# Asia Bond Monitor 2007

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The *Asia Bond Monitor* (ABM) reviews recent developments in East Asian local currency bond markets, along with the outlook, risks, and policy options. The ABM covers the 10 Association of Southeast Asian Nations member countries plus the People's Republic of China; Hong Kong, China; and the Republic of Korea.

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**How to reach us**

**Asian Development Bank**
**Office of Regional Economic Integration**
6 ADB Avenue, Mandaluyong City
1550 Metro Manila, Philippines

**Telephone**
+63 2 632 6688

**Facsimile**
+63 2 636 2183

**E-mail**
asianbondsonline_info@adb.org

## Emerging East Asian Local Currency Bond Markets: A Regional Update

### Highlights

**Bond Market Developments in the First Half of 2007**

- Aggregate local currency bonds outstanding in emerging East Asia grew 10% in the first half of 2007, expanding faster than gross domestic product in most markets.
- Government local currency bond markets grew 10% in the first half of the year, partly because central banks issued more debt to absorb excess liquidity derived from the region's large capital inflows.
- Corporate bond markets grew slower than most government markets for the first time in 18 months, due partly to the rising cost of short-term finance.
- Turnover ratios were mostly higher in the first half of 2007 than in 2006 as steepening yield curves led investors to reassess the term structures of their bond portfolios, while in some markets new regulations also encouraged increased trading.
- Yield curves generally steepened in 2007. Short-term rates fell slightly in response to the liquidity surge, while long-term rates rose in response to the reemergence of inflationary expectations.
- Despite further currency appreciation, local currency index returns were lower during the first half, reflecting steeper yield curves.
- Continued reforms and liberalization have led to credit-rating upgrades for several of the region's economies, laying the groundwork for more rapid expansion of bond markets.

**Outlook, Risks, and Policy Challenges**

- Recent financial market turmoil and a slight easing of economic activity are expected to moderate global GDP growth in 2008.

*Continued overleaf*

## Acronyms, Abbreviations, and Notes

| | |
|---|---|
| ABM | Asia Bond Monitor |
| ABS | asset-backed securities |
| ADB | Asian Development Bank |
| ASEAN | Association of Southeast Asian Nations |
| BIBOR | Bangkok Interbank Offered Rate |
| BNM | Bank Negara Malaysia |
| BNMN | Bank Negara Monetary Notes |
| CDO | collateralized debt obligation |
| CHIBOR | China Interbank Offered Rate |
| CSRC | China Securities Regulatory Commission |
| EU | European Union |
| GDP | gross domestic product |
| HIBOR | Hong Kong Interbank Offered Rate |
| IMF | International Monetary Fund |
| JIBOR | Jakarta Interbank Offered Rate |
| KLIBOR | Kuala Lumpur Interbank Offered Rate |
| KORIBOR | Korea Interbank Offered Rate |
| LCY | local currency |
| MBS | mortgage-backed securities |
| MRT3 | Metro Rail Transit |
| NDRC | National Development and Reform Commission |
| NRSRO | nationally recognized statistically rating organizations |
| OECD | Organisation for Economic Co-operation and Development |
| OREI | Office of Regional Economic Integration |
| OTC | over–the-counter |
| PHIBOR | Philippine Interbank Offered Rate |
| PRC | People's Republic of China |
| REIT | real estate investment trust |
| RMBS | residential mortgage-backed securities |
| SEC | Securities and Exchange Commission |
| SHIBOR | Shanghai Interbank Offered Rate |
| SIBOR | Singapore Interbank Offered Rate |
| SGS | Singapore Government Securities |
| SOE | state-owned enterprises |
| SIVs | structured investment vehicles |
| TIBOR | Tokyo Interbank Offered Rate |
| UK | United Kingdom |
| YTD | year-to-date |

bp = basis points

Note: To conform with market practice, the *Asia Bond Monitor* uses two-letter official ISO Country Codes and three-letter currency codes rather than ADB's standard symbols.

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- In external markets, the expansion of global liquidity and increasing demand for high-yielding assets resulted in complex new instruments entering debt markets—often without consideration of the underlying risk—and kicking off a wave of imprudent financing.

- The rising cost of funds—beginning in mid-2004—led to defaults in late 2006 and early 2007, resulting in a further round of declines in asset prices.

- In emerging East Asia, strong economic growth and robust financial sector conditions—together with relatively small exposure to US subprime mortgages—have helped limit spillover effects of the US subprime turbulence to the region.

- Although the region is more resilient than in previous periods of financial market turbulence, several risks remain:
    - generally deteriorating global economic growth and credit conditions;
    - prolonged financial market volatility;
    - a sharper-than-expected slowdown in US growth; and
    - a resurgence of inflationary pressures that could spill over into local currency bond markets.

- The recent external financial market turbulence underscores the need to address several shortcomings in the region's debt markets—not only in the markets themselves, but also in the regulatory and supervisory systems in which they operate:
    - improving transparency by better valuation and accounting of off-balance sheet risks;
    - strengthening risk assessment and risk management among financial institutions, regulators, and credit rating agencies;
    - enhancing the enabling environment for local currency bond markets; and
    - increasing regional cooperation in monitoring and regulating financial markets, and in developing financial institutions' risk management techniques.

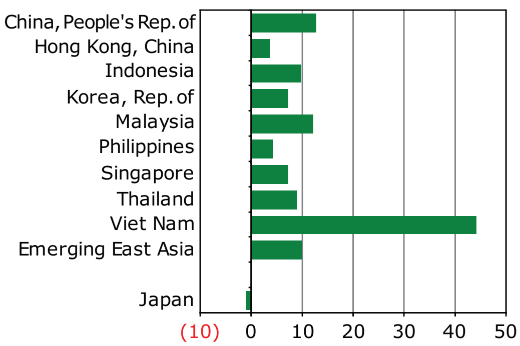
# Emerging East Asian Local Currency Bond Markets: A Regional Update

## Bond Market Developments in the First Half of 2007

### Size and Composition

***Emerging East Asia's local currency bond markets are continuing to deepen, expanding faster than gross domestic product in most markets.***

Figure 1: **Growth of Emerging East Asian Local Currency Bond Markets in 1H07** (%)




Sources: People's Republic of China (ChinaBond.com); Hong Kong, China (Hong Kong Monetary Authority); Indonesia (Surabaya Stock Exchange); Republic of Korea (KoreaBondWeb); Malaysia (Bank Negara Malaysia); Philippines (Bureau of the Treasury); Singapore (Monetary Authority of Singapore); Thailand (Bank of Thailand); Viet Nam (VietComBank Securities); and Japan (Japan Securities Dealers Association).

The value of local currency (LCY) bonds was USD3.0 trillion, 9.9% above the USD2.7 trillion outstanding at end-2006 and up 17.2% from June 2006 (**Table 1**). Viet Nam's bond market grew fastest in the first half (44%); followed by the People's Republic of China (PRC) (13%); Malaysia (12%); Indonesia (10%); Thailand (9%); Singapore and Republic of Korea (Korea) (7%); Hong Kong, China (4%); and the Philippines (4%) (**Figure 1**).[1]

Emerging East Asia's bond markets expanded faster than gross domestic product (GDP) in all markets except the Philippines. The ratio of LCY bonds outstanding to GDP grew from 54.7% at end-2006 to 56.8% as of end-June 2007 (**Table 2**).

Foreign exchange rate gains contributed to the rise in the USD value of bonds outstanding in most economies. In some markets the currency appreciation partly reflected strong inflows of liquidity from overseas investors. Central bank attempts to sterilize the inflationary effect of the new liquidity was a significant factor in the growth of government bond issues across the region. Even currencies that had weakened slightly in the first quarter of 2007 have strengthened somewhat since (**Table 3**). Significant increases in the value of real estate and higher equity market capitalizations attest to the insufficiency of these significant attempts to absorb excess liquidity.

No consistent factor contributed to the overall growth in bond markets. In several countries (PRC, Singapore, and Malaysia), growth was much stronger in government debt markets, while in others (the Philippines and Viet Nam), corporate issuances rose

[1] The growth figures in this section reflect LCY changes in bonds outstanding and do not include the significant foreign-exchange appreciation against the USD that most regional currencies have experienced.

Table 1: **Size and Composition of Emerging East Asian Local Currency Bond Markets** (in USD billions)

| | 2005 | | 2006 | | 1H07 (1 Jan–30 Jun) | | Growth Rate (%) | | |
|---|---|---|---|---|---|---|---|---|---|
| | Amount (USD billion) | % share | Amount (USD billion) | % share | Amount (USD billion) | % share | 2005 | 2006 | 1H07 |
| **China, People's Rep. of** | | | | | | | | | |
| **Total** | 953.22 | 100.00 | 1,213.97 | 100.00 | 1,368.42 | 100.00 | 40.57 | 27.35 | 12.72 |
| Government | 652.84 | 68.49 | 805.81 | 66.38 | 922.99 | 67.45 | 38.51 | 23.43 | 14.54 |
| Corporate | 300.38 | 31.51 | 408.16 | 33.62 | 445.43 | 32.55 | 45.28 | 35.88 | 9.13 |
| **Hong Kong, China** | | | | | | | | | |
| **Total** | 84.90 | 100.00 | 95.69 | 100.00 | 99.20 | 100.00 | 9.18 | 12.72 | 3.66 |
| Government | 16.21 | 19.09 | 16.86 | 17.62 | 17.20 | 17.34 | 3.37 | 4.01 | 2.02 |
| Corporate | 68.69 | 80.91 | 78.84 | 82.38 | 82.00 | 82.66 | 10.65 | 14.77 | 4.01 |
| **Indonesia** | | | | | | | | | |
| **Total** | 50.71 | 100.00 | 53.21 | 100.00 | 58.45 | 100.00 | (0.10) | 4.95 | 9.84 |
| Government | 44.31 | 87.38 | 46.40 | 87.19 | 49.96 | 85.48 | 0.14 | 4.72 | 7.68 |
| Corporate | 6.40 | 12.62 | 6.81 | 12.81 | 8.49 | 14.52 | (1.75) | 6.48 | 24.54 |
| **Korea, Rep. of** | | | | | | | | | |
| **Total** | 879.87 | 100.00 | 965.61 | 100.00 | 1,035.84 | 100.00 | 10.80 | 9.75 | 7.27 |
| Government | 441.95 | 50.23 | 472.38 | 48.92 | 485.66 | 46.89 | 16.95 | 6.89 | 2.81 |
| Corporate | 437.92 | 49.77 | 493.23 | 51.08 | 550.17 | 53.11 | 5.20 | 12.63 | 11.54 |
| **Malaysia** | | | | | | | | | |
| **Total** | 116.80 | 100.00 | 123.91 | 100.00 | 139.03 | 100.00 | 9.67 | 6.09 | 12.20 |
| Government | 57.20 | 48.97 | 62.22 | 50.21 | 76.40 | 54.95 | 8.04 | 8.79 | 22.79 |
| Corporate | 59.61 | 51.03 | 61.69 | 49.79 | 62.63 | 45.05 | 11.27 | 3.50 | 1.52 |
| **Philippines** | | | | | | | | | |
| **Total** | 47.27 | 100.00 | 47.73 | 100.00 | 49.74 | 100.00 | 9.93 | 0.98 | 4.23 |
| Government | 46.20 | 97.74 | 46.15 | 96.69 | 45.38 | 91.23 | 8.30 | (0.11) | (1.65) |
| Corporate | 1.07 | 2.26 | 1.58 | 3.31 | 4.36 | 8.77 | 218.42 | 48.20 | 175.73 |
| **Singapore** | | | | | | | | | |
| **Total** | 90.31 | 100.00 | 99.65 | 100.00 | 106.89 | 100.00 | 5.90 | 10.35 | 7.26 |
| Government | 50.97 | 56.44 | 56.07 | 56.26 | 60.90 | 56.98 | 8.03 | 10.00 | 8.62 |
| Corporate | 39.34 | 43.56 | 43.59 | 43.74 | 45.98 | 43.02 | 3.26 | 10.80 | 5.50 |
| **Thailand** | | | | | | | | | |
| **Total** | 102.04 | 100.00 | 125.26 | 100.00 | 136.51 | 100.00 | 24.69 | 22.75 | 8.98 |
| Government | 70.26 | 68.86 | 83.40 | 66.58 | 93.18 | 68.26 | 29.01 | 18.69 | 11.72 |
| Corporate | 31.78 | 31.14 | 41.86 | 33.42 | 43.33 | 31.74 | 16.10 | 31.73 | 3.51 |
| **Viet Nam** | | | | | | | | | |
| **Total** | 4.25 | 100.00 | 4.91 | 100.00 | 7.08 | 100.00 | 14.52 | 15.57 | 44.23 |
| Government | 4.14 | 97.52 | 4.48 | 91.28 | 6.41 | 90.57 | 12.24 | 8.17 | 43.11 |
| Corporate | 0.11 | 2.48 | 0.43 | 8.72 | 0.67 | 9.43 | 466.67 | 306.16 | 56.02 |
| **Emerging East Asia** | | | | | | | | | |
| **Total** | 2,329.36 | 100.00 | 2,729.96 | 100.00 | 3,001.15 | 100.00 | 21.25 | 17.20 | 9.93 |
| Government | 1,384.08 | 59.42 | 1,593.76 | 58.38 | 1,758.09 | 58.58 | 24.68 | 15.15 | 10.31 |
| Corporate | 945.28 | 40.58 | 1,136.20 | 41.62 | 1,243.07 | 41.42 | 16.56 | 20.20 | 9.41 |
| **Japan** | | | | | | | | | |
| **Total** | 6,735.79 | 100.00 | 6,859.33 | 100.00 | 6,843.13 | 100.00 | 8.55 | 1.83 | (0.24) |
| Government | 6,024.71 | 89.44 | 6,175.99 | 90.04 | 6,154.61 | 89.94 | 10.29 | 2.51 | (0.35) |
| Corporate | 711.08 | 10.56 | 683.34 | 9.96 | 688.52 | 10.06 | (4.23) | (3.90) | 0.76 |

Notes:
1. Growth rates are calculated from LCY base and do not include currency effects.
2. Calculated using data from national sources.
3. Corporate bonds include issues by financial institutions.
4. Philippines and Singapore 1H07 corporate figures are *AsianBondsOnline* estimates.
5. Bloomberg current end-of-period LCY/USD rates are used in emerging East Asia total.

Sources:
People's Republic of China (ChinaBond.com); Hong Kong, China (Hong Kong Monetary Authority); Indonesia (Surabaya Stock Exchange); Republic of Korea (KoreaBondWeb); Malaysia (Bank Negara Malaysia); Philippines (Bureau of the Treasury); Singapore (Monetary Authority of Singapore); Thailand (Bank of Thailand); Viet Nam (VietComBank Securities); Japan (Japan Securities Dealers Association), and *AsianBondsOnline* estimates.

