

*JSPS (Kyoto University)-NRCT (Thammasat University)
Core University Program Conference 2006
“Emerging Developments in East Asia FTA/EPAs”
October 27-28, 2006
Kanbaikan Hall
Doshisha University*

Asian Bond Markets: Development and Implications

By

Bhanupong Nidhiprabha
Thammasat University

Asian Bond Markets: Development and implications

Bhanupong Nidhiprabha
Thammasat University

1. Introduction

Financial deepening can be considered as a measurement of economic development. As an economy becomes mature, direct finance through equity and bond markets become relatively more important than indirect finance. When capital markets are in a nascent stage, firms expand their investment via bank credit extension. The lack of development in the bond market is sometimes characterized as original sin, bringing some Asian developing countries to financial crisis. They are cursed by both currency and maturity mismatching problems arising from heavy reliance on external borrowing of commercial banks. Prior to the crisis in 1977, international banks committed large amounts of credit to Asia, but they also withdrew the funds immediately once the crisis hit. When capital flight took place, many Asian countries suffered from unprecedented currency depreciation. Bank loans contracted as financial institutions tried to readjust their portfolio in response to rising foreign debt in terms of local currency and to dwindling supply of foreign loans. The twin crisis contains currency and banking crisis, leading to economic collapses and financial disintermediation.

The twin crisis is now behind those crisis-hit Asian countries. They have been able to recover and restore their output back to their normal growth path. To prevent repeating the same mistake, bond market development is seen as an approach to mitigate possible economic crisis in the future. Cooperation among ASEAN +3 has led to Asian Bond Market Initiatives (ABMI) aiming at developing efficient bond markets in the region. Central banks in Asian countries hold more than USD 2.7 trillion, but they utilize their excess liquidity through investment in American treasuries instead of investing in Asia. That liquidity in turn comes back to Asian countries in the form of foreign direct investment and portfolio investment. Volatility in these flows leads to risk and uncertainty in Asia, disrupting development of equity and foreign exchange markets.

If Asian bond markets can be successfully established in Asia, local firms would depend less on bank loans, while savers in high-saving-rate Asian countries can have an alternative form of savings in bonds instead of deposit bank accounts. To achieve this goal, bond markets must be liquid and sophisticated enough to attract households and institutional investors. Furthermore, Asian governments can raise funds for infrastructure development from sources within the region. Asian currency bonds can provide high risk-adjusted rates of return, which are higher than American treasury notes. However, American treasury bonds are still in high demand because they tend to be more liquid and resilient to shocks.

2. Stages of Bond Market Development

Some Asian economies are still very dependent of banking system for the provision of finance. In 2005, the percentage of credit to total domestic finance ranged from the highest level of 74.1 percent in China to the lowest level of 17.8 percent in Hong Kong (Figure 1). High income Asian countries such as Japan, Korea, and Singapore, with mature bond markets, do not depend much on domestic credit for financing; their shares of domestic credit financing were respectively 32.8, 36.5, and 19.5 percent of total domestic financing. Share of intermediated debts in total financing declines as the financial system becomes mature and sophisticated. The level of per capita income in a country determines its stage of bond development.

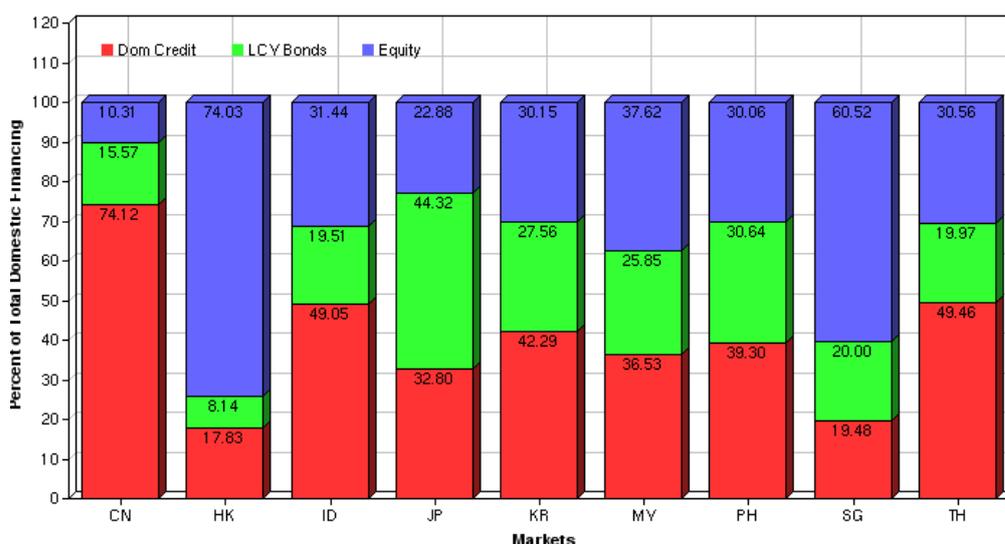
Both equity and bond finance are primary sources of domestic financing. The share of local currency bond in total domestic financing was 44.3 percent in Japan, 27.6 percent in Korea and 20 percent in Singapore. Both Thailand and Indonesia remained a bank-based economy, where share of credit financing was roughly 50 percent. In Japan, bond finance is more important than equity finance. In general, equity finance is more important than bond financing. Equity markets in financial centers like Hong Kong and Singapore are key drivers for domestic investment; the share of equity finance in total financing the two city states was 74.0 and 30.5 percent respectively. It is likely that both equity markets and bond markets are complementary means of investment financing. On the other hand, shares and bonds can be substitute assets in investors' portfolio.

In the early stage of bond development, savers do not have many choices of financial wealth accumulation. They put their savings in bank deposits with no substitutes from stocks and bonds, because of unavailability of alternative assets with low risk and liquid. For this reason, bank lending is the major source of investment financing in developing countries, where equity and bond markets are not developed. However, in some cases, where governments run budget deficit through issuing bonds, the size of bond market will be large. In the Philippines, local currency bonds amounted to 30.6 percent of total financing. The size of the bond market may not necessarily indicate development of other types of bonds.

