return tradeoffs.

Risk/return tradeoffs are also an important consideration when making investment portfolio decisions. One of the most widely used measure of risk/return tradeoffs is the Sharpe ratio, defined as the excess rate of return over the risk free rate divided by return volatilities. A portfolio with a higher Sharpe ratio is preferred because it indicates a higher return per unit of volatility, or risk. As suggested by their Sharpe ratios, individual local currency bond markets in East Asia appear not to show a good risk/return tradeoff. However, a Composite Asian Local Currency Bond Index, constructed using the same weights as the HSBC ALBI but including only East Asian markets, creates a portfolio that has more attractive risk/return characteristics. The index returned 9.15% with a standard deviation (volatility) of 5.64, giving a Sharpe ratio of 1.30. While volatility is significantly higher, the excess returns compare

Table 6: East Asian Bond Market Indices: Risk/Return Analysis, January 2001–September 2004

Market	East Asian Bond Market Indices						Reference Indices				
	Average Duration (years)	In Local Currency		In US Dollars			Index	Average Duration (years)	Annual Return (%)	Standard Deviation	Sharpe Ratio
		Annual Return (%)	Standard Deviation	Annual Return (%)	Standard Deviation	Sharpe Ratio					
PRC	5.28	2.1816	4.2245	2.1842	4.2281	0.08	US Govt All > 1 year	5.33	6.3471	5.8441	0.77
Indonesia	3.75	22.9102	10.6959	24.2787	21.6225	1.04	US Govt 1–10 years	3.32	5.5623	3.6585	1.02
Korea	3.01	7.7416	2.8616	10.2079	8.3383	1.01	US Govt 1–10 years	3.32	5.5623	3.6585	1.02
Malaysia	4.03	4.0469	2.7658	4.0469	2.7681	0.80	US Govt 1–10 years	3.32	5.5623	3.6585	1.02
Philippines	3.08	12.7755	6.6446	9.6038	9.4337	0.82	US Govt 1–10 years	3.32	5.5623	3.6585	1.02
Singapore	4.60	4.5141	4.2150	5.1520	6.8244	0.49	US Govt 3–10 years	4.89	6.5018	5.4991	0.85
Thailand	5.37	5.5832	5.8357	6.7261	8.1576	0.60	US Govt All > 1 year	5.33	6.3471	5.8441	0.77
Composite Bond Index	4.02			9.1505	5.6432	1.30	US Govt 1–10 years	3.32	5.5623	3.6585	1.02

Notes:

1. Bond indices are from HSBC's Asian Local Bond Indices. The Composite Bond Index was computed using HSBC's current weights and normalized to include the markets listed above.
2. Average duration for Asian bond indices as of 13 October 2004; for reference indices as of 22 October 2004.
3. Annual return is the sum of yearly returns from January 2001 to September 2004 divided by 3.75.
4. Standard deviation is the monthly return standard deviation over the same period multiplied by the square root of 12.
5. The risk-free rate used to compute the Sharpe ratio is the average yield on the 91-day US Treasury bill for the same period, i.e., 1.8256%.

Sources: HSBC, Bloomberg/EFFAS for US Government Bond Indices.

favorably with the reference US Government 1–10 year index (US GOVT 1–10yrs), which gives a return of 5.56% with a standard deviation of 3.66 and a Sharpe ratio of 1.02 (Table 6).

East Asian local currency bonds have good potential for global bond portfolio diversification.

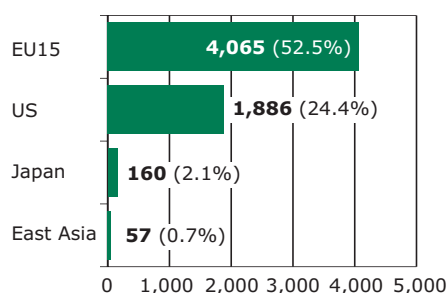
With most global portfolios exhibiting return characteristics highly correlated to US interest rates, instruments with low correlations to US rates, such as local currency bonds, offer portfolio diversification benefits. Once again, the Composite Local Currency Bond Index for East Asia shows a relatively low correlation of 0.41 to movements in US dollar returns for the US GOVT 1–10yrs index (Table 7). The degree of co-movement of returns on East Asian local currency bonds and those on US Treasuries was high for Malaysia and Singapore, but low for PRC, Indonesia, Korea, and Philippines. Philippine bond returns showed a negative correlation with returns on US Treasuries.