Table 2: **Size and Composition of Emerging East Asian Local Currency Bond Markets** (% of GDP)

| | Amount Outstanding | | | |
|---|---|---|---|---|
| | **2004** | **2005** | **2006** | **1H07** (1 Jan–30 Jun) |
| **China, People's Rep. of** | | | | |
| **Total** | 32.29 | 39.47 | 43.83 | 46.06 |
| Government | 22.45 | 27.03 | 29.09 | 31.07 |
| Corporate | 9.85 | 12.44 | 14.74 | 14.99 |
| **Hong Kong, China** | | | | |
| **Total** | 47.07 | 48.00 | 50.74 | 50.88 |
| Government | 9.49 | 9.16 | 8.94 | 8.82 |
| Corporate | 37.58 | 38.84 | 41.81 | 42.06 |
| **Indonesia** | | | | |
| **Total** | 19.95 | 16.43 | 14.39 | 14.56 |
| Government | 17.39 | 14.36 | 12.54 | 12.44 |
| Corporate | 2.56 | 2.07 | 1.84 | 2.11 |
| **Korea, Rep. of** | | | | |
| **Total** | 94.11 | 100.26 | 105.19 | 109.73 |
| Government | 44.78 | 50.36 | 51.46 | 51.45 |
| Corporate | 49.33 | 49.90 | 53.73 | 58.28 |
| **Malaysia** | | | | |
| **Total** | 77.57 | 77.63 | 74.72 | 80.59 |
| Government | 38.56 | 38.02 | 37.52 | 44.29 |
| Corporate | 39.01 | 39.62 | 37.20 | 36.31 |
| **Philippines** | | | | |
| **Total** | 40.77 | 40.15 | 36.55 | 36.37 |
| Government | 40.45 | 39.25 | 35.34 | 33.19 |
| Corporate | 0.32 | 0.91 | 1.21 | 3.19 |
| **Singapore** | | | | |
| **Total** | 121.39 | 71.15 | 72.62 | 73.87 |
| Government | 67.16 | 40.16 | 40.86 | 42.09 |
| Corporate | 54.23 | 30.99 | 31.76 | 31.78 |
| **Thailand** | | | | |
| **Total** | 39.97 | 45.64 | 50.80 | 53.47 |
| Government | 26.60 | 31.43 | 33.82 | 36.50 |
| Corporate | 13.37 | 14.21 | 16.98 | 16.97 |
| **Viet Nam** | | | | |
| **Total** | 8.36 | 8.18 | 8.13 | 10.97 |
| Government | 8.32 | 7.97 | 7.42 | 9.94 |
| Corporate | 0.04 | 0.20 | 0.71 | 1.04 |
| **Emerging East Asia** | | | | |
| **Total** | 48.94 | 52.36 | 54.74 | 56.78 |
| Government | 28.28 | 31.11 | 31.96 | 33.26 |
| Corporate | 20.66 | 21.25 | 22.78 | 23.52 |
| **Japan** | | | | |
| **Total** | 153.38 | 165.50 | 166.44 | 164.36 |
| Government | 135.03 | 148.03 | 149.86 | 147.83 |
| Corporate | 18.35 | 17.47 | 16.58 | 16.54 |

Sources:
People's Republic of China (ChinaBond.com); Hong Kong, China (Hong Kong Monetary Authority); Indonesia (Surabaya Stock Exchange); Republic of Korea (KoreaBondWeb); Malaysia (Bank Negara Malaysia); Philippines (Bureau of the Treasury); Singapore (Monetary Authority of Singapore); Thailand (Bank of Thailand); Viet Nam (VietComBank Securities); Japan (Japan Securities Dealers Association); GDP (CEIC); and *AsianBondsOnline* estimates.

Table 3: **2006/07 Appreciation (Depreciation) of Emerging East Asian Currencies** (%)

| | Against USD | |
|---|---|---|
| **Currency** | **2006** | **2007 YTD** |
| CNY | 3.34 | 3.91 |
| HKD | (0.30) | 0.04 |
| IDR | 8.89 | (1.23) |
| KRW | 8.25 | 1.60 |
| MYR | 6.89 | 3.48 |
| PHP | 7.99 | 8.66 |
| SGD | 8.05 | 3.25 |
| THB | 14.62 | 10.61 |
| VND | (0.87) | (0.19) |
| JPY | (1.11) | 3.65 |

Notes:
1. Appreciation (depreciation) is computed using natural logarithm of (end-of-period rate/start-of-period rate).
2. 2007 YTD is as of 30 September 2007.
Source: Bloomberg LP.

strongly. Securitized notes actually contracted by 5% in the first half of 2007, largely as a result of the US subprime mortgage crisis. New securitized issues were withdrawn as demand dropped, while investors re-assessed their portfolios.

***Government local currency bond markets grew 10% in the first half of the year, partly because central banks issued more debt to absorb excess liquidity derived from the region's large capital inflows.***

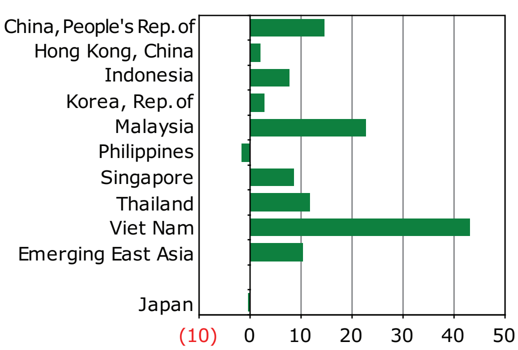
Government bond markets in emerging East Asia grew by 10% through June 2007 **(Figure 2)**.The increased issuance by central banks was especially strong in the PRC, Thailand, Malaysia, and Indonesia.

- Viet Nam (43% government bond market growth in the first half of 2007) has begun to issue large amounts of government bonds now that it has completed the early stages of its 10-year Capital Market Roadmap. The net increase in the first half of 2007 was six times the amount issued during 2006, with most of the increase occurring in the second half. Some of the new issuance was also aimed at absorbing excess liquidity, as was a USD1 billion government issue shortly after June 2007. A much larger portion of the issuance was for infrastructure development—a trend expected to continue into 2008 and beyond.

- In Malaysia (23%), the increased issuance in the first half of 2007 was almost entirely (90%) comprised of the central bank issuance of Bank Negara Monetary Notes (BNMNs). BNMNs are specifically designed as a liquidity management tool and the amount outstanding varies directly with domestic credit conditions and capital account inflows. Islamic bonds issued by the government showed the highest rate of growth—as they have for the past 5 years—growing at an annualized rate of 85%.

- In the PRC, the government bond market growth of 15% in the 6 months to end-June 2007 was in line with the average annual growth rate of 31% over the past 3 years. Growth picked up after slowing to 6% in the second half of 2006. As was the case in 2006, the central bank's (People's Bank of China's) sterilization efforts contributed more than half of the

Figure 2: **Growth of Emerging East Asian Local Currency Government Bond Markets in 1H07** (%)




Sources: People's Republic of China (ChinaBond.com); Hong Kong, China (Hong Kong Monetary Authority); Indonesia (Surabaya Stock Exchange); Republic of Korea (KoreaBondWeb); Malaysia (Bank Negara Malaysia); Philippines (Bureau of Treasury); Singapore (Monetary Authority of Singapore); Thailand (Bank of Thailand); Viet Nam (VietComBank Securities); and Japan (Japan Securities Dealers Association).

growth as the government's highly successful privatization record during the past 2 years actually reduced the China Development Bank's need to issue government bonds. Coupled with the PRC's previous high rate of issuance, the country's government bond market now accounts for 52% of emerging East Asia's total government bond market.

- In Thailand (12%), government bonds outstanding grew close to the average rate of the past 3 years. As the regional market with the highest currency appreciation to June 2007 (over 23%), the central bank significantly increased its own issues, as well as applying new restrictions on the capital account. Monthly issues by the Bank of Thailand rose at year-end 2006 and have remained at a level four times above the 2006 monthly average.

- Singapore's (9%) LCY government bond growth accelerated steadily in the first half of 2007, as the central bank worked to absorb capital inflows that lifted the SGD more than 3% in the year to June 2007. Nonetheless, 75% of the net increase came from two new issues. The Monetary Authority of Singapore issued large amounts of 5- and 20-year bonds in the first half of 2007 as part of its renewed yield-curve building program.

- Indonesia's (8%) government bond market growth to end-June 2007 was twice the 2006 rate as a result of market restructuring carried out during 2005-06, plus recent efforts to stimulate a market for Treasury bills (from May 2007) and a retail bond market (from March 2007). A significant, if temporary, contribution to this growth also has been the central bank's issuance of more bills to absorb a surge in liquidity accompanying higher levels of foreign investment during the past year.

- In Korea (3%), the growth in new government issuance was half as fast as in the first half of 2006, as a result of central bank tightening and the government's plan to reduce public debt to a level below 50% of GDP.[2] Unlike several of its neighbors, Korea has not needed to issue bills to mop up excess liquidity, removing one source of market growth seen elsewhere. This is a result of proactive central bank

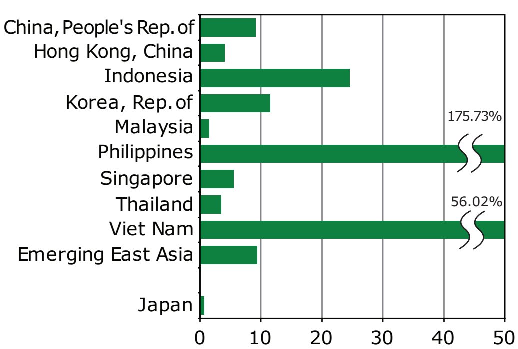
[2] The Bank of Korea discussed these plans in Operational Direction of Monetary and Credit Policies in 2007, issued in January.

measures in tightening credit conditions, which have in turn contributed to the 11% appreciation of the KRW against the USD over the past 2 years.

- In Hong Kong, China (2%), the government's issuance was in line with its long-term average but the rate has been slowing over the last two semiannual periods. The government has reduced its fiscal deficit and projects a surplus for the fiscal year ending in March 2008. Because of this, the Hong Kong Monetary Authority (HKMA) is concentrating its issuance in the bills segment in order to maintain a liquid money market. The HKMA is looking to develop liquid maturities at 10 years and above. The issuance program to support these plans remains under discussion.

- In the Philippines (-2%), the value of LCY government bonds outstanding declined during the year to end-June as the government used its recently improved fiscal position to delay refinancing bonds due for redemption rather than maintain a predictable supply for investors. Several auctions were cancelled because they drew average bids with unacceptable yields higher. This policy raises questions about the Treasury's role as purely a funding agency or as a reliable contributor to bond market infrastructure. Treasury bills and bonds outstanding declined significantly—12% and 15% respectively—with the remaining public debt issued by the central bank to absorb part of the excess liquidity that drove the 13% appreciation of the PHP against the USD since June 2006.

Figure 3: **Growth of Emerging East Asian Local Currency Corporate Bond Markets in 1H07** (%)




Sources: People's Republic of China (ChinaBond.com); Hong Kong, China (Hong Kong Monetary Authority); Indonesia (Surabaya Stock Exchange); Republic of Korea (KoreaBondWeb); Malaysia (Bank Negara Malaysia); Philippines (Bureau of Treasury); Singapore (Monetary Authority of Singapore); Thailand (Bank of Thailand); Viet Nam (VietComBank Securities); and Japan (Japan Securities Dealers Association).

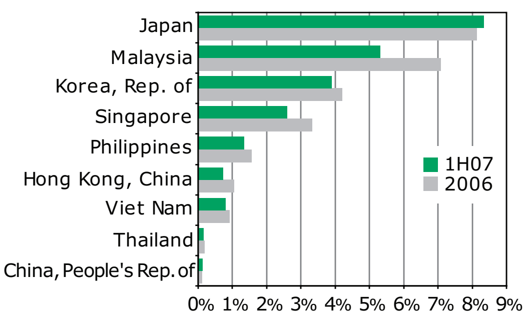
***After outpacing government bond market growth for the previous 18 months, corporate bond markets in emerging East Asia grew at a slower pace in the first half of 2007 due partly to the rising cost of short-term finance.***

Corporate bond markets grew at a slower pace in the first half of 2007, yet several surged ahead **(Figure 3)**. The fastest growing markets—Philippines, Viet Nam, Indonesia, and PRC—also liberalized their bond issuance procedures dramatically in 2006. In the case of Viet Nam and the PRC, the growth was also achieved despite rapidly rising interest rates. Nonetheless, the general trend is that growth in corporate issuance continues to outpace economic growth. Regulatory reform in each market is continuing to be a significant driver of corporate bond market growth.

The securitized-note markets of the region declined by 5% in value during the first half of 2007 as existing issues matured and investor appetite for new issues dwindled—particularly in Japan's asset-backed commercial paper market **(Figure 4)**. The big innovators of 2006 (the PRC and Hong Kong, China) refined new structures for issuance later in 2007. Other contributing factors to this decline were the rising cost of short-term finance in most markets and rising volatility in offshore markets since late February 2007 (**Table 4**).

- In the Philippines (176% corporate bond market growth in the first half of 2007), the corporate bond market grew 50% in the second half of 2006 and accelerated substantially in the first half of 2007. Despite the growth, corporate debt securities comprise only 8.8% of LCY bonds outstanding. The increase in issuance is partly due to clearer guidelines on underwriting and to measures that improve price discovery in a very illiquid market. But the biggest factor is the surge in portfolio investments that lifted overall liquidity levels and lowered the cost of funding. As a strengthening peso made currency swaps less attractive, some domestic companies switched to LCY financing to replace maturing USD debt. The mutual fund sector, revived just 3 years ago, is creating demand in the bond market (90% of all mutual-fund assets under management are debt securities). Despite the LCY renaissance, the securitized note market contracted 6% as prior foreign currency issues matured. In August 2007, the securitized note market came under pressure when the

Figure 4: **Securitized Notes Outstanding, 2006 and 1H07** (% of GDP)




Sources: People's Republic of China, Hong Kong, China, Indonesia, Republic of Korea, Philippines, Singapore, Thailand, Viet Nam (Bloomberg LP); Malaysia (Cagamas Berhad and Bloomberg LP), Japan (Japan Securities Dealers Association, Rating and Investment Information Inc., and Bloomberg LP), and GDP (CEIC).

Table 4: **Short-term Interest Rates**

| Market | Reference Rate | 31-Dec-05 | 31-Dec-06 | 31-Mar-07 | 30-Jun-07 | 28-Sep-07 |
|---|---|---|---|---|---|---|
| China, People's Rep. of | CHIBOR 1 Month | 1.90 | 2.80 | 2.46 | 3.15 | 3.08 |
| Hong Kong, China | HIBOR 1 Month | 4.10 | 3.91 | 4.23 | 4.48 | 5.47 |
| Indonesia | JIBOR 1 Month | 13.60 | 9.49 | 9.04 | 8.26 | 7.97 |
| Korea, Rep.of | KORIBOR 1 Month | 3.80 | 4.65 | 4.76 | 4.86 | 5.17 |
| Malaysia | KLIBOR 1 Month | 3.13 | 3.62 | 3.59 | 3.56 | 3.57 |
| Philippines | PHIBOR 1 Month | 7.81 | 6.81 | 5.38 | 6.13 | 6.75 |
| Singapore | SIBOR SGD 1 Month | 3.19 | 3.44 | 2.94 | 2.38 | 2.52 |
| Thailand | BIBOR 1 Month | 4.30 | 5.24 | 4.69 | 3.75 | 3.50 |
| Japan | TIBOR 1 Month | 0.06 | 0.42 | 0.63 | 0.62 | 0.70 |
| US | Federal Funds Rate O/N | 4.25 | 5.17 | 5.38 | 5.38 | 4.50 |

Sources: Bloomberg LP, except KORIBOR (Korea Federation of Banks).

special purpose vehicle financing part of Manila's Metro Rail Transit (MRT3) lacked sufficient funds to redeem one of its senior notes. After a credit warning from Fitch Ratings, the government and participating banks managed to organize sufficient financing to redeem the notes on schedule.