The demand for bonds by wealth holders depends on income level, size of wealth, and vector of rates of return of all assets in the portfolio. If bonds are illiquid, despite its fixed income nature, they may not be as attractive as low-interest deposits. If the volume of bond transactions in the secondary market is low, there would be less demand for bonds for wealth holders. Countries with high saving rates and high per capita income are likely to experience rapid development in bond markets because of favorable demand conditions. However, supply constraints on bond infrastructure can prevent rapid development of the bond markets because bond transactions are discouraged by the lack of secondary market and inefficient settlement process. Some rules and regulations on public enterprise bonds, debt instruments, and banks' bonds holding seriously hamper development of bond trading. Hirose and others (2004) pointed out that there are three development levels, from the primary (issue) market, secondary (trading) market, to cross border. At the last development phase, structure bond products and high yield bonds are actively issued and traded. Transactions by

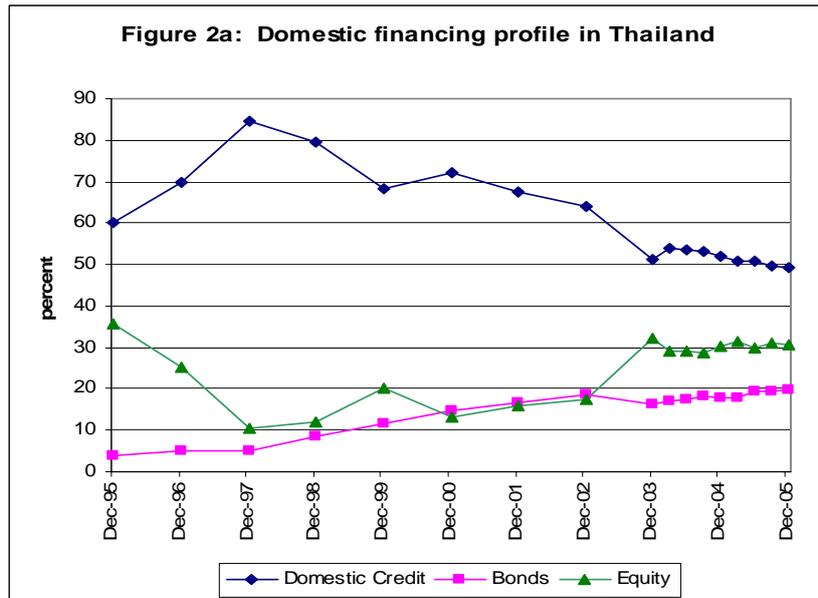
domestic and foreign investors are active. It should be noted that the large size of bond markets do not necessarily imply that bond markets have fully developed to the highest level. The bond markets in Japan and Korea do not have active participation of foreign investors.

Figure 1: Domestic Financing Profile (Dec 2005)



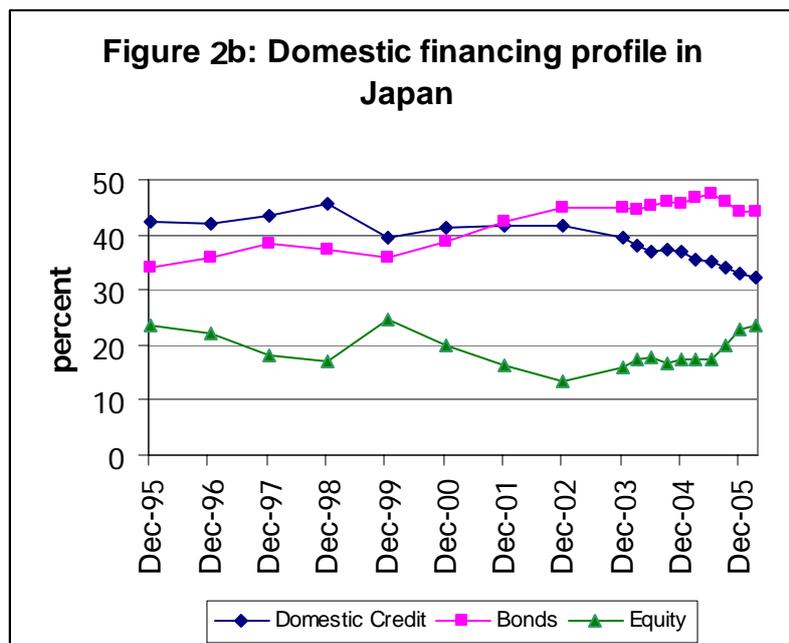
Source: ADB, Asian bond online

But Asian bond markets have come a long way since the crisis. Thailand's share of credit finance was more than 80 percent in 1997 (Figure 2a) as a result of excessive lending concentrated on unproductive investment and speculation in the property sector. Since then domestic credit has become relatively less important, as the economy was on the recovery. The Thai government also started selling bonds to finance its budget deficit. There is also a clear substitution between equity finance and credit finance. The growth of the bond market was limited by a slowdown in economic growth as a result of high inflation, oil shocks and rising interest rates.



Source: ADB, Asian bond online

The share of credit finance was 50 percent in Thailand in 2005, compared with almost 30 percent in Japan. The pattern of bond development is clearly illustrated in the case of Japan. By 2001, bond financing was more important than credit finance (Figure 2b). In the near future, equity finance would surpass credit finance. The stylized fact of bond development pattern is that credit finance will become less important, as income rises, while non-intermediated finance would be predominant means of finance. The wealth elasticity of the demand for bonds must be high for high-income countries. On the contrary, wealth and income elasticity of demand for bank deposits in developing countries must be high.