Table 7: Correlation Between Returns on East Asian Bonds and US Treasuries, January 2001–September 2004

	In Local Currency	In US Dollars
PRC	0.23	0.23
Indonesia	-0.07	0.06
Korea	0.51	0.32
Malaysia	0.51	0.52
Philippines	-0.04	-0.01
Singapore	0.69	0.61
Thailand	0.43	0.39
Composite Bond Index	—	0.41

Sources: HSBC, AsianBondsOnline.

Figure 11: Global Cross-Border Investment in Long-Term Bonds in 2002, by Destination (\$ billion)



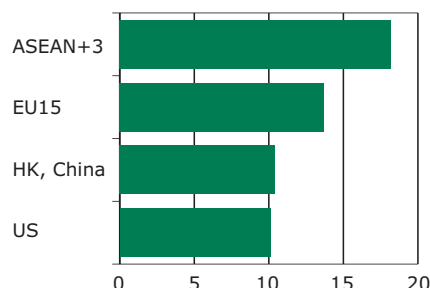
Source: International Monetary Fund, Coordinated Portfolio Investment Survey, December 2002.

Cross-Border Investment

Cross-border investment in East Asian bonds remains small.

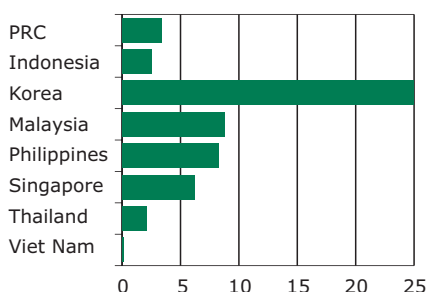
Despite good risk/return tradeoffs for East Asian local currency bonds, foreign investment in the region remains small. The International Monetary Fund’s Coordinated Portfolio Investment Survey provides data on long-term foreign debt securities holdings by domestic residents worldwide as of December 2002. Cross-border investment in East Asian bond markets was \$57 billion, or 0.7% of total global cross-border bond investment (Figure 11). Foreign investment in Korea’s local

Figure 12: Cross-Border Investment in East Asian Bonds in 2002, by Origin (\$ billion)



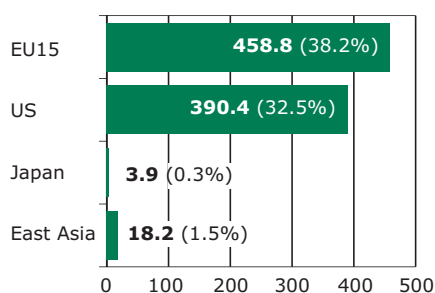
Source: International Monetary Fund, Coordinated Portfolio Investment Survey, December 2002.

Figure 13: Cross-Border Investment in East Asia in 2002, by Destination (\$ billion)



Source: International Monetary Fund, Coordinated Portfolio Investment Survey, December 2002.

Figure 14: Cross-Border Investment by ASEAN+3 in 2002, by Destination (\$ billion)



Source: International Monetary Fund, Coordinated Portfolio Investment Survey, December 2002.

currency bond markets accounted for less than 0.5% of total outstandings, even with markets open to foreign investors since December 1997. Indonesia and Thailand, where there is no limit on foreign investment in local currency bonds, also have very low cross-border investment. There are several impediments to cross-border investment in local currency bonds in the region. Several countries restrict foreign investment in local currency bonds, while others require regulatory approval. Withholding taxes and relatively high transaction costs discourage foreign investment in some countries.

ASEAN+3 is the largest investor in East Asian bond markets.

Of \$57 billion in total cross-border investment in East Asia, the EU15 accounted for \$14 billion (24%), the US \$10 billion (18%), and Hong Kong, China \$10 billion (18%). ASEAN+3 accounted for \$18 billion, or 32% (Figure 12). Major recipients of cross-border investment in East Asian bonds were Korea (\$25 billion), Malaysia (\$8.8 billion), Philippines (\$8.3 billion), Singapore (\$6.2 billion), PRC (\$3.5 billion), Indonesia (\$2.5 billion), and Thailand (\$2.1 billion) (Figure 13). The major cross-border investors in East Asian bonds among ASEAN+3 are Japan (\$10.4 billion) and Singapore (\$6.8 billion).