- In Viet Nam (56%), the LCY corporate bond market grew more than the government bond market. The rate of growth was far less than the 112% observed in the last 6 months of 2006, as some very large issuers tapped the offshore USD market. The central bank also tightened policy rates to counter the excess levels of liquidity. This stalled the stock market's rapid appreciation and tempered issuer sentiment in the debt market. The main driver of growth has been infrastructure spending, supported by a high level of demand from both foreign and domestic investment funds.

- In Indonesia (25%), the LCY corporate bond market grew rapidly during the first half of 2007, accelerating from 2% in the second half of 2006. The announcement during the second quarter and passage into law in the third quarter of new tax incentives to corporate bond issuers was a major factor in the market's growth. In addition, a nascent Islamic bond market is attracting a new investor base and at USD330 million now makes up 4% of the corporate bond market. The steady decline in the central bank's reference rate from 9.75% at year-end 2006 to 8.25% in early July 2007 also encouraged new investors and issuers into the market.

- In Korea (12%), corporate issuance accelerated in the first half despite expectations that a slowing economy might reduce corporate demand for credit. The securitization note market remained steady despite successive interest-rate hikes and currency volatility, which made these instruments less attractive to foreign investors. To facilitate the participation of foreign issuers and investors in the debt markets, the central bank and the securities regulator have taken measures to increase the range of risk-management techniques and for investor eligibility. The securities regulator has also loosened rules for collateral inclusion in funds. The corporate bond market is now 58% of GDP, while the securitized note market is only 2% of GDP.

- The PRC (9%) has led the region in corporate bond market growth for the past 3 years and in the first half of 2007 remains the region's second fastest-growing major market (after Korea) in terms of bonds outstanding. More important than its strong growth, however, is the diversity of issuance. A majority of corporate bonds were issued by listed companies in which the government's stake has been reduced (below 50%) or which have no government stake. Innovation has been an important factor, as numerous convertible bonds were issued to take advantage of the stock market's dramatic rise this year. Subordinated debt also made its debut in the LCY bond market, when the Bank of Communications issued 10- and 15-year subordinated notes comprising 9% of net bond financing in the first half of 2007. No new LCY securitized notes were issued in the first half of the year and 39% of the previous issues matured, reducing the amount outstanding. Nonetheless, regulatory guidance regarding the issue of securitized notes was clarified by both the central bank and the securities regulator.

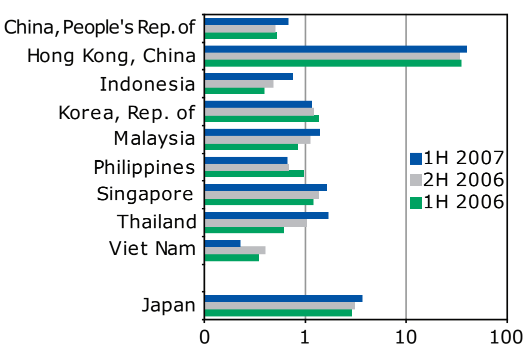
- Singapore's (6%) LCY corporate bonds outstanding grew modestly in the first half of 2007 from the equivalent of USD43.7 billion in December 2006. A contributing factor was the steady rise in the number of foreign firms issuing SGD bonds in Singapore. Foreign-based issuers constitute almost 25% of total LCY corporate bonds. Some of this growth in 2005 and 2006 also came from real estate equity investment trust (REIT)-related bond issuers. While the REIT sector continues to grow, securitized notes as a whole contracted by 15% in the first half. Increasing volatility in the international securitization sector reduced the appetite for many of the market's traditional investors.

- In Thailand (4%), the corporate bond market grew strongly (18%) in 2006, but slowed in the first half of 2007 in response to policy uncertainty and a significant increase in issues from the central bank. The securitized note market also declined, by 7% in the first half. Even though the central bank cut its policy rate six times between December 2006 and July 2007, to 3.25%, and the 5-year yield dropped to 4%, the yield curve steepened steadily and many firms chose to borrow short-term funds from banks, which reduced new debt issues.

- In Hong Kong, China (4%), the corporate bond market continued growing at twice the rate of the much smaller government note market. However, growth decelerated from the 8% achieved in the second half of 2006. A significant factor was the extremely strong equity market, where price-earnings ratios rose to such high multiples that it became much cheaper to finance projects with equity than debt. The securitized note market contracted by 28% in 2007, falling to below 1% of GDP as several issues matured. More securitized note deals have been issued in the second half of the year. But the main reason for the lack of new issues was the focus on PRC-related financings, for which very little structuring was required amid investor enthusiasm on both sides of the border.

- Malaysia's (2%) corporate bond market growth was modest, decelerating over the past year and declining slightly as a percentage of GDP. Although corporate demand for funds has remained strong, it has to a larger extent been satisfied by banks or by the recently booming equity market. The reduced demand for bonds was even more pronounced in the securitization market, which declined 14% in value in the first half. The Islamic Finance sector continued its double-digit growth over the period at an annualized rate of 26%. Islamic securities now comprise more than half of corporate bonds outstanding (61% as of end-June 2007).

Figure 5: **Government Bond Turnover Ratios**[1]




[1] Calculated as LCY trading volume (sales amount only) divided by average LCY value of outstanding bonds during each 6-month period.

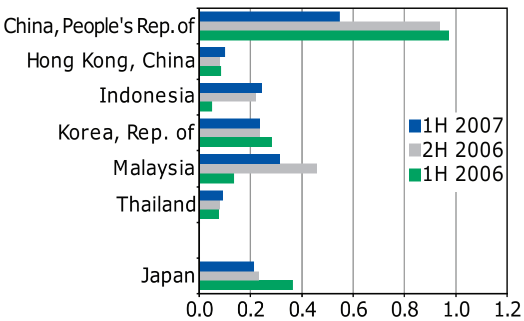
Sources: People's Republic of China (ChinaBond.com); Hong Kong, China (Hong Kong Monetary Authority); Indonesia (Bank Indonesia and Surabaya Stock Exchange); Republic of Korea (KoreaBondWeb); Malaysia (Bank Negara Malaysia); Singapore (Monetary Authority of Singapore); Thailand (Thai Bond Market Association); Viet Nam (VietComBank Securities and Ho Chi Minh City Securities Trading Center); and Japan (Japan Securities Dealers Association).

## Turnover

***Turnover ratios were mostly higher in the first half of 2007 than in 2006 as steepening yield curves led investors to reassess the term structure of their bond holdings, while in some markets new regulations also encouraged increased trading.***

Turnover ratios, a measure of market liquidity, rose appreciably in government bond markets in Indonesia, PRC, and Thailand, while Malaysia; Hong Kong, China; and Singapore improved more modestly in the first half of 2007, compared with the second half of last year. Korea, Philippines and Viet Nam saw moderate declines (**Figure 5**). For the LCY government bond sector, the average turnover ratio rose 18% to 1.3 times the value of bonds outstanding.

Figure 6: **Corporate Bond Turnover Ratios**[1]




[1] Calculated as LCY trading volume (sales amount only) divided by average LCY value of outstanding bonds during each 6-month period.

Sources: People's Republic of China (ChinaBond.com); Hong Kong, China (Hong Kong Monetary Authority); Indonesia (Bank Indonesia and Surabaya Stock Exchange); Republic of Korea (KoreaBondWeb); Malaysia (Bank Negara Malaysia); Singapore (Monetary Authority of Singapore); Thailand (Thai Bond Market Association); and Japan (Japan Securities Dealers Association).

Corporate bond turnover increased substantially in Hong Kong, China and more moderately in Thailand and Indonesia. Corporate bond market turnover declined in PRC, Korea, and Malaysia (**Figure 6**). In the LCY corporate bond market, the average turnover ratio fell by 31% to 0.32 times the value of bonds outstanding.

- The PRC saw quite divergent trends in turnover in the government and the smaller corporate sector. While the government bond market's turnover ratio rose 34% to 0.68 times bonds outstanding, the corporate market's ratio fell 42% to 0.55 times during the first half of 2007. The PRC corporate bond market remains more liquid than the government sector—in sharp contrast to the rest of the region, where turnover in the government sector is 3 to 15 times that of the corporate sector. In part, this is due to the novelty of corporate bonds. Even though all corporate bonds required bank guarantees until the third quarter, they offer considerably higher yields than government bonds. Since corporate bond trading was allowed on the interbank market—managed by the central bank—they have gained a wider range of investors (including insurance firms, as opposed to purely banks before). In parallel, the new investors are gradually allowed to access the interbank market. The interbank market is where most bills and bonds are now traded. Much of the rise in the government bond turnover ratio is attributable to the rise in the proportion of central bank bills—to almost 50% of the total government market. These money-market instruments are more liquid than medium-term notes and bonds, adding to their popularity.

- Hong Kong, China retained its position as having the highest turnover ratio in the region's government bond sector. A contributing factor is the Hong Kong Monetary Authority's continued issuance at the short end of the yield curve. Its primary objective is to support a liquid money market, as this reinforces the territory's banks and debt and equity underwriting markets. In the first half of 2007, turnover rose moderately (18%) to 40 times government bonds outstanding. The high percentage of bills (53%) is the main reason for the high turnover ratio. Similarly, the much larger corporate bond market's turnover ratio rose 25% to a less liquid 0.10 times bonds outstanding. A major factor in this rise has been the dramatic surge in HKD liquidity over the past year as the PRC has gradually opened more investor channels into Hong Kong, China. This expansion of funding sources has matched the enormous increase in Hong Kong, China-based fund raising for PRC-based firms. Over USD42 billion in new HKD-denominated equity and USD0.65 billion in new RMB-denominated debt for PRC concerns has been raised in Hong Kong, China's capital markets in the year to June 2007. This compares with USD99 billion of issues over the past decade.

- In Indonesia, new tax incentives for corporate bond issuers and new rules for price discovery have boosted both issuer and investor participation in the debt capital markets over the past year. Since the beginning of May, government bonds can be traded on the Surabaya stock exchange and liquidity has improved for both government and corporate bonds as a result. The merger of the Surabaya and Jakarta stock exchanges takes effect on 1 December 2007. Increased investor participation was especially visible in the first half of 2007, during which government bond turnover rose 58% to 0.76 times bonds outstanding and the corporate market rose 11% to 0.25 times bonds outstanding. The boost in market activity has also been supported by the continued decline in interest rates. Rates fell all along the yield curve during 2006 as the central bank continued cutting its reference rate until June 2007. The consequent rise in bond prices has induced both trading and issuance.

- Korea's government bond market turnover ratio fell 2.5% to 1.18 times bonds outstanding, while corporate bond market liquidity declined by 1% to 0.24 times during the first half of 2007. Central bank tightening led to a 50 basis point (bp) rise in yields over the period, which discouraged trading. At the same time, the mutual fund market has continued growing at a fast pace for many years, bringing new small investors to the fixed-income and equity markets. This meant that institutional investors tended to wait for new issues at the higher yields rather than trade existing notes.

- In Malaysia's capital markets, turnover in the government bond market (up 24% to 1.39 times bonds outstanding) rose moderately, while that in the corporate bond market (down 31% to 0.32 times bonds outstanding) fell substantially. The government market benefited from the increased share of issuance in the money market—where most trading occurs—combined with some uncertainty over future interest-rate trends. The influx of foreign capital that motivated the central bank's increased issuance in the first place flowed into government and corporate debt securities, increasing the foreign-held share during the first half of 2007 by almost 50%, and raising turnover.

- In the Philippines, the significant reduction in market yields and the increasing influx of nonresident funds (some of it an increase in repatriated income) have made bond issuance more attractive to corporations. But this surge in liquidity led the central bank to begin tightening late in the first quarter and to increase bill issuance to mop up some of the liquidity. Unlike many other markets, this new issuance did not lead to a rise in turnover (which was down 3.3% to 0.66 times bonds outstanding), as the prospect of higher yields (up since April) has discouraged new trades. The practice of declining bids at treasury auctions also discouraged turnover as market participants were reluctant to position their portfolios ahead of auctions. Certainty of the amount and timing of government debt supply is crucial to building market confidence. No corporate debt securities turnover data is available although the significant rise in new corporate issues may lead to measurable turnover in the near future.

- Singapore's LCY government bond market turnover rose 20% to 1.63 times bonds outstanding during the first half of 2007. A 0.75% decline in short-term yields and sell-off in longer-dated bonds led to a steepening of the yield curve, which somewhat discouraged outright trading of bonds by institutional investors. Countering this disincentive was the large increase in bills issuance to absorb liquidity which resulted in an increase in the money market share of overall trading. Some support for increased liquidity came from several re-openings of existing government benchmark issues to provide more depth.

- In Thailand, the pattern of solid issuance volumes and stronger trading volumes seen in several markets was repeated. Higher-than-average market growth was reflected in the highest turnover increase in the region, up 62% to 1.68 times government bonds outstanding during the first half of 2007. The most active part of the government market was short-term notes and bonds issued by the Bank of Thailand, which pays a moderately higher yield than the sovereign. These instruments are used to sterilize excess liquidity. Turnover increased five-fold over the average for the past 2 years during the first half of 2007. In late February 2007, the central bank lowered its policy rate and the general decline in interest rates that followed stimulated the corporate bond market—both for new issues and for trading. The corporate bond turnover ratio rose 17% to 0.09 times as a result.

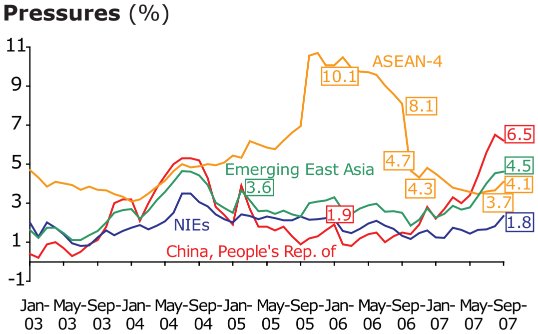
- Viet Nam's bond market continues to evolve rapidly and the response to policy signals and external changes in the supply of funds is changing with it. Amid the strongest bond market growth in the region, turnover in government bonds declined substantially, to 0.23 times bonds outstanding. The main cause of the decline was the central bank's tightening policy in response to excess funds supply, especially from nonresidents. As the State Bank of Vietnam has limited policy tools at the moment, it has increased reserve requirements and the base lending rate to cool the market. The expectation of further tightening has encouraged investors to wait for future issues at higher rates rather than switch out of older issues into the current higher-yielding notes. The corporate bond market is less than 1 year old and no systematic measure of its activity is available, but market reports suggest that its limited liquidity declined somewhat in the first half of 2007.