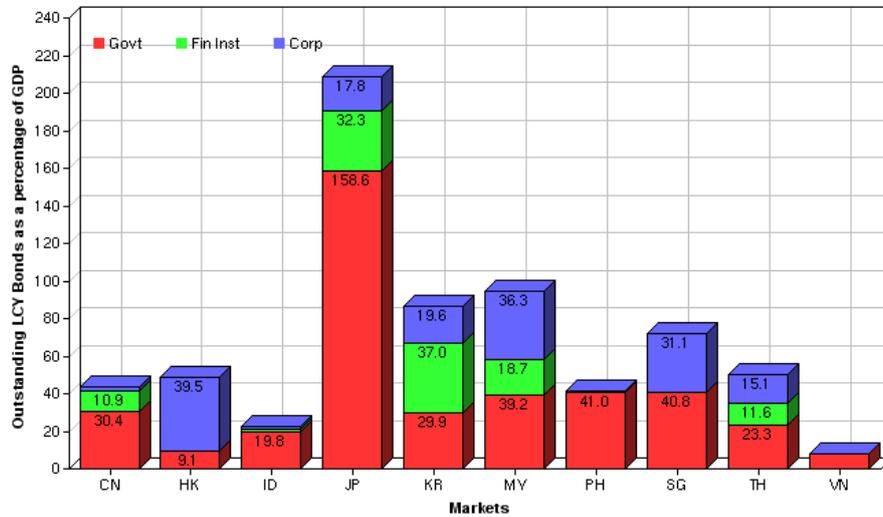
Source: ADB, Asian bond online

If this conjecture is correct, an attempt to establish bond markets would not be successful, since the pattern of the demand for bonds is dictated by the level of development. A policy implication is that measures to promote bond markets should be focused on reducing supply constraint while capacity building is required to relax those constraints. The market demand-led is then a more appropriate approach than supply-leading approach. However, this is not to deny the importance of government bond issuance that can establish benchmark yield curves. Hong Kong and Singapore established the bonds markets not for financing budget deficit but to enhance the efficiency of financial infrastructure. When tender process, rather than administrative mechanism, is used to price the issue of new government bonds, the yields of new bonds provide price signals to investors on the risk free interest rate.

3. Market size and liquidity

As discussed earlier, the demand for bonds is partly determined by income and wealth, in addition to its relative rate of returns of other assets in the financial portfolio. Since the demand for bonds is income elastic, an increase in income or wealth will lead to a larger percentage of the increase in the demand for bonds. By the end of 2005, the value of outstanding local-currency bonds in Asia was around two trillion USD, as opposed to seven trillion USD of Japanese bonds and 22 trillion USD American bonds. The size of local currency bonds, as a percentage of GDP, varies according to the level of income (Figure 3). The size of bond markets in Hong Kong and Korea does not correspond directly to their high income levels, because of the importance of their equity markets in mobilizing and distributing funds. As for other Asian countries with a lower level of development, the size of the bond markets is relatively low. Note that in China, Japan, and Korea, bonds issued by financial institutions are more important than those bonds issued by corporations. The size of government bonds are also related to fiscal positions in Japan, Indonesia, and the Philippines. There are also implications on crowding-out effect and wealth effect of budget deficit financed by bond creation.

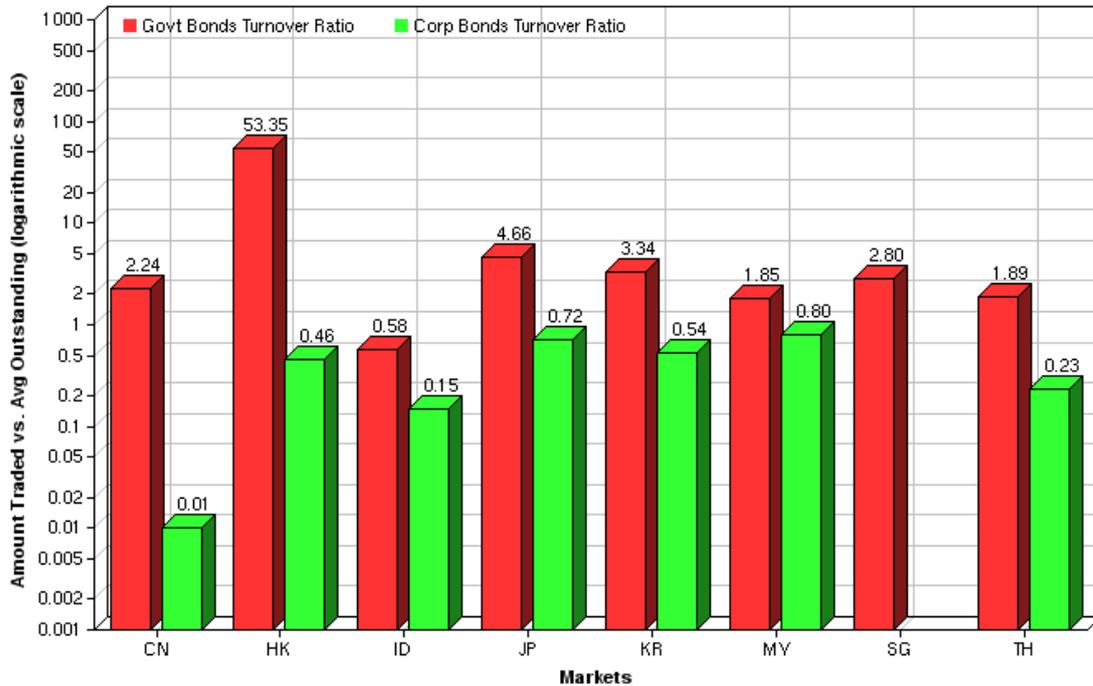
Figure 3: Size of local currency bonds in Asia



Source: ADB, Asian Bond on line

According to CGFS(2000), liquidity has many dimensions involving tightness, depth, immediacy, and resilience. Tightness refers to the narrowness of the bid-ask spread. Depth of the market can be measured by the size of transactions without moving the price. Immediacy can be measured by the speed at which orders can be executed. Resilience refers to the ease with which prices return to normal after temporary disturbances in order. The size of the bond market in turn affects its trading volume and liquidity. Jiang and McCauley (2004) found that trading volume is related to market size. Since economies of scale exist in financial transactions, the larger the bond market, the smaller would be its transaction cost. Large bond markets help increase the volume of transactions, thereby providing liquidity in the market. As observed in Figure 4, trading in government bonds are more active than corporate bonds. In this case, government bonds include central and local governments, and the central bank. Corporate bonds comprise bonds issued by public and private companies, banks, and other financial institutions. The turnover ratio shows the frequency at which outstanding bonds have been traded in the market. Government bonds are more liquid than corporate bonds. Trading activity and market liquidity is low for corporate bonds in all countries. But the small market in Indonesian government is even less liquid than corporate bonds in Malaysia. Small issue size reflects the lack of depth of the market, discouraging trading and producing the lack of liquidity.