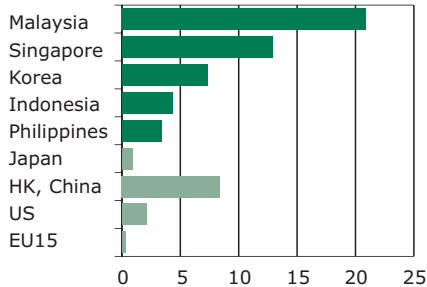
But cross-border investment in East Asia by ASEAN+3 is very small compared with its total cross-border bond market investment worldwide.

ASEAN+3 is one of the largest cross-border investors in bond markets worldwide, holding \$1.2 trillion, or 15% of global bonds outstanding as of December 2002. Compared with this figure, its cross-border investments in East Asia was about 1.5% (\$18 billion) (Figure 14). Just 1% of Japan's total overseas bond investment was in East Asia. For Philippines, it was 3%, for Indonesia 4%, for Korea 7%, for Singapore 13%, and for Malaysia 21% (Figure 15). This suggests there remains great potential for channeling regional savings into productive investment within the region.

More foreign issuers are allowed to offer local currency bonds.

Many East Asian countries are allowing foreign issuance of local currency bonds in a move to increase the variety of debt instruments. In August 1998, Singapore opened the Singapore dollar bond market to foreign institutions. On 5 November 2004, the Asian Development Bank issued Malaysian ringgit-denominated bonds in Malaysia, amounting to RM400 million. This was the first issue by a supranational and foreign entity in the Malaysian domestic capital market. Thailand has eased regulations

Figure 15: Investments in East Asian Bonds in 2002, by Origin (% of each country's total cross-border investment)



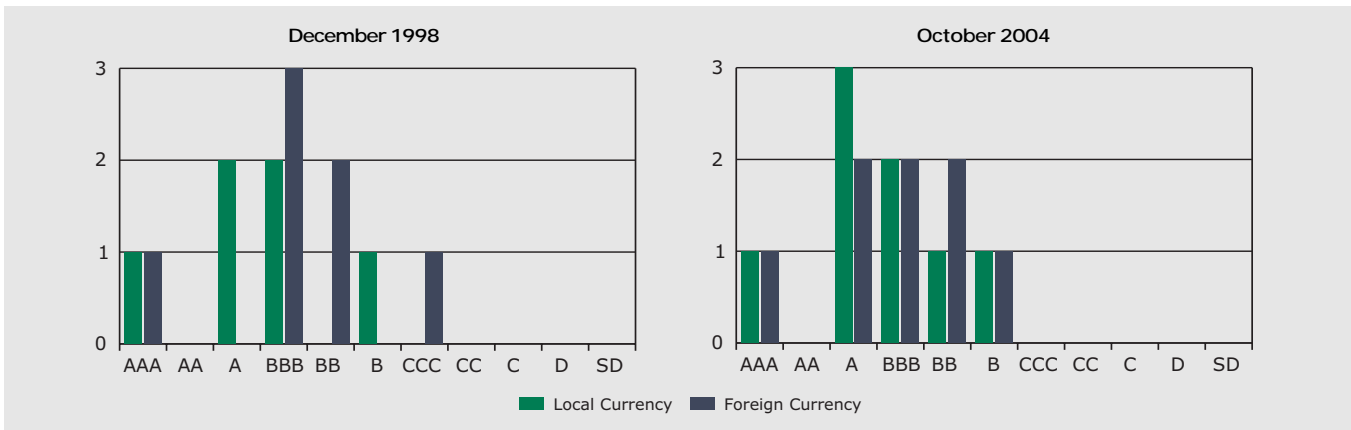
Source: International Monetary Fund, Coordinated Portfolio Investment Survey, December 2002.

allowing foreign sovereign borrowers and multilateral financial institutions to issue baht-denominated bonds. And the PRC is negotiating with multilateral financial institutions to issue local currency bonds.

Sovereign credit ratings have been improving across the region.

The distribution of sovereign credit ratings for local and foreign currency issuance shows an encouraging trend across the region. Currently, five out of eight foreign currency ratings and six out of eight local currency ratings are investment grade. This marks an improvement since the Asian financial crisis when the ratings distribution was wider and skewed to the right. Better credit ratings reflect improved macro-economic and political stability (Figure 16).