## Bond Yields

***Reversing the general trend of the previous 2 years, yield curves generally steepened in 2007. Short-term rates fell slightly in response to the liquidity surge, while long-term rates rose in response to the reemergence of inflationary expectations.***

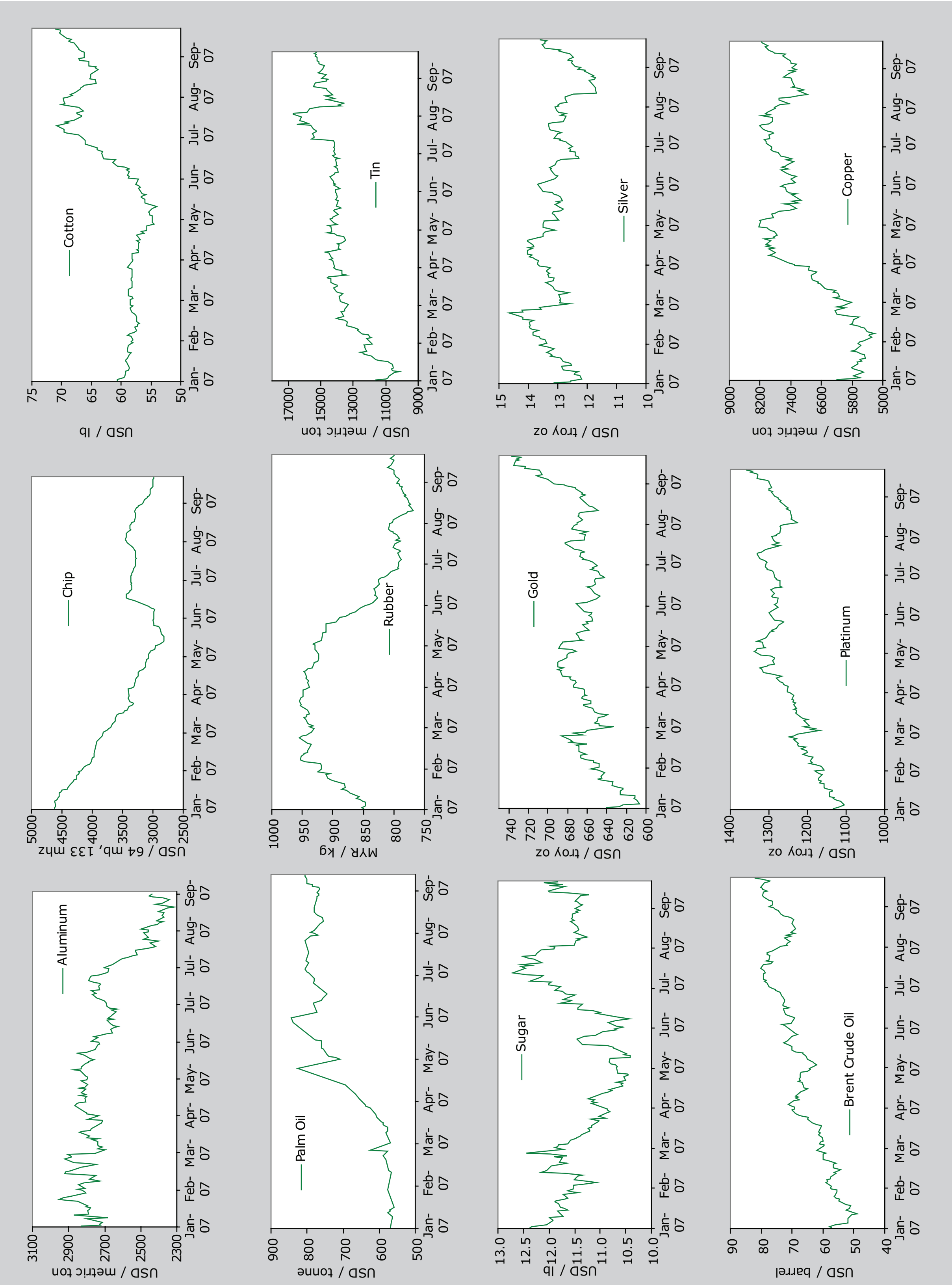
During most of the first quarter of 2007, interest rates in emerging East Asia held steady and currencies continued to appreciate (see Table 3, pg. 5 and Table 4, pg. 9). Slight rises in headline inflation and continued high oil and other commodity prices **(Figures 7, 8)** led to a rise in inflationary expectations and most yield curves

Figure 7: **Reemergence of Inflationary Pressures** (%)




Source: OREI staff calculations based on CEIC data.

Figure 8: **Commodities Daily Trading Prices** (USD)




Sources: Bloomberg LP and Reuters.

began to steepen in the second quarter as global uncertainties and increased volatility from global credit markets impacted on local currency debt markets (**Figures 9, 10**).

Policy makers, including those at the People's Bank of China, tightened interest rates in the early part of the year in response to rising inflation. When the Shanghai Stock Exchange index fell more than 10% in 2 days, global markets briefly panicked and investors began to re-evaluate their securities holdings based on heightened perceptions of financial risk. Market participants began to withdraw credit lines from each other in reaction to rising defaults in the US subprime mortgage market and increased market volatility. These actions triggered a fundamental change in regional bond markets. Long-term bond yields began to rise, significantly reversing direction in the case of Indonesia and particularly in Thailand and Malaysia. In some markets, short-term interest rates rose as central banks issued bills to absorb liquidity although in others they remained relatively unchanged. But regardless of these policy actions, many market participants found it difficult to borrow as credit lines contracted.

By late July—partly as a response to the very public failure of several large credit hedge funds[3]—long-term yields in many Asian markets were reflecting global trends and had already risen by 50bp to 100bp. Central banks generally loosened policy[4] to reduce the effects of a global credit squeeze and short-term yields eased in response.

Long-term yields remain high relative to short-term rates to reflect the heightened risk premium in all emerging East Asian markets except Japan and Singapore, which are functioning as regional safe havens. Yield curves in the rest of Asia have steepened as investors moved into shorter maturities to wait out the turbulence. The two exceptions were Indonesia and the PRC, where overdue central bank tightening raised short-term rates enough to flatten the local yield curves markedly in the third quarter.

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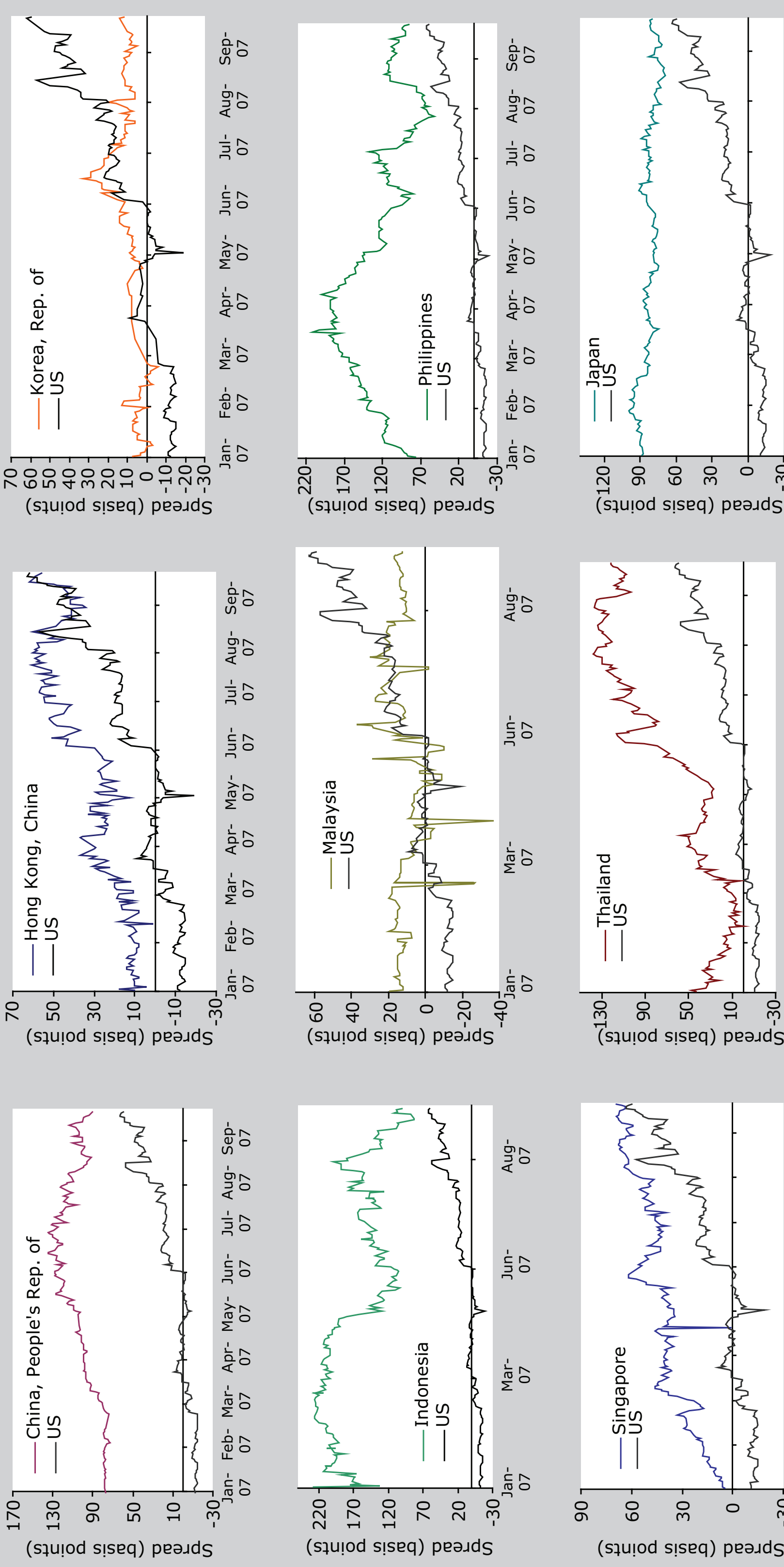
[3] Bear Stearns, a major New York securities firm, was forced to wind up two hedge funds that it managed, the High-Grade Structured Credit Strategies Fund and the High-Grade Structured Credit Strategies Enhanced Leverage Fund, after injecting more than USD3 billion into the former in July 2007. Sowood Capital Management LP, a hedge fund manager that had held over USD6 billion in assets under management, had to wind up both of its hedge funds in July 2007.

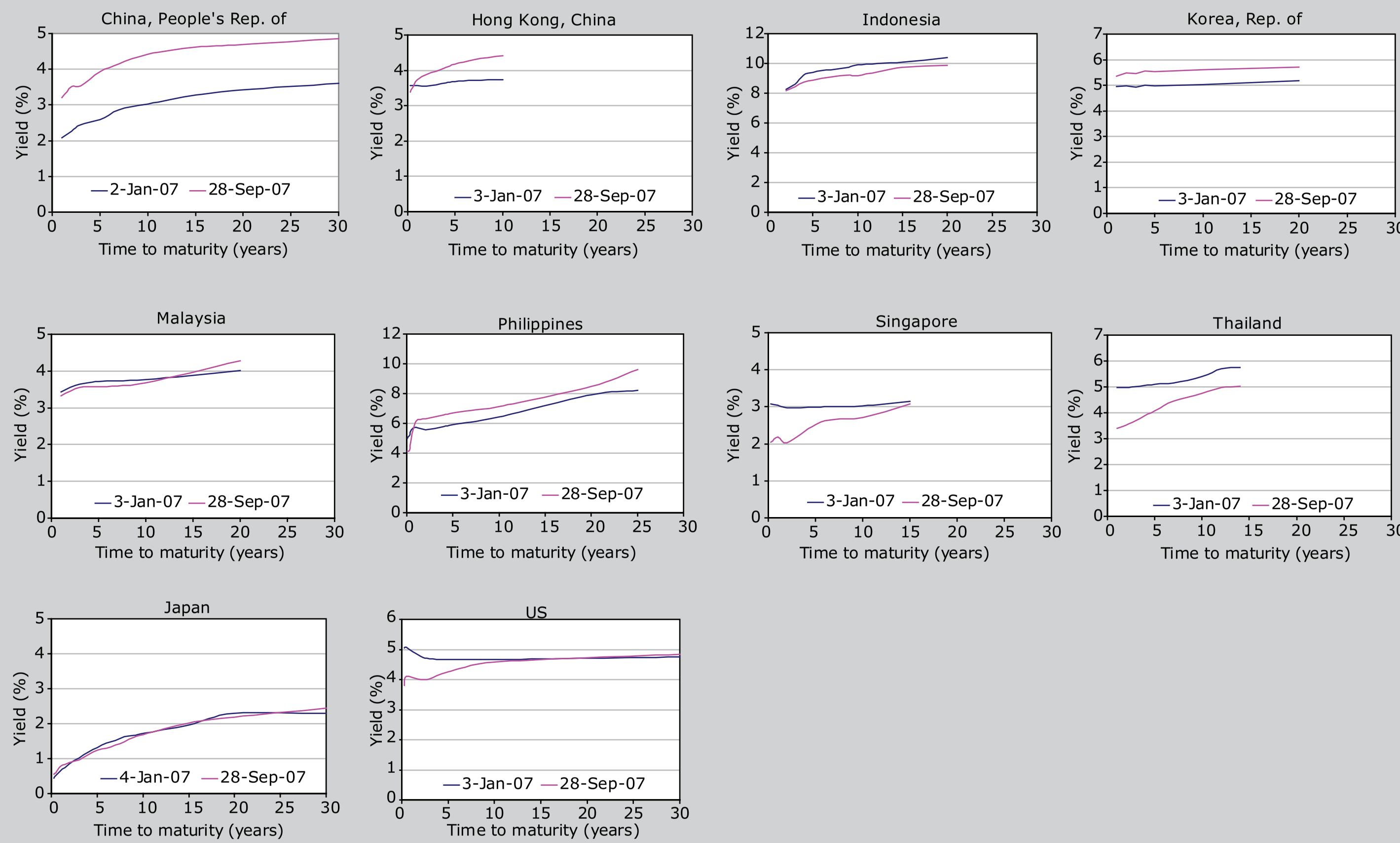
[4] This action took several forms. In some cases Central banks kept policy rates unchanged but eased access requirements to emergency funding or widened acceptable securities collateral to include prime name paper. In others, both policy rates and collateral arrangements were eased.

Figure 9: **Interest Rate Spread—2-Year and 10-Year Local Currency Bonds**




Source: *AsianBondsOnline.*

Figure 10: **Benchmark Yield Curves—Local Currency Government Bonds**




Source: *AsianBondsOnline*.