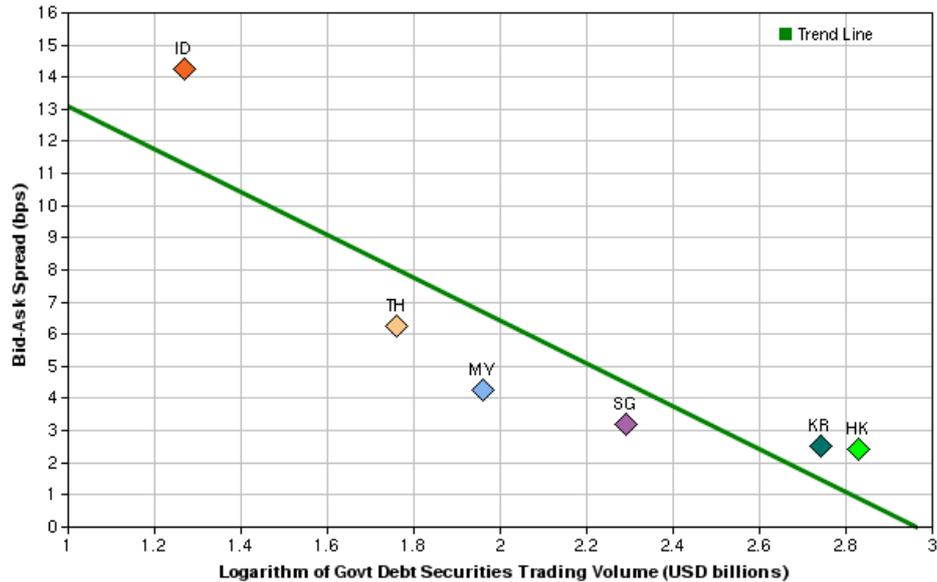
**Figure 4: Bond turnover ratio
(2005)**



Source: ADB, Asian bond online

Market activity can be discouraged if market participants adopt buy-and-hold strategies. If there is a regulation stipulating that financial institutions must hold government bonds as reserve requirements, this captive market for government bonds would encourage banks to adopt inactive strategy. Active markets with large turnover ratio can produce more efficient allocation of financial resources. This can be seen a narrower bid-ask spreads in markets where bonds are traded more frequently. Figure 6 illustrates the negative relationship between the bid-ask spreads and trading volume of government bonds in Asia. According to Fleming (2003), bid-ask spread is the best indicator of market liquidity. Indonesia government bonds with USD 1.2 billions volume of transaction on the average had 14 basis points, while government bonds in Korea with USD 2.7 billions were traded with a very narrow spread of 2.5 basis points. Market size matters for liquidity as well as the efficiency.

Figure 6: Trading volume and bid-ask spreads



Source: ADB, Asian bond online

4. Yields and volatilities

Usually Asian corporations issue bonds to finance their operations in USD, but they have begun issuing bonds in their own currencies. Table 1 shows Asian local currency bond returns index profile for August 2006, based on the LCY bonds with inception date on Dec 29, 2000. The average duration of the bonds ranges from 3.2 years (Korea) to 4.5 years (Thailand). The average yield varies from 2.97 percent (China) to 11.8 percent (Indonesia). Although the average maturity of the bond does not vary much, the index returns indicate considerable variations. These large differences indicate variations of the risk premium associated with economic fundamentals in issuing countries. Asian local bond markets offer alternative assets to investors with various risk appetite. Currency mismatching risk can be substantially reduced with rapid growth of these LCY bond markets, while maturity mismatching can be avoid if financial institution offer bonds with longer duration than five years. Nevertheless maturity mismatching problem can be resolved to some extent with existing average duration.

Table 1: Asian LCY Bond returns index

Inception date on Dec 29, 2000

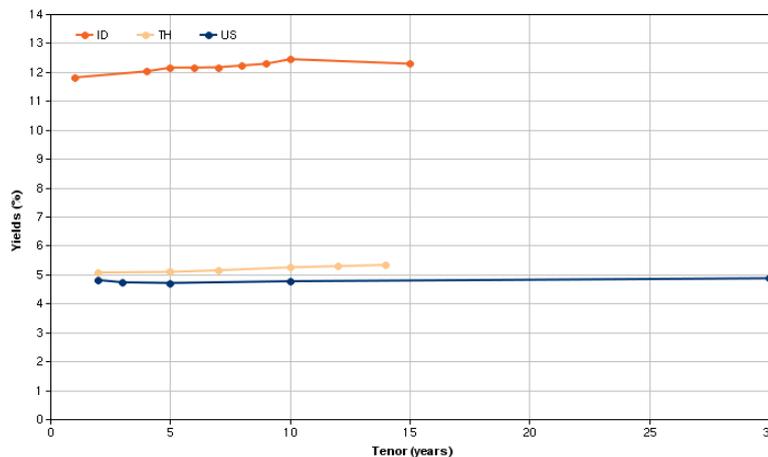
Index Profile for Aug 2006

Market	Market Value (LCY Millions)	Average Duration (years)	Avg yield (percent)	Index Returns (percent)	
				Average Monthly Return (since inception)	Year-to-date Return
CN	1,039,507	4.45	2.97	0.34	0.74
HK	138,826	3.55	4.55	0.44	3.02
ID	19,042,172	3.67	11.78	1.59	16.04
KR	252,898,688	3.17	4.96	0.51	5.06
MY	169,431	3.72	4.30	0.36	1.97
PH	530,638	3.48	9.35	1.12	8.66
SG	67,953	4.35	3.44	0.31	1.51
TH	1,102,201	4.49	5.35	0.40	4.06

Source: ADB, Asian bond online

The benchmark yield curves shown in Figure 7 suggest that Indonesia and Thailand have issued bonds at various tenors. The Indonesia LCY bonds have the maturity extended to 15 years. Development in this market can be assessed from the ability to issue bonds with longer tenor up to thirty years, similar to the US and Japan bond markets. With shorter benchmark, the baht-denominated bonds offer yield profile similar to the dollar-denominated bonds. Bond pricing mechanism works to compensate inflation expectations in Indonesia. As a result, the rupiah-denominated bonds more than double the yields of the baht bonds.