Figure 16: Frequency Distribution of Sovereign Credit Ratings



Source: Standard and Poor's.

Addressing the Mismatch Problem

Local currency bond markets are helping address the dual mismatch problem.

A number of indicators suggest that, in recent years, East Asia has substantially reduced its reliance on foreign currency borrowing, especially short-term foreign currency borrowing. The ratio of foreign assets to foreign liabilities for East Asia increased from 1.1 in 1997 to 2.5 in 2003 (Table 8). The increase was most significant for PRC, Thailand, and Viet Nam. The ratio of short-term external debt to total external debt for East Asia has also declined significantly, from 66% in 1997 to 55% in 2003 (Table 9). The decline was most significant in Singapore, followed by Viet Nam and Malaysia. Exceptions were the PRC and Korea. In addition, the ratio of foreign currency bonds to total bonds outstanding

Table 8: Ratio of Foreign Currency Assets to Foreign Currency Liabilities in East Asia

	1997	1999	2001	2003
PRC	2.5	3.2	5.4	6.4
Indonesia	0.5	0.8	1.1	1.3
Korea	0.5	1.2	1.6	1.7
Malaysia	0.8	1.7	1.5	1.5
Philippines	0.6	0.8	0.7	0.6
Thailand	0.5	1.0	1.5	2.8
Singapore	1.8	2.2	1.8	1.9
Viet Nam	1.7	2.9	4.3	3.3
East Asia	1.1	1.7	2.2	2.5

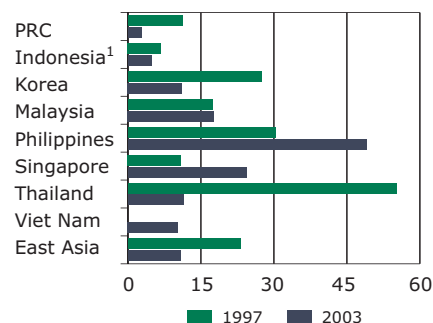
Sources: International Monetary Fund, International Financial Statistics (lines 11, 16c, 21, and 26c); Bank for International Settlements, International Financial Statistics (Tables 6b and 11).

Table 9: Ratio of Short-Term External Debt to Total External Debt in East Asia

	1997	1999	2001	2003
PRC	38.8	29.8	37.1	50.7
Indonesia	57.8	45.7	50.2	47.7
Korea	59.9	54.0	57.6	61.9
Malaysia	51.7	42.4	35.9	33.5
Philippines	59.3	45.1	38.3	42.2
Singapore	87.1	69.8	69.2	64.9
Thailand	57.7	43.9	43.5	46.2
Viet Nam	57.0	41.6	39.2	36.8
East Asia	65.6	51.6	52.9	54.8

Source: Bank for International Settlements, International Financial Statistics (Table 8).

Figure 17: Foreign Currency Bonds (% share of total bonds outstanding)



¹Refers to 1999 and 2003.
Sources: Bank for International Settlements, International Financial Statistics (foreign currency portion of Table 11); Bank Indonesia; and Ministry of Finance, Viet Nam.

in East Asia declined from 23% in 1997 to 11% in 2003 (Figure 17). The decline was sharpest in Thailand, followed by Korea and the PRC. In the Philippines, however, the ratio increased from 30% to 49% and in Singapore from 11% to 24%. As a result of these improvements, financial vulnerability has declined significantly in East Asia in general, as suggested by the aggregate effective currency mismatch (AECM) index proposed by Goldstein and Turner (Box 1).

Local currency bond markets are increasingly becoming an important source of domestic finance.

Local currency bond markets are now increasingly becoming an importance source for channeling domestic savings into productive investment in East Asia, complementing bank lending. In 2003, bank lending accounted for 61% of total domestic financing in East Asia, down from 68% in 1997. Bond financing accounted for 19% of total domestic financing, up from 13% in 1997 (Figure 18 and Table 10).

Box: The Aggregate Effective Currency Mismatch Index

The Aggregate Effective Currency Mismatch (AECM) index was developed by Morris Goldstein of the Institute for International Economics and Philip Turner of the Bank for International Settlements.¹ It measures a country's financial vulnerability to currency mismatches in terms of income and expenditure flow. An important feature of the AECM is that it not only takes into account the currency of foreign borrowings, but also the currency of domestic debt contracts and other income and expenditure flows.