- In the PRC, yields have risen in step with the central bank's progressive tightening, which began early in 2006 and accelerated in the second and third quarters of 2007. As inflation continued rising throughout this period, the yield curve, as reflected by the 2–10 year curve spread, steepened about 55bp from January through August. The spread has flattened somewhat (about 30bp) as global debt and equity markets recovered in September and October. At its steepest, the 2–10-year term spread was 131bp steeper than the equivalent term spread in the US, reflecting the relatively higher inflationary expectations. The yield curve spread may remain high over the next year. As part of the new parcel of reforms, the 10-year Treasury bill will find new competition from corporate bonds that will be issued at higher yields and without bank guarantees and its yield may have to rise somewhat to reflect the increased competition for investment funds from corporate borrowers.

- Yields in Hong Kong, China track US yields most closely because of its currency peg with the USD and the divergence between the two markets remained consistently at around 20–30bp until August 2007. Increasing monetary ties with the PRC are beginning to change the dynamics of this relationship. Qualified Domestic Institutional Investor and similar programs in the PRC are bringing more funds into Hong Kong, China both into equities and local debt securities. The continued influx of funds has meant that the local 2–10 year yield curve spread stopped widening just as US credit markets tightened dramatically in response to market turbulence. Since August the divergence has almost completely disappeared.

- Indonesia, like the Philippines and the PRC, benefited in the early half of 2007 from an increasing number of foreign investors attracted by the high yield of its bonds and its progression of public-sector reforms. The central bank continued to lower its policy rate throughout the first half of the year, increasing the likelihood of capital profits from holding debt securities. As a result, the 2–10 year LCY yield curve spread declined approximately 100bp to fewer than 120bp between January and June 2007. Foreign credit problems increased awareness of risk in all markets and pushed the term spread back out briefly to 200bp in August. In the third quarter Indonesia raised policy rates to support the currency in the light of global turbulence, which has narrowed the 2–10 year spread to approximately 100bp.

- In Korea, domestic credit markets expanded rapidly in response to a series of liberalizing steps that allowed a wider range of borrowers to access the market. New demand for investment capital helped push LCY yields higher across the yield curve by an average of 50bp by mid-July. The Bank of Korea raised policy rates in December 2006, and this combination of policy actions ensured that the yield curve remained flat until early May. At that point, rising foreign credit concerns and domestic inflation risks pushed up the 10-year yields and increased the local currency 2–10 year spread to 30bp, until the central bank raised the overnight call rate in July and August, flattening the yield curve again.

- In Malaysia, the yield curve remained fairly flat with yields at about 3.75% throughout the year. During the period of rising global credit concerns, beginning in mid-May, there was a considerable reallocation of funds between various maturities in the LCY bond market. As a result the 2–10 year yield curve spread gyrated between +30bp and -30bp, although the long-term trend of a flat yield curve remained relatively intact. The increased volatility was a test of the new openness in the country's capital account, as significant amounts of foreign investment money had entered the LCY market during 2006 and had helped lift the currency almost 10% in the 18 months to end-June 2007. The size of the LCY government and corporate bond markets and the balance of outbound and inbound investments helped keep the currency stable during this period of foreign investor uncertainty.

- In the Philippines, easier short-term interest rates pushed the 2–10 year yield curve spread to 220bp by March 2007. As foreign investors became more concerned about credit risk in the light of increased stock market volatility and emerging inflation concerns, 10-year yields also began to rise. The combination of the central bank tightening credit access and the US-based credit crunch led to short-term rates increases of more than 180bp, to nearly 7% in late July—nearly 1% above the central bank's official borrowing rate. The rise in short-term rates and the promise of a reduced fiscal deficit helped flatten the yield curve by over 130bp from March to August 2007. Along with the central bank's tiering scheme for reserves access (effectively rationing reserves without raising rates), these measures began to slow some of the effects of excess liquidity. The external shock from the US credit markets also caused both the foreign currency and the LCY term yields to see-saw. As peso holders sought safety in the LCY sovereign note and foreign investors reduced their Philippine USD sovereign debt holdings, the yield on LCY Philippine Treasury notes came down to within 20bp of USD bonds issued by the Republic of the Philippines, unimaginable from the differential of 370bp seen 2 years earlier.

- Singapore's yield curve spread gradually steepened throughout 2007, from just 5bp at year-end 2006 to nearly 70bp in September. The two main sources of this steepening were a creeping—but still low—inflation expectation which caused longer bond yields to rise and investor "flight to safety" which pushed the 2-year yield down 85bp. Investors in other economies in Asia saw Singapore and Japan as safe havens and moved investment capital in the short end of the Singapore debt markets. Even though the Monetary Authority of Singapore increased its issuance of bills and short-term bonds to absorb the new liquidity, demand was strong enough to bring short-term yields down further than long-term yields.

- In Thailand, continued enforcement of the 30% unremunerated reserve requirement, imposed in December 2006, proved a major influence in LCY debt markets. Once listed equity investments were exempted, foreign investment flowed back into the equity market in 2007. The Bank of Thailand reversed its policy stance and eased interest rates. Between January and May 2007 both short-term and long-term interest rates fell—ensuring that the 2-10 year yield curve spread remained in a band between parity and +50bp. The return of global risk perceptions then reduced the investment inflows. New relaxation of rules for overseas investment by residents combined with diminishing inflows by nonresidents created a net outflow of portfolio money which helped lift the 2-year yield over 50bp from mid-May. At the same time, 10-year yields rose by 140bp as inflation concerns reemerged. As a result the 2–10 year spread has steepened 100bp since May.

- In Viet Nam, authorities raised concerns about the strong inflow of funds driving stock and property prices up and overheating the economy. Bank lending to the securities sector, whether to support trading or margin purchases, tripled in the year to June 2007. These worries led the central bank to tighten reserve requirements. A series of administrative measures has also progressively limited individuals' access to credit. This tightening has resulted in yields for 5-year bonds rising from 7.6% in early January to 8% in September. This represents a reversal of the easing trend in 2006 when 5-year bond yields fell from 8.75% to 7.6%.

## Bond Index Returns

***Despite turbulence in international credit markets, appreciating real currencies have resulted in 5.4% returns in US dollar terms over the first 9 months of 2007.***

The ABF Pan Asian index returned 5.4% in the 9 months to September 2007, compared with full year returns of 13.64% in 2006 (**Table 5**). Within the context of international volatility in other global fixed-income asset classes, Asian fixed-income returns are at least positive although some of the early gains from lower long-term yields in most of the region's markets during the

Table 5: **iBoxx ABF Index Family Returns**

| Market | Modified Duration (years) | 2006 Returns (%) | | 2007 YTD Returns (%) | |
|---|---|---|---|---|---|
| | | Local Currency Bond Index | USD Unhedged Total Return Index | Local Currency Bond Index | USD Unhedged Total Return Index |
| China, People's Rep. of | 4.11 | 2.32 | 5.63 | (2.41) | 1.43 |
| Hong Kong, China | 3.37 | 5.77 | 5.49 | 1.60 | 1.80 |
| Indonesia | 4.89 | 26.48 | 35.46 | 10.23 | 8.54 |
| Korea, Republic of | 3.20 | 6.00 | 14.38 | 1.95 | 3.59 |
| Malaysia | 4.31 | 4.81 | 11.82 | 3.05 | 6.16 |
| Philippines | 3.88 | 22.24 | 30.05 | 2.02 | 10.71 |
| Singapore | 5.02 | 3.73 | 11.91 | 4.27 | 7.09 |
| Thailand | 4.94 | 5.48 | 18.67 | 7.00 | 12.09 |
| | | | | | |
| Pan-Asian Index | 4.08 | NA | 13.64 | NA | 5.40 |
| | | | | | |
| US Govt 1–10 years | 3.52 | | 3.52 | | 4.95 |

Notes:
1. Market bond indexes are from iBoxx ABF Index Family. 2007 YTD is year-to-date returns as of 30 September 2007.
2. Annual return is computed for each year using natural logarithm of year-to-date index value/ beginning year index value.
3. Duration is as at 30 September 2007.
Sources: *AsianBondsOnline*, Bloomberg/EFFAS for US Government Bond Index.

first half of 2007 were reversed during the third quarter. When overseas credit markets ran into liquidity problems, foreign investors reduced their debt exposures in some economies. Earlier positive returns due to appreciation of the region's currencies also partially reversed, reducing returns in USD terms in the third quarter.

Nonetheless, Thailand and the Philippines showed very strong USD returns with the help of large currency gains in the first 9 months of the year. While returns in the PRC bond markets were slightly negative in local currency terms, an appreciating RMB ensured positive returns in USD terms. Solid LCY returns in Thailand and Indonesia resulted from continued central bank easing throughout the period. Even with the rise in long-term yields in Malaysia and Singapore in the third quarter, returns for the 9 months remain positive in both local currency and USD terms.

## Institutional and Regulatory Changes

***Continued reforms and liberalization have led to credit-rating upgrades for several regional economies, offering the best hope for more rapid expansion of bond markets.***

Market liberalization has continued at a fast pace in 2007. Several markets are working on building liquidity in their government yield curves by focusing issuance on benchmark maturities. Extending the term of the yield curve has drawn renewed interest, as has opening the capital account to balance the flow of cross-border investments. Some markets have started experimenting with higher-risk bond issues and synthetic credit risk in efforts to increase credit market access for smaller companies.

- PRC authorities have worked on many fronts in credit markets and have achieved significant breakthroughs in two related areas: (i) improving the corporate sector's access to credit, and (ii) removing mandatory bank guarantees for corporate issuers. With the first, the formal designation of the China Securities Regulatory Commission (CSRC) as the sole agency where filings for bond issuance are vetted—against written standards—is a major positive reform. Reducing the role of the National Development and Reform Commission (NDRC) as the sole gateway to markets was a necessary step, one that may be formally complete but which will take time to show results. Through filings with the CSRC, corporate issuers must meet accounting and governance standards and can manage their applications through a transparent legal process. With the second, removing corporate bond guarantees means investors can no longer rely upon the government to bail them out when issuers get into trouble. The burden has begun to shift to the investor to make prudent decisions on risk pricing, based on disclosure supervised by regulators and service professionals. Issuers' costs could also be reduced if the margin at which they can issue is less than the cost of the bank guarantee. In this way, well run corporations will be rewarded for good governance by lower financing costs. With these two steps, the PRC has become an investment option where resources can be allocated based on expected risk and return, rather than on top-down central planning. To further support this, the central bank has issued rules governing the licensing and operation of market-makers for bond markets.

- In Hong Kong, China, the biggest development of 2007 was the initial RMB5 billion bond issue by China Development Bank at the end of June, which should kick-start RMB issuance in this market. A system of securities and cash clearing, including RMB checks, repo agreements, and daily price fixings had to be created in parallel with the HKD system. This arrangement allows Hong Kong, China to operate as a complete offshore financial center for the PRC, using the territory's accounting, legal system, and open capital account to test new funding arrangements before adopting them on the mainland. Planning began in 2007 for a commodities futures exchange to support commodity risk hedging for future equity and bond issues. The treasury office issued a new 15-year note in August and announced plans for a regular semiannual issue program. This extension of the yield curve would make Hong Kong, China more competitive in raising long-term finance for infrastructure projects in the mainland. One result of the closer integration with mainland markets and the consequent improvement in Hong Kong, China's finances was a ratings upgrade to AA and Aa2 by Fitch Ratings and Moody's Investors Service, respectively, in August.

- In Indonesia, several reforms led to recent bond market growth. Two critical steps stand out: (i) a move toward listing and pricing all bonds publicly, and (ii) clarifying accounting and eligibility rules for mutual funds, which compete with banks as bond investors. A new 30-year LCY government bond was issued in May to benchmark longer dated corporate debt which will be used for infrastructure finance. New municipal bond rules from securities regulators and new collective standards from local municipal administrators were issued during the first half of 2007. These rules and standards specify municipal reporting and bond-issuing procedures to support a nascent municipal infrastructure finance market. Securities regulators announced a range of bond initiatives, some of which are still pending final approval. These include tax waivers for companies listing bonds on the exchange, electronic reporting of all over–the-counter (OTC) bond trades and the development of a repo market. The central bank, Bank Indonesia, also announced plans for a regulated Islamic capital market—the details to be published in late 2007 and early 2008. Based on improving fiscal accounts, Japan Credit Rating Agency upgraded Indonesia's sovereign bond's foreign exchange rating to BB+, while Moody's placed these notes under review for possible upgrade in August.

- The Bank of Korea announced plans to shift from using the overnight call rate to an overnight repo rate as its main policy instrument, beginning January 2008. The Financial Supervisory Service announced a set of rules to (i) tighten primary dealer eligibility requirements; (ii) centralize reporting of OTC prices; (iii) relax rules for repo collateral eligibility; and (iv) improve disclosure by listed bond issuers. It has also offered tax incentives to investors in high-yield notes with maturities of one to 3 years. The new Consolidated Capital Market Act is a step toward making Korea an attractive financial hub. It removes restrictions separating nonbank financial institutions from the banking sector, shifting to a disclosure based system of explanatory filings for new financial products from one requiring permission to offer. It also widens the range of collective investment schemes and collateralized debt obligations. In view of the country's improved fiscal condition, Moody's raised Korea's sovereign foreign-exchange rating to A2 at end-July.

- To improve liquidity in the sovereign yield curve, the Malaysian central bank, Bank Negara Malaysia (BNM), held a switch auction at the beginning of 2007 in which it accepted existing Malaysian Government Securities for 3- 5- and 7-year issues. This restructuring of the yield curve will likely focus new issues and re-openings at these maturities, thus increasing liquidity. A related change in instruments began early this year with the introduction of Bank Negara Monetary Notes (BNMNs). Discount versions will replace existing central bank discount bills and there will be some coupon-bearing BNMNs replacing Malaysian Government Securities stock. BNM has explained that these new notes will make its liquidity-management operations more clear and simple, and distinct from treasury operations. Bursa Malaysia signed an agreement with the Korea Exchange to install an electronic bond-trading platform that should increase market liquidity through greater price transparency. To improve liquidity for Islamic instruments, Malaysia's securities regulators have agreed with the Dubai Financial Services Authority for the cross-border trade of Islamic funds.

- The Philippines is facing a declining public borrowing requirement, as new tax sources and stronger growth will likely support higher tax revenues. The government has begun shifting issues from the USD market to the PHP market. Roughly half the public debt outstanding is in USD instruments, but 60% of financing in the first half of 2007 went to the PHP market, allowing the government to hold the LCY decline to 1.7% in bonds outstanding during the period. To support price discovery in the new corporate bond market, the central bank issued guidelines for a new "mark-to-market benchmark" to be published through the Philippine Dealing and Exchange Corporation, allowing price calculation where no market price is available. This arrangement may eventually work similar to the bond-pricing-agency system in Korea, supporting better risk management and increasing market liquidity.