Figure 7: Benchmark yield curve
18 Oct 2006 LCY Bonds

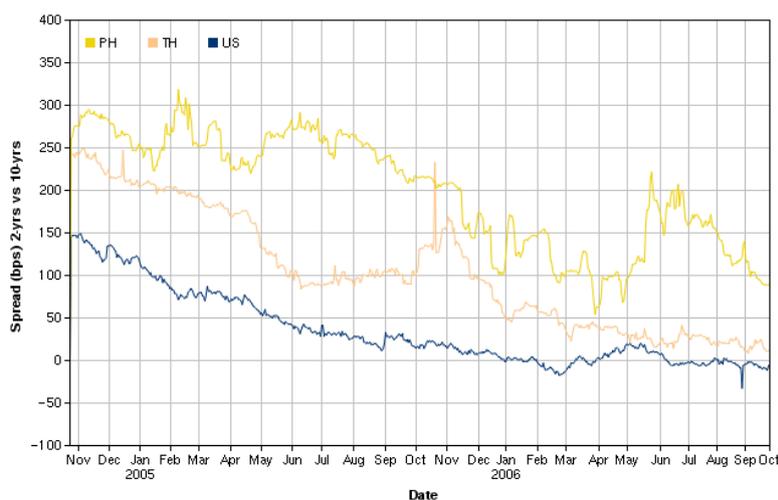


Source: ADB, Asian bond online

It should be noted that total returns are higher for LCY bonds in countries that experience currency appreciation if they are unhedged. For hedged LCY bonds, their total returns would be higher than unhedged if the currency that the LCY bonds were denominated depreciates.

The shapes of the benchmark yield curves in Asian countries are similar to the US yield curves. From 2005 to 2006, the yield spreads between two years LCY bonds in Thailand and the Philippines move in line with the US bonds. If the slope of the yield curve can indicate future economic activity, the flattened yield curves in Asia suggest a slowdown of economic expansion in Asian economies, which are highly integrated with the US economy. A decision to increase the federal funds rate affects both money and bond markets in Asia.

Figure 8: Yield spreads: 2years vs. 10years LCY bonds



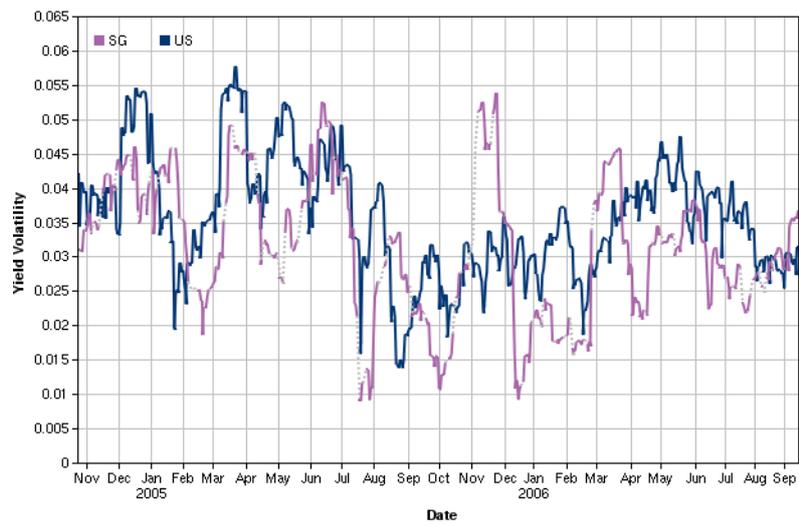
Source: ADB, Asian bond online

It is not only the shape of the yield curves but also yield volatilities that are affected by the US bond markets. Volatility of the bond yields in Thailand is higher than the US bond markets. The yield on the 10 year baht bonds fluctuates in line with the US bonds with wider ranges of up and down swings. The sheer size of the US bond market can handle jittery markets and bad news much better than small markets in Asia. Figure 9b depicts a similar conclusion in Singapore bond market. Since its size is larger than the baht bond market, its yields exhibit lesser degree of volatility when compared with the US bond markets. Asian local currency bond markets, just like Asian money markets, are very much dictated by the movements in the US bond markets—albeit with larger fluctuations caused by both internal and external factors.

Figure 9a: Yield volatility
 10 year LCY Bonds
 Thailand vs. US



Figure 9b: Yield volatility
 10 years LCY Bonds
 Singapore vs. US



Source: ADB, Asian bond online

The yield volatilities can be low or high, depending on the market players. If the central bank buys government bonds to finance budget deficit, there will be an expansion of money supply. Consequently, price stability can be threatened by money-finance budget deficit. For commercial banks that are required to hold a portion of their reserve requirement in government bonds, they tend to be inactive in the bond markets due to their buy-and-hold position. Insurance companies do not require liquidity as much as other institutions may park their money in long-term bonds. Figure 10a illustrates that commercial banks and other financial institutions have become less important as bond investors. Insurance companies and other investors such as non-profit organizations and households have become major investors in the Thai bond markets.