The AECM is computed as the product of foreign currency debt (*FCYD*) as a share of total debt (*TD*) and the ratio of a country's net foreign currency assets (*NFCA*) to exports of goods and services (*XGS*) or imports of goods and services (*MGS*), that is,

$$AECM = \frac{FCYD}{TD} \times \frac{NFCA}{XGS} \quad \text{if } NFCA < 0$$

or

$$AECM = \frac{FCYD}{TD} \times \frac{NFCA}{MGS} \quad \text{if } NFCA > 0$$

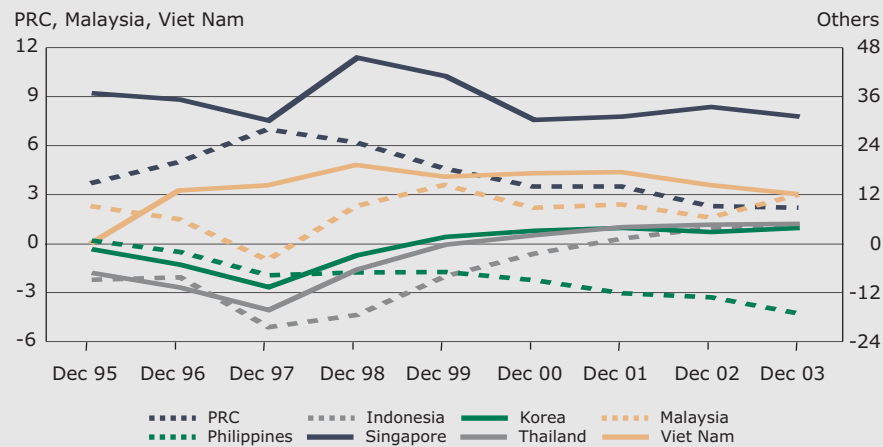
The closer the AECM index is to 0, the better matched foreign currency assets are to liabilities. The AECM is

also a useful tool in analyzing the ability of a country to service foreign currency debt liabilities. An increase in the value of an AECM index suggests a decrease of vulnerability to currency depreciation.

The figure below shows that during 1996–2004, People's Republic of China, Singapore, and Viet Nam had positive ratios, reflecting a low reliance on foreign debt financing and therefore limited vulnerability to currency depreciation. Philippines, Republic of Korea, Indonesia, and Thailand showed negative AECMs between 1996 and 1998, while Malaysia had a mildly negative AECM in December 1997. Each of these markets experienced currency realignments during the 1997 Asian crisis. Since then, AECMs of crisis-affected countries with the exception of the Philippines have shown significant improvement.

In 2004, all market ratios show positive AECMs except the Philippines. This suggests significantly less vulnerability to currency mismatches throughout the region compared with 1997. One of the major policy initiatives responsible for this improvement has been the rapid growth of local currency bond markets, which reduced reliance on external financing.

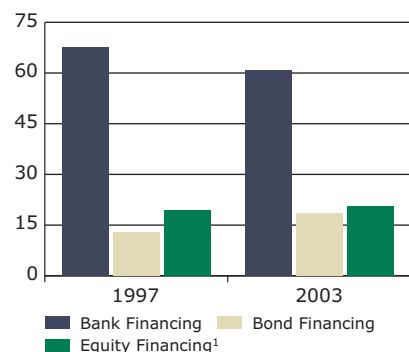
Box Figure: Aggregate Effective Currency Mismatch (AECM) Index



Sources: Goldstein and Turner, except Singapore and Viet Nam (AsianBondsOnline).

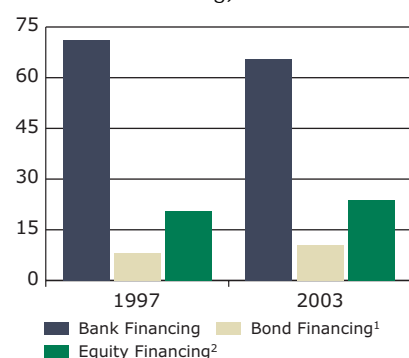
¹Goldstein, Morris and Philip Turner. 2004. *Controlling Currency Mismatches in Emerging Economies*. Washington, DC: Institute for International Economics.