- The Monetary Authority of Singapore issued a new 20-year government bond in March as part of its effort to extend the yield curve and support the listing of longer-term corporate notes, including those for property and infrastructure. It also reintroduced a 5-year note. Coupled with the re-opening of 2-, 7- and 10-year bonds, the government is trying to improve liquidity in a thinly-traded benchmark curve. A more ambitious program is to follow the success of real estate investment trusts (REITs) with the securitization of insurance risk. Just as traditional securitized notes remove assets from a bank's balance sheet, the new notes would be issued by special-purpose vehicles to effectively reinsure the insurance companies. The proposed regulatory regime is consistent with Singapore's strategy of becoming a risk-management center in Asia.

- Thailand's planned Financial Institutions Act aims to consolidate existing statutes for commercial banks, securities companies, capital-raising firms, and mortgage companies. Over the past 5 years, the consolidation of smaller securities companies into large ones or into banking groups has laid the foundation for capital improvement and encouraged subordinated debt issuance. The logical extension of this act would be to create more universal banks and to better integrate debt and equity capital markets. The Securities and Exchange Commission approved a draft revision of the mutual fund law that would increase accountability of fund managers to fund beneficiaries, but would also allow managers more scope in managing risks. The revision would raise the ceilings on single-issuer holdings and on foreign currency assets, which may increase cross-border investment. Despite problems surrounding the imposition of the unremunerated reserve requirement in December 2006, increased latitude in investing overseas has been one of the benefits to resident bond investors and pension funds.

- The bond market in Viet Nam has grown in part to support accelerated infrastructure investment. Aside from shifting more financing for infrastructure from government to state-owned enterprises (SOEs), new policies have tried to improve determining levels of risk. Banks are now required to better detail how loans are used. Similarly, bank bonds for capital expansion are now required to clearly specify the use of funds. Infrastructure may be next on the list as procurement control is a problem and would benefit from increased disclosure. The central bank has also authorized a one-year trial with credit default swaps, where local institutions holding LCY government and SOE bonds can buy default protection from designated foreign banks. These banks, in turn, may use these swaps to transfer the credit risk to their overseas branches. The application of this credit transfer is likely to be through credit-linked notes with a higher yield than Viet Nam's BB- Fitch rating would attract.

# Outlook, Risks, and Policy Challenges—Emerging East Asia

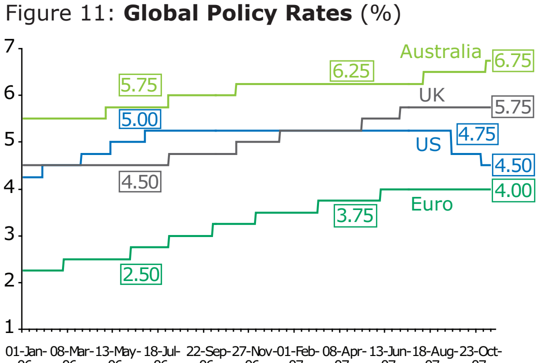
## External Market Environment

***Recent financial market turmoil and a slight easing of economic activity is expected to moderate global GDP growth in 2008.***

Economic growth is expected to continue to slow in the world's major industrial economies in 2008 amid concerns about tighter credit and the US economy. This is expected to slow global GDP growth from an estimated 5.2% in 2007 to a projected 4.8% in 2008.[5] The US subprime market turmoil and associated credit supply deceleration are expected to contribute to moderately easing economic growth. Expansion in the eurozone is also expected to ease somewhat, given banks' unexpected exposure to the US subprime sector. Excluding the US, Organisation for Economic Co-operation and Development (OECD) economies appear set to remain reasonably sound in 2007–08. A modest recovery is expected in Japan as robust profits support corporate spending, but soft external demand and tight credit demand are weighing down the economy. Double-digit economic growth continues unabated in the PRC, with GDP expected to grow above 11% this year. Inflation has been contained in advanced economies although resurgent global and commodity prices are reigniting inflationary pressures.

Recent major money market rate increases have tightened global monetary conditions. In response, the US Fed lowered its overnight rate to stabilize short-term rates, while other major central banks placed the tightening cycle on hold **(Figure 11)**. During the August market sell-off, the flight to quality and liquidity

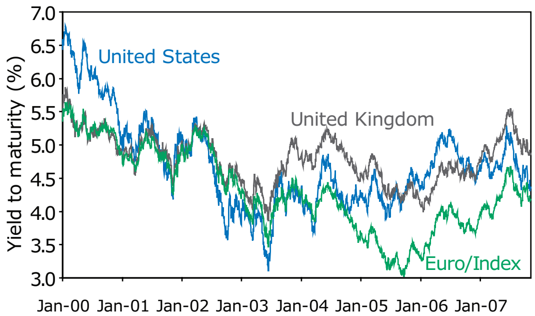
Figure 11: **Global Policy Rates** (%)




Source: Bloomberg.

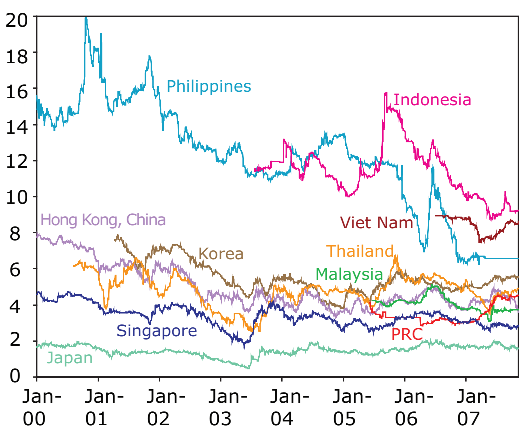
[5] International Monetary Fund, *World Economic Outlook Database* (October 2007).

Figure 12: **10-year Government Bond Yields—Advanced Economies** (% per annum)



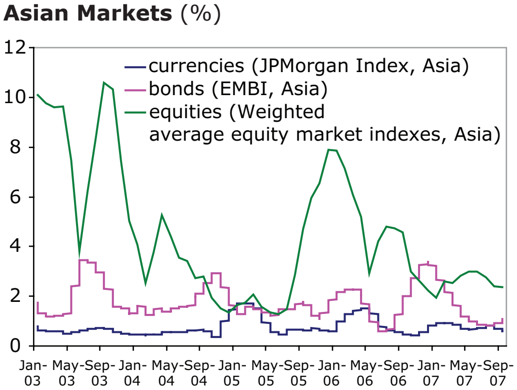

Source: Bloomberg.

Figure 13: **10-year Government Bond Yields—Emerging East Asia** (% per annum)




Source: Bloomberg.

Figure 14: **Volatility for Emerging East Asian Markets** (%)




Note: Volatility is based on market indexes for emerging East Asia, and is calculated as the standard deviation of the index divided by the average value of the index on a rolling quarterly basis.

Source: OREI staff calculations.

also pushed down yields on US, United Kingdom (UK), and euro government bonds, and a general re-pricing of risk widened credit spreads for corporate bonds **(Figure 12)**. Spreads on emerging market sovereign bonds also widened as investors fled to less risky assets **(Figure 13)**. While some normalcy has returned to global financial markets, volatility remains **(Figure 14)**.

Still, tightened credit conditions persist in some segments of the money and lending markets. More shocks may occur. Any deterioration in financial conditions could interact with vulnerabilities in advanced and emerging market economies to seriously prolong a slowdown in global economic activity.

***The expansion of global liquidity and increasing demand for high-yielding assets resulted in a plethora of complex new instruments entering debt markets, often without consideration of the underlying risk and kicking off a wave of imprudent financing that will take a substantial period of time to work itself through the system.***

Low benchmark yields in the US as a result of the Fed's deep cuts in the discount rate when the 2000/01 stock market bubble burst led to nominal borrowing rates that were significantly below the long-term average. As a result, US mortgage lending grew, much of it to unqualified borrowers. In large part, investors began a search for yields that drove high-yield bond spreads to new lows—in many cases without properly assessing the underlying credit risk.

At the same time, financial innovation spread into new asset classes, fueling higher degrees of leverage in financial products that were then sold on to investors seeking higher yields. As competition in securitizing assets increased, the previous wide profit margins eroded for both balance-sheet and arbitrage collateralized debt obligations (CDOs). This reduction in "per deal" profit thus motivated arrangers to seek out and acquire lower-quality assets to blend into their CDO pools and increase the effective leverage in these products.

Poorly monitored credit intermediation and inadequately understood underlying product risk led to severe market imbalances. Market players, for example, layered leverage risk on top of already highly-leveraged instruments. In particular, banks would set up structured investment vehicles (SIVs) to fund leverage in CDOs with short-term finance, creating a severe mismatch problem. Some of these SIVs were sold to investors under the pretense of being "arbitrage"—or risk-free—funds.

***The rising cost of funds beginning in mid 2004 led to defaults in late 2006 and early 2007, and resulted in a further round of declines in asset prices.***

As growth in real world GDP reached a 31-year high of 5.3% in 2004 (when G7[6] budget deficits peaked at USD878 billion), central banks—particularly the US Fed—began tightening credit to slow the expansion to more sustainable levels. When short-term rates rose several funds were exposed to refinancing risk in addition to the risk of the underlying pool-assets' value. The same rising interest rate pressures drove hedge funds to take on riskier strategies to boost returns. This late-cycle pursuit by financial managers of continued high returns pushed many marginal deals onto the market that—as recently as 2003—would have been considered unmarketable.

By early 2007, the rising cost of finance in money markets began to affect tightly-priced deals and erode the profitability of SIVs. At the same time, tighter financing began driving the weakest borrowers into default, as many priced their own finances too tightly. The subsequent defaults within CDO pools reduced the available income to service the securitized notes, resulting in a rapid increase in defaulting CDOs. These pools with supposed "blended risk" were thus squeezed at both ends—declining available yield from collateral (as more of it defaulted) and higher money-market costs in financing that collateral.

The most highly-leveraged hedge funds were in the same position, as margin calls initially and then client redemption calls forced the funds to unwind positions at low prices. The vicious cycle had begun, with defaults forcing lenders into distressed sales that in turn caused mark-downs in collateral and required further liquidation to meet capital or margin requirements.

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[6] Canada, France, Germany, Italy, Japan, UK, and US.

Good-quality assets were also sold at distressed prices during the second quarter of 2007 as many prudent investors began selling high-yield assets in anticipation of a credit crunch. Because many Asian issuers are at or below investment-grade, many regional bonds were sold indiscriminately and foreign lenders limited

Box 1: **The Subprime Mortgage Market Mess—What are the Lessons to be Learned?**

The stresses rising from the debacle in the United States (US) subprime mortgage market have sorely tested the international financial system over recent months. The fact that neither originators nor end users are yet able to assess the damage—and the amount of leveraging that some investors have undertaken—together have magnified rising subprime defaults into severe global financial market turmoil. Hedge funds, investment funds, and the commercial paper markets have all been affected negatively, prompting the need to rescue the United Kingdom-based Northern Rock Bank as well as other collective rescue operations in Germany and Canada. The world's major central banks have had to respond by pouring liquidity into the markets.

***Subprime lending—a double edged sword?***

Subprime lending refers to the practice of making loans to borrowers with generally poor credit quality. Typically, subprime borrowers' poor credit histories or the inability to demonstrate sufficient income to support monthly payments preclude them from obtaining loans at affordable rates. The combination of high interest rates, bad credit history, and murky financial situations often associated with subprime applicants makes them risky not only for creditors but for subprime originators as well.

There is also a weakness in the linkage between sponsoring banks and structured investment vehicles (SIVs)[1] that transfer residual risk back to the commercial or investment bank if and when asset values decline significantly. SIVs often obtain short-term loans by issuing commercial paper rather than matching the maturity of the asset collateral with the liability. Investors then provide cash in exchange for the commercial paper at money-market interest rates. The ability of SIVs to absorb risk cheaply contributed to the low cost of credit and enhanced the ability of firms and households to carry more debt. SIVs, however, are complicated and opaque. Current regulatory and accounting standards—such as Basel I—failed to recognize sufficiently the degree of risk to the residual risk holders.

[1] Structured investment vehicles are limited-purpose operating companies that undertake arbitrage by purchasing mostly highly-rated medium- and long-term fixed-income assets, which are funded with cheaper, mostly short-term, highly-rated commercial paper and medium-term notes.

The sharp fall in the value and temporary illiquidity of asset-backed securities (ABS)[2] has sparked a crisis of confidence that quickly spread to most credit markets, even affecting markets for investment grade to corporate bonds. Uncertainty about credit losses related to subprime lending led investors to shy away, in particular to those based on SIVs. The subsequent deterioration led rating agencies to downgrade ABS collateralized by subprime mortgages, resulting in downgrades in collateralized debt obligations (CDOs) that themselves use lower-rated ABS tranches as collateral. When short-term rates rose and credit tightened, these funds were exposed to repricing of credit, raising concern among investors about the nature and quality of these assets and a flight to quality ensued.

***Finding fault***

Understanding and managing the ripple effect of the subprime turmoil through the global economy is a critical challenge for governments, businesses, and market participants. The inability of homeowners to make their mortgage payments—stemming from everything from poor judgment by either the borrower or the lender, mortgage incentives, and rising adjustable mortgage rates—led default rates to begin increasing in the fourth quarter of 2006. Furthermore, declining home prices have made refinancing more difficult.

If these markets are to recover, structural reform will need to (i) demonstrate lending integrity; (ii) increase transparency; and, (iii) ensure that banks have insured themselves adequately against the need to provide liquidity to their off-balance sheet vehicles.

There is plenty of blame to go around:

- Subprime borrowers, who argued home ownership was inaccessible to them because they could not qualify for loans, were seduced by the illusion of inexpensive

[2] Asset-backed securities are a type of bond or note based on pools of assets, or collateralized by cash flows from a specified pool of underlying assets. Assets are pooled to make otherwise minor and uneconomical investments worthwhile, while also reducing risk by diversifying the underlying assets.

long-term finance. They were not complaining so long as housing prices were on the rise. But they have been, and loudly, once the housing market began to stall out.

- Professional risk evaluators have a duty to their shareholders—and to their clients—to protect their best interests by making sound lending decisions. However, off-balance sheet financing boosted leverage to higher levels system-wide. As this lending was concentrated in a limited number of vehicles, the size of credit exposures was underreported. Hedge fund and CDO leverage also increased through nonbank and derivative financing, which appeared as prudent loans on bank balance sheets.

- Investors demanded higher yields in a low interest rate environment—and to achieve higher yields meant taking on additional risk. Poor risk transparency in the credit chain and overstretched subprime borrowers meant that investors in many domiciles acquired assets whose true default risk was invisible. The apparent safety of mortgage-backed securities (MBS) meant these risks were distributed away from their geographical point of origin. Thus US subprime exposures surfaced on bank balance sheets worldwide. A prolonged period of falling interest rates lulled many investors into ignoring credit risks in their bond pricing and to relying almost solely on credit rating agencies to set risk levels.

- Lastly, financial regulators were using traditional measures of risk that were inadequate to evaluate these new financial products. In the end, it is the taxpayer who might be left to pay the price of another bailout.

***Understanding the risks of the subprime turmoil***

There are three primary risk categories:

- Credit risk—although the risk of default should have been assumed by the banks originating the loans, credit risk has been sliced and diced to be shared more broadly among a range of investors, including banks and specialist funds, far from the source of risk. This is because the rights to these mortgage payments have been repackaged into a variety of complex investment securities, usually MBS or CDOs.