Figure 10a: Thailand: government bond investor profile

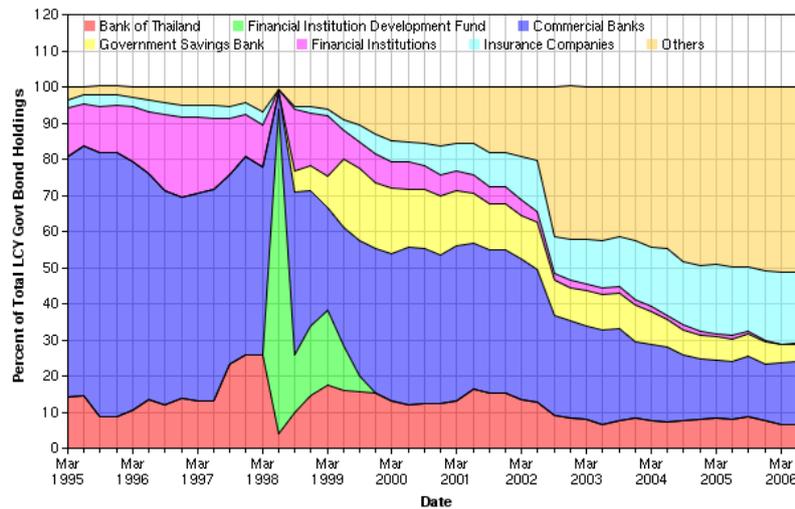
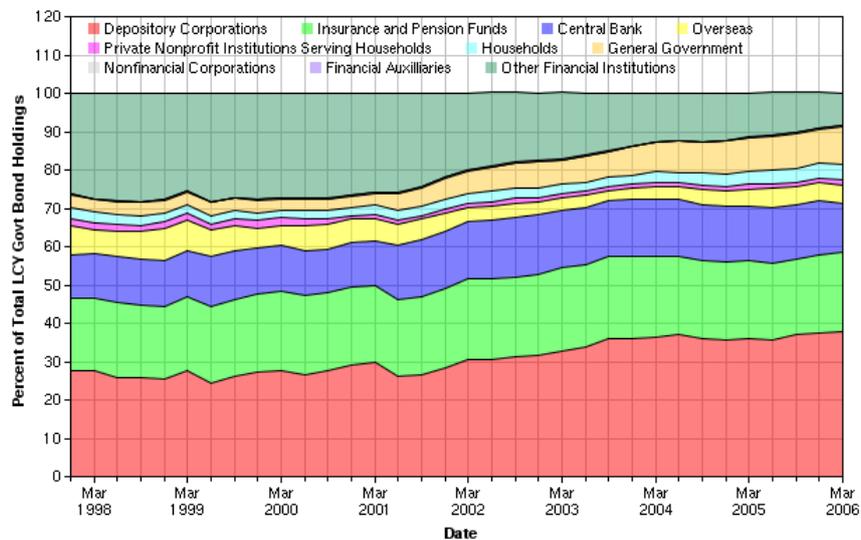


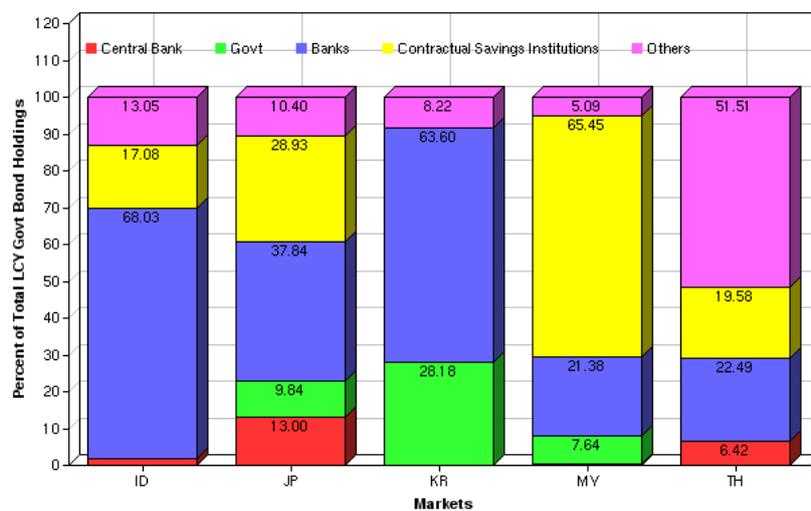
Figure 10b: Japan investor profile



Source: ADB, Asian bond online

There is a sharp contrast of the bond investor profile in Japan, where the importance of depository institutions has been increased over the years. Insurance and pension funds as well as the central bank have a significant share of local bond holding. While overseas holding is not large, it is significant compared to the Thai bond markets. Note that the profile of Japanese bond investors change gradually over time, which is not the case in the Thai bond markets, where there has been a substantial change in market players, leading to more volatile nature of the market.

Figure 11: Asian Investors profile in LCY bond markets



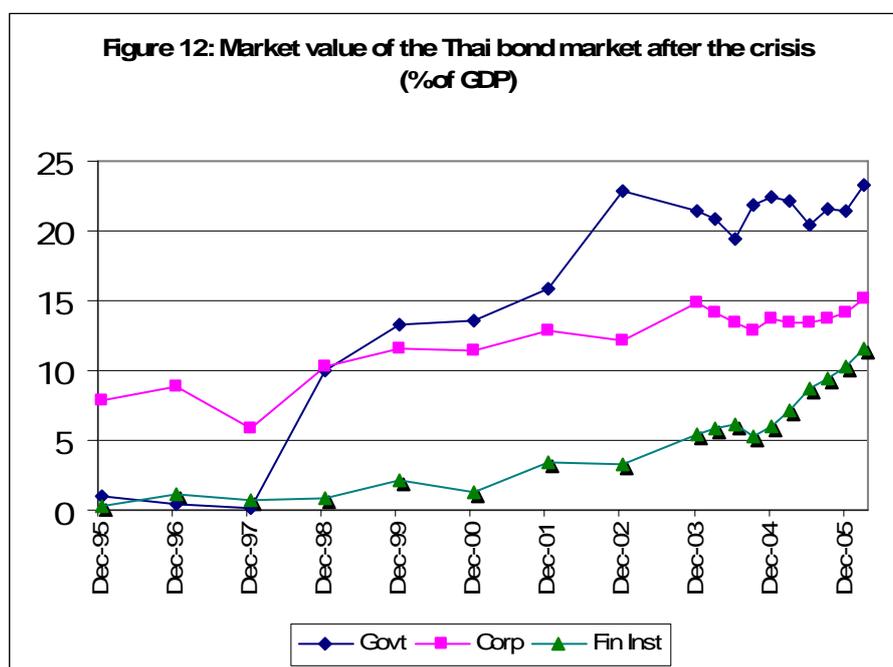
Source: ADB, Asian bond online

Comparison of Asian investor profiles is shown in Figure 11. Commercial banks have substantial share above 60 percent in Indonesia and Korea, while the correspond shares in Malaysia and Thailand are around 22 percent. Contractual savings institutions in Malaysia amounted to 65 percent of total LCY government bond holdings, followed by 29 percent in Japan, and 20 percent in Thailand. The high saving rate of a country, which reflects strong economic growth and large shares of working population, would directly and directly foster the bond market development.