Figure 18: Domestic Financing in East Asia, 1997 and 2003 (% of total domestic financing)



¹Stock market capitalization as proxy.
Sources: International Monetary Fund (bank financing); Bank for International Settlements, Bank Indonesia, Surabaya Stock Exchange (bond financing); World Federation of Exchanges (equity financing).

Figure 19: Corporate Domestic Financing in East Asia, 1997 and 2003 (% of total corporate domestic financing)



¹Includes corporate and financial bonds.
²Stock market capitalization as proxy.
Sources: International Monetary Fund (bank financing); Bank for International Settlements, Bank Indonesia, Surabaya Stock Exchange (bond financing); World Federation of Exchanges (equity financing).

Table 10: Domestic Financing Profile, 1997–2003 (% of total domestic financing)¹

	1997	1998	1999	2000	2001	2002	2003
PRC							
Bank Financing	75	74	71	63	66	71	72
Bond Financing	9	11	12	12	13	13	13
Equity Financing	16	15	17	25	21	16	15
Indonesia²							
Bank Financing	71	76	47	54	56	55	50
Bond Financing	—	—	22	30	29	29	27
Equity Financing	29	24	31	16	15	16	23
Korea							
Bank Financing	69	63	53	58	55	56	51
Bond Financing	23	25	22	27	27	28	29
Equity Financing	8	12	25	15	18	16	20
Malaysia							
Bank Financing	48	46	39	43	42	43	40
Bond Financing	20	21	20	23	24	23	23
Equity Financing	32	33	41	34	34	34	37
Philippines							
Bank Financing	51	48	44	50	51	53	49
Bond Financing	18	20	20	22	25	26	27
Equity Financing	31	32	36	28	24	21	24
Singapore							
Bank Financing	36	40	26	29	34	33	28
Bond Financing	12	14	11	15	20	24	21
Equity Financing	52	46	63	56	46	43	51
Thailand							
Bank Financing	85	80	68	72	67	64	51
Bond Financing	4	8	12	15	17	19	16
Equity Financing	11	12	20	13	16	17	33

¹ Stock market capitalization is used as a proxy for equity financing.
² For 1997 and 1998, figures refer to bank and equity financing only.
Sources: International Monetary Fund (bank financing); Bank for International Settlements, Bank Indonesia, Surabaya Stock Exchange (bond financing); World Federation of Exchanges (equity financing).

But bond issuance remains limited in corporate finance.

The role of bonds in corporate finance has also increased in recent years, but the increase has been slight. In 1997, bank lending accounted for 71% of total corporate finance and bond financing 8%. In 2003, the corresponding shares were 66% and 11%, respectively. This suggests that corporate bond markets in East Asia remain small and have a long way to go before they become a significant source of corporate finance (Figure 19).

Recent Policy Reforms and Challenges Ahead

Recent Policy Reforms

Since the 1997 financial crisis, East Asia has introduced important reforms and policy initiatives at national and regional levels to facilitate the development of local currency bond markets. These reforms and policy initiatives fall into the following categories: (i) strengthening the legal and regulatory framework; (ii) improving the bond issuing process and pricing mechanisms; (iii) promoting demand for local currency bonds; (iv) improving market infrastructure; and (v) promoting regional cooperation in developing bond markets.

Strengthening the legal and regulatory framework

In general, the legal and regulatory framework for East Asian capital markets has been strengthened in recent years. Regulatory reforms can be classified into two types: those aimed at improving the institutional and organizational framework for capital market regulation and supervision; and those targeted at strengthening laws and regulations for securities markets and their enforcement. The latter type has covered areas such as issuing, listing, and trading; bond market access by foreign and domestic investors and issuers; financial accounting and reporting; insolvency; and corporate governance. Malaysia and Singapore have moved away from traditional top-down merit-based regulatory systems, adopting a disclosure-based regulatory regime. Merit-based regulation has often been criticized for causing delays, inefficiencies, misfeasance, corruption in the regulatory process, and for its high enforcement cost. Disclosure-based regulation, in contrast, relies mainly on financial disclosure and market discipline to protect investor interests. Spearheaded by Malaysia and Singapore, disclosure-based regulatory philosophy is gaining acceptance among East Asian capital market regulators.

Improving the bond issuing process and pricing mechanisms

A number of initiatives have been introduced to improve the bond issuing process and pricing mechanisms. One is to create market-determined benchmark yield curves, so the lack of benchmark interest rates is no longer a major impediment to efficient pricing of bond instruments and mark-to-market. Several countries have extended benchmark yield curves.