- Asset-price risk—the rising inability of subprime and lower-quality mortgage homeowners to pay meant that the value of the mortgage assets fell suddenly. Weakening cash flows combine with demand for wider credit spreads to push down the market value of assets at many rating levels. Even assets supported by strong cash flows may be caught in this re-pricing of credit risk.

- Liquidity risk—the financial risk due to uncertain liquidity involves a worsening of the pledgeable value of the ABS and a contraction of short-term credit. However, because of concerns regarding the value of the mortgage-asset collateral linked to subprime and Alt-A[3] loans, the ability of many companies to issue such paper has been significantly affected.

***What have we learned so far?***

This is a cycle that seems to occur all too frequently. Little may be taken away in terms of lessons learned as history continues to repeat itself. But are the lessons to be learned from the recent financial turmoil different from previous ones? The issues are many: (i) lack of transparency; (ii) over-reliance on credit rating agencies' structured-credit evaluations; (iii) lax credit evaluations and underwriting standards in lending institutions; and (iv) regulators who struggle to keep pace with financial innovations in structured finance, all in combination with a drop in housing prices, low domestic interest rates, and tightening credit spreads.

- **There is no such thing as a low-risk, high-return investment**

Innovative financial instruments and their ability to absorb risk have efficiently contributed to the low cost of credit and enhanced the ability of firms and households to carry more debt. During the 1990s, the introduction of automated underwriting encouraged the growth of the subprime market and securitization has later come to facilitate market growth by dispersing risk—providing investors with a supply of highly-rated securities with enhanced yield, and opening up the mortgage origination business to specialty finance companies. These developments allowed credit rationing to be relaxed for marginal borrowers previously considered too risky by traditional lenders, resulting in a substantial expansion of the US home ownership rate since the mid-1990s.

Consequently, leveraging by firms and households has risen sharply as asset prices—notably for residential real estate—have soared. As economic conditions tilted to the downside, it became inevitable that defaults would rise, with the result that reverberations have been felt globally, especially in the US and in Europe. The highest delinquency

[3] Alt-A loans fall between prime and subprime.

rates have been associated with hybrid and option adjustable-rate mortgages that require payments at low, initially fixed "teaser" rates which can result in negative amortization during the first few years.

- **Financial institutions' and markets' global reach has not dispersed risk more widely**

The combination of globalization and the advent of a plethora of repackaged, securitized products has in effect broadened the reach of financial institutions and markets worldwide. But the notion that this would disperse risk appears unjustified, at least to the same extent. Rapid financial globalization may well spread the impact of systemic risk wider than before and could encompass more than an individual country or even region.

The process of risk dispersion, exacerbated by a lack of transparency, may not be responsive to changing perceptions of asset quality and periods of market stress. While financial innovation has increased banks' ability to move risk off their balance sheets, it has not eliminated the possibility that this could return unexpectedly, and rapidly. Recent events have demonstrated that the existence of fluid and continuous markets for complex (opaque) instruments may not be counted on in moments of financial stress.

- **A strong economy and rising house prices can help buffer risky business—but only for so long**

Favorable economic global activity and low interest rates contributed to a surge in the US real estate market in 2002. As equity increased, distressed borrowers were able to renegotiate or sell their homes and prepay their mortgages. However, by mid-2006 new homes sales stalled. House price appreciation slowed. Interest rates rose with inflation fears threatening to raise them higher. This left many overstretched borrowers with no choice but to default.

- **Understanding underlying risk and having adequate risk management strategies and systems pays off**

Better monitoring of complex products and liquidity management is essential, especially in a market where liquidity is insufficient to provide reliable market prices. While ratings are expected to continue to be an important component in structured credit evaluations, investors should be wary of using ratings as a substitute for due diligence. Recent experience demonstrates the need to understand how securitization contributed to the current financial market turmoil; how the incentive structure may have weakened credit discipline and the importance for originating lenders to monitor risk adequately.

- **As the shock wanes, investors in search for yield will seek new ways to price risk and package securities**

Subprime mortgages are a segment of the financial market place in which risk might have been abused. But this in no way denigrates the invaluable role that taking risk plays in any economy—it drives investment, innovation, and growth. Risk becomes a problem only when it is misrepresented—which is especially true in today's environment where financial markets are increasingly globally integrated. History has shown that while investors may shun an asset class hit by financial turmoil—and there is an initial flight to quality followed by structural reform—they will gradually return seeking new ways to price risk and package securities.

credit access to all but the best Asian borrowers. In addition, a number of large Asian financial institutions had purchased US and European CDOs with the same sanguine attitude that western investors seemed to be taking. When they discovered the sudden, unexpected losses, some of these institutions began to slow domestic lending. As a result, Asian markets felt some of the chill coming from a North American market that was rapidly cooling.

## Outlook for 2008

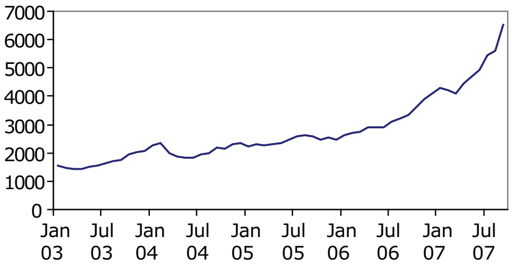
***Strong economic growth and financial market conditions—together with relatively small exposure to US subprime mortgages—have helped limit spillover effects of the US subprime turbulence to emerging East Asia.***

Despite increasing uncertainty in the global economy, in particular in the US, and with world GDP growth slowing in 2008, emerging East Asia's growth trend continues to be strong. The PRC in particular is one of three emerging economies that together contribute to more than half of world growth.[7] At the same time, high oil and other commodity prices have combined with this strong growth to exacerbate inflationary pressures, particularly in the PRC and Indonesia. Most economies are also experiencing large current account surpluses—as they have for several years—reflecting strong external demand and large increases in savings. Although these are expected to ease somewhat in 2008, the trend will likely continue. Together with the significant capital inflows to the region, currency appreciation against the US dollar is expected to continue.

Developments in the mortgage credit markets, in combination with low domestic interest rates, tight credit spreads, and underdeveloped bond markets have in recent years fuelled an increase in structured products and hybrid derivatives markets searching for higher yields and extended maturities. Korea and Taipei,China are the largest LCY markets for these products in the region. However, both bond spreads and equity prices in emerging markets have proved to be relatively resilient to recent market turbulence. Emerging market bond spreads initially rose in line with the re-pricing of credit risk—although not to the same

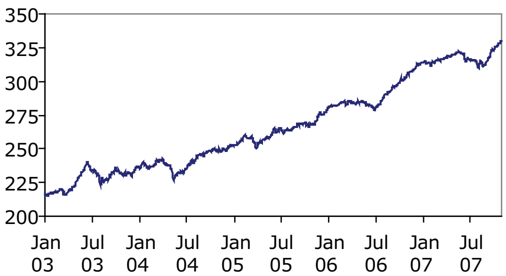
[7] Russia and India are the other two emerging economies.

Figure 15: **JP Morgan Emerging Market Bond Index**




Source: Bloomberg.

Figure 16: **ASEAN+3 Equity Market Index** (excluding Japan)




Source: Bloomberg.

extent as in more advanced economies—and have since gradually tightened once more. Resilience in equities may in part be a reflection of continuing expectations of strong macroeconomic performance **(Figures 15, 16)**.

The current turbulence represents a first test of innovative financial instruments used to distribute credit risk in globally interconnected markets, and where reverberations can spread with startling rapidity. This instability differs from previous periods in one important aspect—the impact on emerging East Asian economies has so far been limited. Credit spreads have increased somewhat but continued economic growth and domestically well-supported financial markets should allow the majority of East Asia's economies to weather the weakening external environment. However, the subprime turbulence is not an isolated event. And even though there are no signs yet that problems in these markets are more widespread, downside risks to regional economic and financial market trends remain and wider repercussions cannot be ruled out.

***Although the external environment has weakened recently and downside risks have intensified, many economies in emerging East Asia have benefited from improved macroeconomic fundamentals, largely benign domestic conditions, strong external balances and prudent economic management.***

Continued reforms—including financial and corporate sector reforms—have left emerging East Asia with stronger regulatory environments, better fiscal discipline, and deeper market economies. This includes more stable banking systems as well as healthier corporate and household balance sheets.

Years of above-average capital inflows have helped to sustain robust economic growth, which—together with government savings—act as buffers that could help absorb at least some of the downside impact from slower US growth. Record high capital flows, especially to financial markets, have increased pressure on currencies to appreciate, enhanced already abundant liquidity in the region and contributed to rising asset prices. Surging capital inflows, however, impose a significant challenge to the region as inflationary pressures build and world interest rates continue to rise.

Also, higher growth rates and increased wealth have made the region's economies and markets more interdependent. Trade in goods and services within the region has grown, and although trade with the US still comprises a substantial share, the region has collectively become less dependent on the US economy.

Finally, strong fundamentals underpin credits in most emerging East Asia's economies. External funding needs and the combination of attractive local market returns and stable or appreciating currencies have attracted sizeable foreign debt capital to local equity and bond markets, contributing to sovereign credit spreads lower than the 2006 average. They have helped to buffer the region's markets against spillovers from mature credit-market volatility.

However, the sustainability of these gains depends not only on the adoption of national policies for broadening and deepening regional policy cooperation but also on the continued support of global and regional financial institutions.

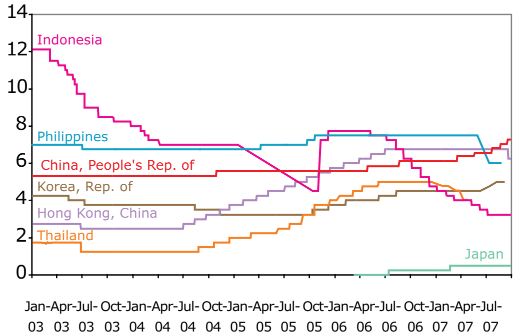
## Risks to the Outlook

Although the region is more resilient than in previous periods of financial market turbulence, generally deteriorating global economic growth and credit conditions, prolonged volatility, a sharper-than-expected slowdown in US growth, and a resurgence of inflationary pressures could spill over into local currency bond markets. Prospects for 2008 will thus depend not only on how the global economy evolves generally but also on how financial markets react.

***Prolonged global financial market volatility, persistent risk aversion together with a re-pricing of credit risk could lead to a reversal of capital flows (particularly "carry trades") to the region.***

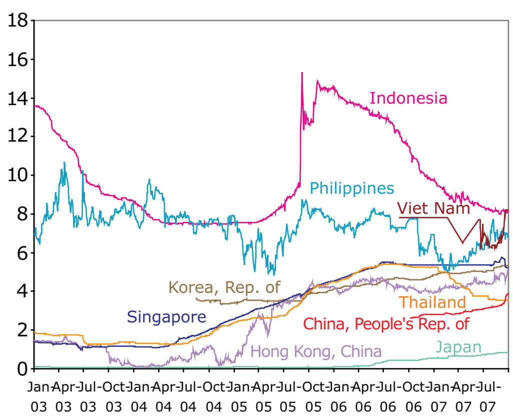
Uncertainty regarding the losses from subprime delinquencies—together with an onset of high volatility in markets—could also set off an unwinding of the yen carry trade, triggered by a continued strengthening of the yen against the US dollar. The unwinding could result in yen buy-backs and sell-offs of other currencies. This has the potential to spill over into target markets in emerging East Asia and significantly disrupt local currency bond markets—and market liquidity more generally. Increased volatility has also prompted lenders to raise margins, even for highly-rated borrowers, and lowered the mark-to-market value of collateral. Although economies in the region are running current and capital account surpluses, persistent risk aversion could stem inward capital flows. The extent of the impact on growth will depend on how quickly market liquidity returns to normal and on the extent of the retrenchment in credit markets. On the upside, however, lower capital flows could ease the pressure on regional currencies to appreciate, thus increasing competitiveness.

Figure 17: **Money Market Rates—Emerging East Asia** (%)




Source: Bloomberg.

Figure 18: **ASEAN+3 Interbank Offered Rate** (3 months)



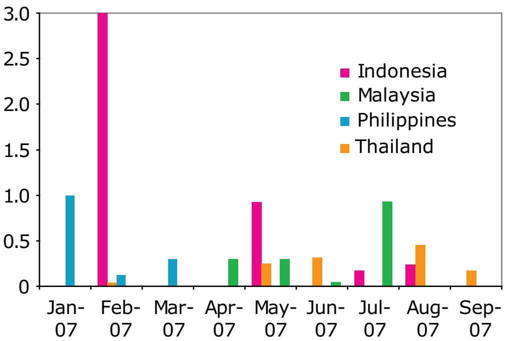

Source: Bloomberg.

***Tighter short-term financing conditions could dampen both household and corporate spending, reducing new issuances and delaying those already in the pipeline.***

Money markets and interbank lending markets are gradually recovering from the initial clogging from credit re-pricing, retrenching from risk assets, and the constriction of liquidity **(Figures 17, 18)**. Still, continued strains in money markets and some credit markets will likely lead to a tightening of general credit conditions—by increasing costs and reducing funding levels. In major industrial economies such as the US and the eurozone, lending standards have been tightened. There are signs that this could slow GDP growth substantially in these economies, with significant external demand implications for the region. So far, in emerging East Asia, only offshore issuance of sovereign and corporate bonds has been affected by tighter short-term financing conditions **(Figures 19A, 19B)**.

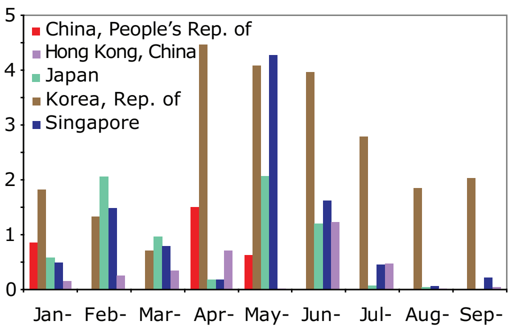
Reflecting the broader re-pricing of credit risk, spreads on high-yield corporate debt have widened from the tight levels reached earlier in the year. Although aggregate corporate leverage remains relatively low, its increase over the past year—particularly for those entities that have been the subject of buyouts—has heightened vulnerabilities, especially as financial and possibly economic conditions turn less benign.

Figure 19A: **Foreign Currency Bond Issuance in Selected Emerging East Asian Economies** (USD billion)




Source: *AsianBondsOnline.*

Figure 19B: **Foreign Currency Bond Issuance of Selected Emerging East Asian Economies** (USD billion)




Source: *AsianBondsOnline.*

Some emerging East Asian banks may also need to absorb sizable commitments on leveraged loans and bonds, possibly at reduced value. This may limit the capacity of banks and other institutions to offset the flow of credit lost through nonbank channels.