6. Mitigating the impact of future crisis

Current account deficit is caused by imbalances between savings and investment. Prior to the crisis in 1997, many Asian countries experienced unsustainable current account deficit. Most crisis-hit countries in Asia had high saving rates, but their investments were excessive and inefficient. The bond market development can mitigate the impact of future crisis if it can enhance savings and channel financial resources to productive investment. The former governor of the Bank of Thailand after 1998 once said that he wished the Thai bonds market were so developed that it can mitigate or prevent the financial crisis in the country.

The amount of government bonds before 1997 was negligible, because there was no need to issue bonds. Consequently there was no establishment of benchmark yield curves for assessing risks of corporations. Nevertheless the amount of corporate bonds was 8 percent of GDP, higher than the combined amount of bonds issued by the government and financial institutions. There was no need for the latter to issue bonds because they were able to get cheap funds through short-term external borrowing. Then came the crisis which discouraged financial institutions to issue bonds during the economy slump. Until 2004, when banks resumed their loan expansion, bonds issued by financial institution have begun to increase, reaching 10 percent of GDP in 2006.



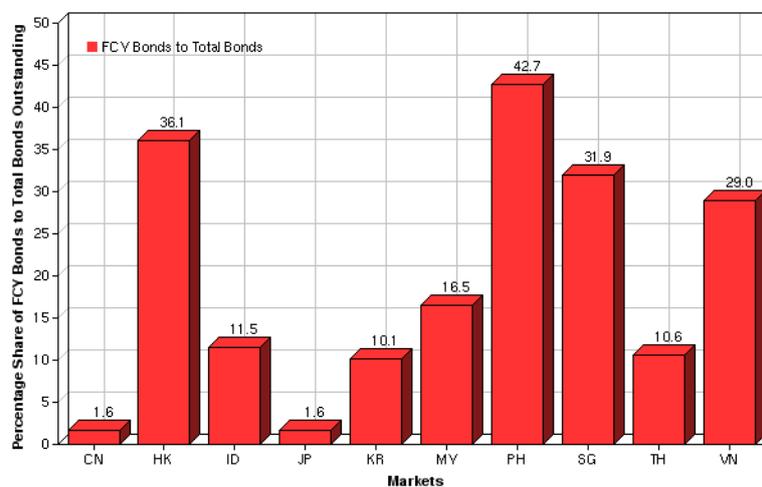
Source: ADB, Asian bond online

With enlarging fiscal deficit, the Thai government started to issue bonds. The amount of government bonds increase from near zero level to almost 25 percent of GDP in 2006. Likewise, bonds issued by Thai corporations increased from 5 percent of GDP in 1997 to 15 percent in 2006. Large corporations took advantage of the low interest rates, switching their financing source from banks to non-intermediate debts. It seems that the Thai bond markets have been operating in a manner that can mitigate future financial crisis.

Since not all of the bonds are issued in local currencies, there are some currency risks involving in issuing foreign denominated bonds. Figure 12 illustrates that there are significant foreign currency bond obligations issued by governments and corporate issuers. A high foreign currency bonds to total bond obligations indicates greater reliance on international debt contrast against local currency debt. The ratio is highest in the Philippines at almost 43 percent, followed by Hong Kong 36 percent, Singapore 31.2 percent, and Vietnam at 29 percent. The high FCY ratios in Hong Kong and

Singapore do not indicate currency risks as much as in the Philippines and Vietnam. The latter two countries are not able to offer attractive bonds denominated in their local currencies. For Hong Kong and Singapore, their roles of international centers in the region naturally involve high degree of global trading in foreign currency denominated bonds. The strength of local currency dictates the proportion of these foreign currency bonds. Japan and China have a very low proportion of foreign currency bonds around 1.6 percent because of investor confidence in the yen and renminbi. The corresponding figures for Thailand, Indonesia, and Korea were roughly 10%, suggesting that currency mismatching risks from issuing bonds in these countries are not large.

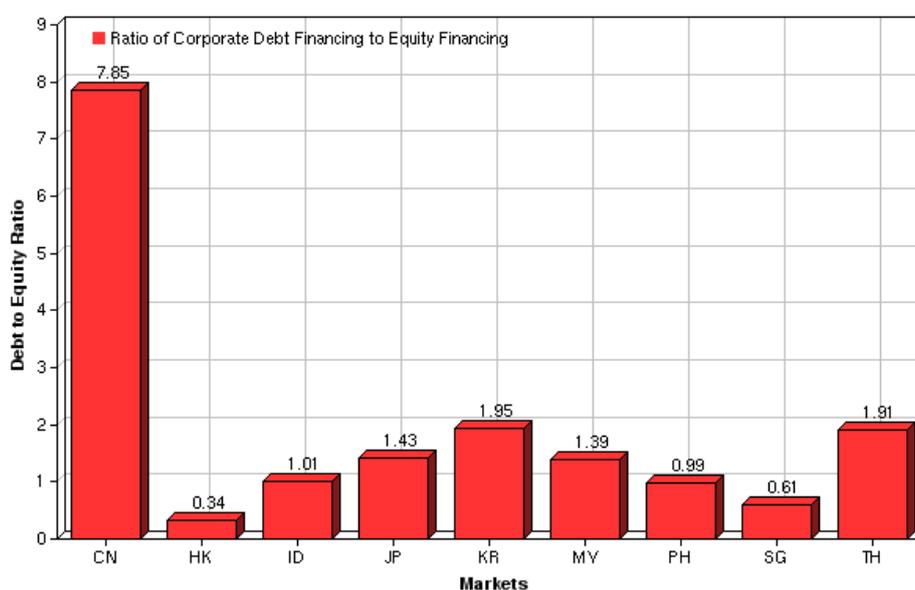
Figure 12: The importance of foreign currency bonds



Source: ADB, Asian bond online

With developed bond markets in dept and scope, corporations can choose means of investment finance through bonds, bank credit, or equity. Equity is the permanent source of funds, while bank credits are short-term source of funds which is subject to withdrawal. Bonds are in between the two sources of funds, more permanent than bank credit but less desirable than equity finance. If corporations can increase the share of bond financing, they can reduce the leverage ratio. The higher is the ratio of corporate financing debt to equity financing, the lower the credit risk for the corporation. Since interest expenses on bank credits are considered as fixed cost, their profit will be sensitive to changing in sales, thus firms with high leverage ratio are consider in high risk categories. Their cost of external funds will be lower if their leverage ratios can be reduced because they would get better credit rating.