Another advance has been the adoption of competitive auction systems for government bond issuance. This has been adopted by PRC, Indonesia, Korea, Malaysia, Philippines, Singapore, and Thailand. Most of these countries use the uniform-price auction method. Thailand switched from the uniform- to multiple-price auction method in 1999.

A third improvement has been the adoption of a primary dealer system. Malaysia and Singapore had it in place before the 1997 Asian financial crisis. Korea adopted it in 1999, and Indonesia in 2003. The primary dealer system has three objectives: (i) to promote efficient price discovery through competition among participating dealers; (ii) to increase liquidity through market-making; and (iii) to promote wider distribution of government-issued securities.

Promoting demand for local currency bonds

Initiatives have begun to increase demand for local currency bonds. Many East Asian markets have taken measures to widen the investor base for local currency bonds, in particular, to promote the development of contractual savings institutions such as pension funds, mutual funds, insurance companies, and trust operations at commercial banks. Pension funds and insurance companies prefer to hold long-term, annuity-based financial products with low risk, while bond funds demand short-term bond instruments. Increasing participation by these investors in bond markets diversifies the investor base, stabilizes market demand, and increases liquidity. Thailand introduced a Government Pension Fund (GPF) in 1997 to replace its defined-benefit scheme that was funded out of the budget. The GPF held approximately 10% of bonds outstanding in Thailand at the end of 2003. Malaysia's Employee Provident Fund and 12 smaller pension funds are Malaysia's major institutional investors, with combined assets approximately 67% of GDP. The PRC's institutional investor base is small (combined assets at 12% of GDP), but it has been expanding, especially among insurance companies and mutual funds. Joint ventures are being established between international asset management companies and local financial institutions to help facilitate development of the PRC's contractual savings industry.

Several countries have also taken measures to increase the participation of individual and retail investors in bond markets. The Philippines introduced a small-denomination treasury bond program for individual investors, tradeable on the local stock exchange. Viet Nam also encourages retail investment in bond markets. And individual investors in Korea became eligible for direct purchasing of government bonds on the primary market in noncompetitive auctions in 1999.

Improving market infrastructure

Market infrastructure in East Asian bond markets has also improved in recent years. Most countries have introduced real-time gross settlement systems with delivery-versus-payment facilities to reduce settlement-related risk. Some countries, including Indonesia, Korea, and Thailand, have established organized exchanges for trading fixed-income securities, capturing some of the over-the-counter activity, which is the dominant form of bond trading in East Asia. Bond futures and short-term interest rate derivatives are now available in Korea, Malaysia, and Singapore, with Indonesia and Thailand expected to join soon. And many East Asian countries now have local credit rating agencies specializing in corporate debt.

Promoting regional cooperation in developing bond markets

Regional cooperation in developing East Asian bond markets is encouraging. The Asian Bond Markets Initiative (ABMI) was endorsed by ASEAN+3 Finance Ministers in August 2003. The aim of the ABMI is to facilitate development of efficient and liquid bond markets, enabling better utilization of savings for Asian investment and mitigating currency and maturity mismatches. Six working groups have been established, each addressing a key area for local currency bond market development: (i) new securitized debt instruments; (ii) credit guarantee and investment mechanisms; (iii) foreign exchange transactions and settlement issues; (iv) issuance of bonds denominated in local currencies by multilateral development banks, foreign government agencies, and Asian multinational corporations; (v) rating systems and dissemination of information on Asian bond markets; and (vi) technical assistance coordination. A focal group has also been set up to coordinate and monitor the work of the six working groups. Through this mechanism, ASEAN+3 officials hold regular discussions on the development of local currency bond markets.⁵

In addition to the ABMI, other regional initiatives are working to develop bond markets. The Asia Cooperation Dialogue has a mandate to improve public awareness of the various initiatives and to secure political support. The Asia-Pacific Economic Cooperation Regional Bond Market Development Initiative focuses on the development of regional markets and securitization and credit guarantee mechanisms. And the Executives' Meeting of East Asia Pacific Central Banks (EMEAP) Asian Bond Fund Initiative focuses on the demand side of regional bond

⁵Progress reports of the six working groups are available at <http://asianbondsonline.adb.org>.

markets. It launched the Asia Bond Fund (ABF1)—which invests in US dollar bonds issued by sovereign and quasi-sovereign issuers in EMEAP countries except Australia, Japan, and New Zealand. EMEAP is preparing the ABF2, which will invest in local currency bonds.