***A sharper-than-expected decline in US economic growth could have a sizable impact on emerging East Asia through financial sector and household balance sheets.***

The effects on the real economy are likely to force down interest rates as a result of the increase in risk premiums and through an additional rationing of credit, as lenders strive to protect themselves against rising defaults. Tighter credit conditions in the US economy could reduce economic activity by tightening the supply of credit to weaker household borrowers, thus fuelling falling housing prices. The resulting negative wealth effects may also have a dampening impact on household consumption and private-sector demand. These results may range from material loss of net worth and restricted credit access to higher costs of debt, all of which could lead individuals and companies to liquidate assets, or to motivate them to save more and consume less. Imbalances in credit and funding markets could also restrict the overall provision and channeling of credit.

Although the emerging East Asian economies rely more on bank lending, debt issuance has been less affected by recent developments. However, housing sector risk remains significant and could undermine domestic demand in the US and elsewhere. Should the US enter a recession and the global economy slow substantially, the impact on the region's economies would be significant.

***Although inflation remains manageable in most regional economies, overheating and sustained increases in food and energy prices pose a significant upside risk and could lower bond yields.***

Although still manageable, inflationary pressures are quickly resurfacing in emerging East Asia, reflecting overheating pressures and higher food and energy prices. If inflation increases—especially core inflation—monetary authorities in the region would have less flexibility in dealing with potential slowing in economic activity arising from weaker demand and further monetary tightening may be required (see Figure 7, pg. 16).

The levels of these risks naturally vary across emerging East Asian economies, depending on factors such as the level of openness to trade and exposure to global financial markets.

## Policy Challenges

Better cooperation among policymakers in the region and continued efforts at the national level have allowed for greater stability and deepening of bond markets.[8] However, policymakers face considerable challenges—in both mature and emerging markets—to ensure the stability of the financial system and continued healthy global and regional growth. Against the backdrop of the recent turbulence, several shortcomings have arisen, not only in the markets themselves, but also in the regulatory and supervisory systems.

### *Improve transparency by better valuation and accounting of off-balance sheet instruments.*

Many structured products lack transparency—particularly those backed by other structured or securitized products such as asset-backed commercial paper and CDOs, making it difficult for investors to determine the value of the underlying assets that ultimately provide the cash flow for these products and to determine their direct exposures. While structured products help disperse risks to those willing to bear them, there is a general perception of uncertainty among investors regarding who holds certain credit exposures, and the extent or concentrations of such risks. One reason why counterparty risk has risen so rapidly is that a large part of exposure to the subprime mortgage sector has been transferred off the original lenders' balance sheets, making it difficult to know when problems might emerge. Opaque

[8] Several measures for developing regional bond markets further have been cited in previous issues of the *Asia Bond Monitor*—such as (i) developing an enabling regulatory environment that encourages institutional investors to trade, (ii) expanding ways to hedge market risk, (iii) increasing investor diversity, and (iv) strengthening market microstructures.

structures may also have masked off-balance sheet exposures and contingent liabilities in other asset classes.

To address this problem, regulators and market participants need to assess how transparency can be provided in various markets, especially for relatively new or illiquid instruments, to reduce uncertainty and avoid surprises. Providing greater clarity in the link between various investment entities and institutions; assessing contingent draws on funding channels that occur and the risks of credit exposure; determining whether capital charges on standby credit lines are sufficient; and defining accounting adequacy and legal parameters for guaranteeing adequate risk control.[9]

### *Strengthen risk assessment and risk management among financial institutions, regulators, and credit rating agencies.*

In theory, it is up to investors to conduct due diligence on the structures and underlying assets before buying complex instruments. In reality, however, markets are essentially driven by external independent assessors and rating agencies. Because many investors had become to dependent upon these agencies, a loss of confidence in the validity of credit ratings contributed to a sharp decline in product demand. Investors need to have the capacity to clearly analyze product risks and establish appropriate internal risk-monitoring systems over the lifecycle of the investments.

Regulators need to renew efforts to test the capacity of their regulated institutions to manage the risks they assume, and to explore the dynamics and sensitivities of the assets they hold. They need to better understand the collateral's character and the tranching structure, particularly if instruments are difficult to value or have illiquid secondary markets. Regulators should also be able to better audit the risk management systems used by these institutions, to verify that they are appropriately tailored to individual risks.

Credit rating agencies can help bolster the growth of corporate bond markets by contributing to the market debate on issuers'

[9] For a more complete discussion, see International Monetary Fund, *Global Financial Stability Report*, September 2007.

credit quality and in helping investors make appropriate decisions on credit risk and pricing spreads of corporate bonds. They also must remain free from political, issuer, or dealer influence in calculating ratings. This requires a well-capitalized base and a diverse range of income sources, thus ensuring financial independence. However, in recent years, rating agency earnings have been increasingly derived from rating complex securities. And as ratings are requested and paid for by banks, the potential for conflicts of interest increases.

There remains the need to enhance transparency in several dimensions:

- ratings and their methodology
- instruments' underlying asset values;
- risk and valuation models to the pricing process in the secondary market; and
- global market risks and different participant's positions.

### *Enhancing the enabling environment for local currency bond markets.*

There are several critical issues that US regulators must address: how to protect the US economy from recession and its impact globally without also protecting those who imprudently took advantage of the financial situation; how best to smooth the transition back to normal credit conditions without rewarding abusive behavior; and how long to provide cheap and flexible access to central bank liquidity without stoking inflation (and record commodity prices) further.

While absorbing subprime losses without derailing market reforms presents a policy challenge to regulators in emerging East Asian markets, this largely exogenous turmoil is fortunately occurring at a time when most of the region's economies and financial systems are in good shape. There is considerable domestic and intraregional capacity to absorb the combined demand and credit shock that is emerging, or might even accelerate. However, crafting an appropriate response to this potentially serious problem may distract regulatory and productive resources from their well-hewn roadmaps for market reform—now in progress across the region. It remains to be seen whether the situation leads to delays in financial reform for several years or stimulates

Box 2: **Credit Rating Agencies—Strengthening the Rating Process**

With mortgage defaults in the subprime market soaring and mortgage-backed securities along with them, credit rating agencies have come under increased scrutiny by regulators and lawmakers over how they rate complex structured-finance products in general, and residential mortgage-backed securities (MBS) in particular. Critics argue that rating agencies are too optimistic initially when rating these securities, and slow to adjust them downward as defaults rise. They also suggest a potential conflict of interest given the credit rating agencies' "issuer-pays" model. Their advisory services to investment banks issuing and underwriting mortgage-backed securities on how to package the securities to achieve a targeted rating pose another potential conflict of interest.

The primary responsibility, however, for managing risk lies with the individual institutions and investors taking on those risks. It is thus important that for investors to fully appreciate the role of credit rating agencies—that credit rating agency assessments are intended to cover only credit risk and that investors carry out their own due diligence and do not become over-reliant on ratings. This will enable credit rating agencies to retain their important role in the financial system.

**Issues**

Credit rating agencies argued that excessive mortgage delinquencies in 2006—particularly by subprime borrowers—exceeded their expectations largely due to fraud in the mortgage origination process, deterioration in loan underwriting standards, and more restrictive lending standards (in response to the mortgage delinquencies) that limited over-leveraged borrowers from refinancing. Despite these claims, there remain three major issues with structured finance credit rating methodologies and processes:

First, pooling and tranching structured credit products[1] make them far more complex than traditional bonds, rendering the risks associated with these products difficult to assess. For pooling, risk and return evaluation requires an assessment of the loss distribution of the underlying asset pool. For tranching, it requires analyzing asset pool loss and the deal's specific structural features, including rules for the allocation of payments received from the collateral pool and for the redirection of these cash flows in the event of any financial stress.[2]

Second, for rating traditional bonds and simple MBS, credit rating agencies have focused on credit (or default) risk. In rating collaterized debt obligations (CDOs), however, where the underlying collateral was MBS and other securities, liquidity risk could affect the ability of the CDOs to be paid off in full and on time. The wider spreads could trigger forced liquidations of the asset pools underlying the CDOs and lead to unexpected losses to investors, even if the underlying collateral has no default risk. The credit rating agencies' slow recognition of liquidity risk contributed to delays in rating downgrades.[3]

Third, arrangers tend to target specific ratings when structuring credit tranches, thus requiring rating agency inputs. This practice has raised questions about the potential conflicts of interest, especially in light of credit rating agency business models.[4]

**Proposed Measures to Strengthen Rating Methodologies and Confidence in the Rating Process**

In response to the subprime turmoil, policy makers, credit rating agencies and international organizations are suggesting measures to improve credit rating agencies' performance and are taking steps to assess their role in rating structured finance products. These measures include the need to (i) enhance transparency; (ii) ascertain that methodologies and procedures for determining credit ratings are adhered to; (iii) revise the way credit rating agencies rate CDOs and other forms of structured finance products; (iv) introduce a more differentiated scale for structured credit products; (v) for institutions to avoid over reliance on credit ratings; (vi) separate rating and advisory functions within credit rating agencies; and (vii) increase competition.

i. The need for greater transparency in the securitization process for subprime residential mortgage backed securities

[1] Structured finance products generally have three key characteristics: (i) pooling assets (either cash-based or synthetically created); (ii) tranching liabilities backed by the asset pool; and (iii) delinking credit risk of the collateral asset pool from the originator's credit risk—usually via a finite-lived, stand-alone, special purpose vehicle.

[2] Fender, Ingo and Janet Mitchell. "Structured Finance: Complexity, Risk, and the Use of Ratings", BIS Quarterly Review, June 2005.

[3] "The Role and Impact of Credit Rating Agencies on the Subprime Credit Markets" Testimony by Lawrence White to the Committee on Banking, Housing, and Urban Affairs, United States Senate, 26 September, 2007.

[4] Opcit., Fender and Mitchell.

(RMBs) has been brought forward by, for example, Moody's Investors Service. Proposed changes include (i) third-party oversight of the accuracy of loan information and making loan-level performance information available to transaction participants; (ii) a requirement that issuers provide stronger and more uniform representations and warranties to investors regarding loan information; (iii) third-party responsibility for monitoring and enforcing representations and warranties; and (iv) greater public disclosure of activities by banks' structured investment vehicles (SIVs). European Finance Ministers are also drawing up a road map of reforms to include greater public disclosure of activities by banks' SIVs.

ii. To ascertain that methodologies and procedures for determining credit ratings are adhered to, the United States (US) Securities and Exchange Commission (SEC) is taking steps to assess the role of credit rating agencies in rating structured finance products. In particular, the SEC is examining whether nationally recognized statistically rating organizations (NRSROs) abandoned stated methodologies and procedures for determining credit ratings in order to assign higher ratings. The SEC is also examining whether NRSROs followed stated procedures in managing conflicts of interest inherent in the business of determining credit ratings for residential mortgage-backed securities.[5]

iii. The way CDOs and other forms of structured finance products are rated is also being looked into by credit rating agencies. Among other things, they are looking into measuring how the market value of structured investments might be affected in a credit crunch. The International Swaps and Derivatives Association has endorsed plans by credit rating agencies to revamp the way they grade some of these complex securities and rate instruments such as CDOs differently from traditional corporate and municipal bonds. Other suggestions include requiring credit rating agencies to rate both default and liquidity risks, for agencies, to provide detailed disclosure of contacts with clients and to limit the use of ratings by regulators of financial institutions.

iv. Introducing a more differentiated ratings scale for structured products could also help to alert investors to the scope for a more rapid deterioration of ratings in structured credit products than on traditional corporate or sovereign bonds.[6]

v. Similarly, investors should ensure their portfolio allocation decisions do not use ratings as the only point of reference to price the structured product, without liquidity risk being taken care of, and that such ratings should not be used as a substitute for appropriate due diligence.

vi. While it may be difficult to legislate remedies that would force credit rating agencies to improve their rating—particularly by changing their business model from issuer-pays to investor-pays—to address concerns about potential conflicts of interest, credit rating agencies could establish policies and procedures to firewall ratings from ancillary businesses in order ensure that they are independent and avoid engaging in commercially conflicting activities. Separating rating businesses from consulting activities could for example help regain investor confidence.

vii. Although an increase in the number of rating agencies may not completely curtail the powers of the well-entrenched few, subjecting them to some level of competition and allowing market forces to determine which rating truly reflects the financial market best could help keep them on their toes. Competition from new agencies is expected to come with the Credit Rating Agencies Reforms Act (recently promulgated)—which is to encourage credit rating agencies to improve their performance.

[5] Credit Rating Act, 2006, US Securities and Exchange Commission.

[6] For a more detailed discussion see Global Financial Stability Report, September 2007, International Monetary Fund.

the growth of high-yield finance in emerging East Asia's domestic markets.

One powerful lesson for regulators is that credit risk is not a black-and-white business. To make capital markets work to effectively allocate capital, a measure of uncertainty is needed to ensure participants leave some margin for error and avoid overly tight pricing.

Conversely, there is some evidence to suggest that already-cautious regulators who were reluctant to license derivative products are using the subprime market turmoil as an excuse to further delay or limit financial innovation and capital market development. Despite the issues that the subprime mortgage crisis raised, derivative products have proved useful for shifting risk and hedging portfolio exposures, and are essential for the development of efficient capital markets. Mortgage-backed securities and instruments such as CDOs have also created access to finance at more competitive rates to millions of homebuyers.

It is worth remembering that default rates overall remain relatively low. It was the overlay of excessive leverage that created most of the problems in the mortgage sector—not the individual products themselves. Regulators need to adopt an approach that can assess the ultimate risks underlying structured products. But more important, they need to adopt a balanced approach that protects consumers while facilitating financial innovation and financial market deepening.

### *Increase regional cooperation in monitoring and regulating financial markets and in developing financial institutions' risk management techniques.*

Enhanced financial cooperation could also widen the region's effective market size through regulatory coordination and joint initiatives in areas such as monitoring and regulating financial markets and financial institutions' risk management techniques with a view to avoiding collective bad outcomes and promote regional financial stability. There are also indications that the Asian Bond Fund(s) and the creation of the Pan-Asian Index Fund are leading to a degree of convergence in market microstructures across the region, including harmonizing regulatory and other institutional frameworks such as clearing and settlement, rating agencies, taxation, and relaxation of exchange controls.

Improvements in the regional bond market have also occurred under the ASEAN+3[10] Asian Bond Markets Initiative, with the aim of addressing impediments to local currency and regional bond market development. In collaboration with ASEAN+3, ADB also conducts regional studies including assessing the feasibility of establishing a regional credit guarantee mechanism, developing a regional clearing and settlement system, harmonizing credit and trading standards, introducing new securitized debt instruments, and improving local credit rating systems.

ADB has also taken several measures to develop the institutions and market infrastructure required to stimulate large and active currency bond markets across emerging East Asia. In 2006, ADB launched a USD10 billion Asian Currency Note Programme—the first regional platform dedicated to bond issuances in regional currencies, and Asia's first multi-currency note platform since the 1997 Asian financial crisis that links the domestic capital markets of Singapore and Hong Kong, China. Under the scheme, local currency bonds are issued in the domestic markets under a single framework with a common set of documents governed by English law. The program provides savings in terms of legal and transactions costs and allows issuers to tap markets without having to seek approvals for each issue.

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