Figure 13: Leverage ratio

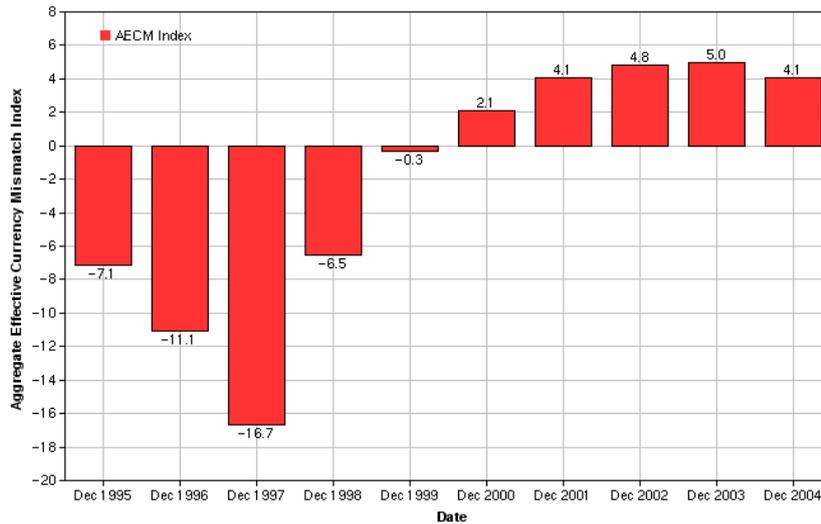


Source: ADB, Asian bond online

Morris Goldstein and Phillip Turner developed the Aggregate Effective Currency Mismatch index (AECM) which was computed as the product of foreign currency debt as a share of total debt and the ratio of a country's net foreign currency assets to exports (in case of negative foreign currency assets) or imports (in case of positive foreign currency assets). The closer the index is to zero, the better matched foreign currency assets and liabilities. The index is created to measure a country's vulnerability to currency mismatch in terms of expenditure and income from for debt obligations and international trade.

The AECM index clearly demonstrated the degree of vulnerability of mismatching currency in Thailand, which peaked at -16.7 1997. By 1999, that mismatching risk almost totally vanished. In the past five years, the index indicates that the currency mismatching has been contained as Thai firms and financial institutions substituted foreign debt by issuing domestic bonds. The slowdown in import growth also contributed to reducing vulnerability. However, we cannot entirely eliminate mismatching risks. Firms should be cautious about exchange risks when they conduct foreign transactions. In this case, regular public intervention in the currency market to maintain a stable exchange can be a problem. Because of moral hazard, firms are not willing to pay for the cost of hedging. Mismanagement of exchange rate policy is the root of the problem of currency mismatching. Even if the bond markets are well functioning, maintaining unrealistic exchange rates ensues currency mismatching.

Figure 14: mismatching currency



Source: ADB, Asian bond online

7. Concluding remarks

Government bonds are important at the early stage of bond market development, because they are complementary to bonds issued by firms and financial institutions. Once government bonds are firmly established in the market, as indicated by a gradually rising share in GDP, other private bonds can benefit from the benchmark yield curves of the risk-free government bonds. Government bond prices may not provide reliable information to market participants when they are not frequently traded. We would observe, in a later stage of development, a gradual rise in volume of outstanding bonds issued by the private sector. At this development stage, a country would experience volatility in bond yields. The shape and the movement of the yield curves of local currency bonds would be dictated by factors affecting conditions of the US bond market. As the bond markets become mature, there would be less fluctuation in bond yields; thereby producing a reasonable degree of risks for domestic investors.

The level of per capita income is the fundamental factor determining the success of bond development. There exists a threshold level of income that would permit the demand for bonds to rise faster than GDP. Because the demand for bonds depends on wealth and income level, in addition to a vector of relevant real net return on all assets in the portfolio, a country with a high saving rate and steady economic growth is likely to develop its bond market more successfully than countries with low level of savings. There are such things as demand constraints as well as supply constraints. Providing market infrastructure for bond intermediaries is important, but it is not

sufficient to establish market depth of the bond markets. In sum, there is no short cut for the rapid development of the bond markets. Equity market development can go hand in hand with advanced bond markets, although the two markets give different advantage to corporations.

Capital control liberalization through permitting cross-boarder bond trading would increase product variations and attract investors with different risk-preferences. As bond markets become active shown by large volume of transactions the bid-ask spreads can be reduced; thus improving the efficiency of financial resource allocation. The Asian bond fund is a product of regional cooperation among East Asian-Pacific Central Banks (EMEAP) to pull resources from their international reserves to invest in dollar-denominated government bonds. The measure to improve regional market activity was strengthened by the establishment of Asian Bond Fund 2 to invest in local currency denominated bonds. Asian Bond Market Initiatives (ABMI) is cooperation among the ASEAN+3 countries to enhance the activities of local currency bond markets in the region. These initiatives are important milestones for financial cooperation in the region, but they should be regarded as a catalyst for an early stage of bond development. They cannot replace a genuine demand for bonds that arise from strong domestic demand within the country.

References

Committee on the Global Financial System (2000) "Market liquidity: research findings and selected policy implications, BIS March.

Fleming, M.J. (2003) "Measuring treasury market liquidity" Federal Reserve Bank of New York, Economic Policy Review, September.

Jiang, Gurong and Robert McCauley (2004) "Asian local currency bond markets" BIS Quarterly review.

Hirose, Masato, Takeshi Murakami, and Yutaro Oku (2004) "Development of the Asian Bond markets and business opportunities" NRI papers, no. 82, November, Nomura Research Institute.