Challenges Ahead: Increasing Market Liquidity

Despite these recent encouraging developments, East Asian local currency bond markets remain illiquid. Increasing market liquidity is a key challenge for policymakers, regulators, investors, and other market participants. Recent reforms and policy initiatives have worked to increase market liquidity, but more needs to be done. Based on the experience of countries where local currency bond markets are developed, and emerging markets with successful bond markets, in addition to existing reform efforts, the following measures could help increase liquidity in East Asian local currency bond markets: (i) broadening the variety of fixed-income securities; (ii) introducing a When-Issued (WI) market; (iii) introducing Separate Trading of Registered Interest and Principal of Securities (STRIPS); and (iv) developing fixed-income derivatives markets.

Broadening the variety of fixed-income securities

Bond supply has increased in East Asia, but the variety of instruments is narrow. Developed markets have a variety of bond instruments to cater to investor preferences. These include mortgage-backed securities, corporate bonds, treasury securities, agency bonds, short-term money market instruments, municipal bonds, and asset-backed securities and structured notes. Local currency bond markets in East Asian countries are dominated by treasury securities. In Thailand, treasury and government agency securities make up 59% of total bonds outstanding, with corporate bonds at 20%. But there are no municipal, mortgage, or asset-backed securities. In Korea, treasury and government agency bonds account for 71% of the market, followed by corporate bonds at 28%. The municipal bond market is very small, at 1%. In the PRC, treasury bonds account for 57% of total bonds outstanding, followed by F-Bonds (issued by designated financial institutions) at 31%, People's Bank of China bills at 9%, and financial E-bonds (issued by state-owned enterprises) at 3%. Broadening the variety of bond instruments would help increase investor participation in local currency bond markets and enhance liquidity.

Asset-backed securities (ABS) have gained in popularity. In Korea, ABS are being used for securitization of nonperforming loans and credit

card receivables, and to enhance credit ratings of corporate bonds for small and medium-size borrowers. Malaysia began to issue ABS in 2001. Another instrument that could be added to the mix of fixed-income securities in the region is inflation-indexed bonds. These bonds are common in developed markets such as Australia, Canada, New Zealand, United Kingdom, and US. Japan issued inflation-indexed bonds, the first in the region, in March 2004.

Introducing When-Issued (WI) trading

In most developed markets, trading during the period between announcement date and issue date (ranging from one- to two-weeks) is allowed and the issue is said to trade “when, as, and if issued.” WI trading is similar to trading in a futures market, allowing long and short positions to be taken before the settlement date. A major benefit of WI trading is the minimization of price and quantity uncertainties associated with competitive auctions. Trading on a WI basis facilitates bond price discovery and the issuing process. With competitive auction methods becoming the norm in the region, local currency bond markets would benefit from the introduction of WI trading. In the region, Japan is the only country so far to allow WI trading of government and financial bonds.

Introducing Separate Trading of Registered Interest and Principal of Securities (STRIPS)

STRIPS allows principal and interest components of designated government securities to be separated and traded, creating highly liquid zero-coupon bonds and notes. They help broaden the bond investor base and create a continuous benchmark yield curve over a wide range of maturities where existing government bond issuances may be incomplete. Japan recently allowed designated primary dealers to operate coupon stripping and reconstructing of STRIPS.

Developing derivatives markets

With the exception of Korea, East Asian futures exchanges are yet to expand sufficiently to act as an effective tool for hedging interest rate exposures. Interest rate swap markets are also underdeveloped or illiquid in many countries, except in Korea and Singapore. Regulatory environment and market infrastructure could be examined to identify possible impediments to the development of derivatives markets. Tax incentives could also be considered. Any regulatory or policy initiative to foster the development of hedging instruments, however, should

consider linkages among various derivatives products and between derivatives and cash markets. The introduction of STRIPS, for example, would assist in the pricing of interest rate swaps, and increase turnover in both futures and cash markets. In developed markets, active interest rate swaps accompany active futures markets. These in turn encourage greater assumption of risk in cash markets, which then feeds back into demand for derivatives products, creating a circularity that further increases liquidity.