

CHAPTER 23

WHAT ARE THE NEXT STEPS FOR BOND MARKET DEVELOPMENT IN THAILAND?

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ABSTRACT

Recently East Asian policymakers have focused on facilitating corporate bond market development through a host of financial market reforms including greater foreign participation in the domestic markets as issuers and investors. However, the alternate approach – the encouragement of domestic issuers to further tap international markets – remains largely ignored. The objective of this study is to investigate these issues in the context of reform undertaken by Thailand following the Asian Crisis of 1997. As a small and open economy, Thailand was forced to become more receptive to foreign investment and capital market participation. We raise the significance of bond return volatility and skewness as an impediment to greater involvement by international investors. Empirical analysis highlights the time-varying nature of both variance and skewness of bond returns, which can only be overcome through government policy that focuses upon stabilizing the macroeconomic environment and not simply enhancing domestic and regional financial market infrastructure.

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1. INTRODUCTION

One of the well-documented successes of the Asia-Pacific region in the post-crisis period has been the significant development of local financial markets: credit extended in domestic markets, stock market capitalization, and the size of both the government and corporate bond sectors have all increased at a regional level over the last 10 years. In absolute terms, these increases represent commendable successes in terms of achieving national policy outcomes as well as those mandated by regional initiatives.¹

Though noteworthy, these regional successes disguise the considerable variation that exists in the achievement of these outcomes within the region, and especially when compared with the levels evident in some financial markets in Europe and America. For example, the corporate bond sector remains undeveloped in many countries (less than 5% of GDP in 2005/2006 in India, Indonesia and Philippines); the market for domestic credit from the banking sector is considerably smaller in India, Indonesia, Philippines and Thailand than Australia, China, Korea and Japan, while stock and government bond markets also display significant variation.

The overriding policy response to financial market reform in the Asia-Pacific region has focused on developing alternatives to bank-intermediated financing in the corporate sector, by facilitating corporate bond market development (Herring & Chatusripitak, 2000; IMF, 2005), with considerable progress being made to the improvement of the scale and scope of many domestic bond markets in recent years. However, McCauley and Park (2006) noted that domestic bond market development is one of three separate policy perspectives that could be adopted by government with each requiring different responses and strategies: first, an enhanced but not necessarily integrated series of domestic markets; second, a regional bond market denominated in regional currencies; and finally, a global market where East Asian borrowers and possibly investors are minor players. These authors favour the third image of bond market development, where national bond markets are developed with the ultimate objective of integration into a global market. Enhancing global integration requires greater foreign participation in the domestic markets (Burger & Warnock, 2006a) that includes the issuance activities of multilateral development banks (Hoschka, 2006), foreign corporations (Batten & Szilagyi, 2007) and foreign investors (Bae, Yun, & Bailey, 2006), as well as an expanded role for domestic issuers in international markets.

The key objective of this study is to investigate some of the key empirical features of Thai international bond issues that may enhance or impede their

appeal in international markets. This study therefore builds upon [Burger and Warnock \(2006a\)](#), who previously have highlighted the importance of key statistical characteristics of bond returns as well as the more frequently discussed investor protection and governance factors that may act as investor impediments to bond market development.

Thailand is a natural candidate for an examination of these issues. As a small and open economy, after the 1997 crisis Thailand was required to be more receptive to foreign investment and capital market participation than ever before. The key condition stipulated by the International Monetary Fund (IMF) for financial support was that Thailand had to further develop its domestic bond markets to avoid the historic mismatch in the maturity and currency of cooperate borrowing. Improving legal rights and investor/lending protection, emphasizing corporate governance and enhancing regulatory supervisions were also among IMF recommendations.

Thailand was also encouraged to adopt a more free-market approach to economic management, which resulted in lifting the permissible levels of foreign ownership in many strategic industries (e.g. bank, insurance, property, automobile, etc.). As a result, over the past decade, considerable disintermediation was undertaken in Thailand's financial markets, which also saw the blossoming of the domestic bond markets. For example, the domestic debt market grew more than 10-fold from 1997 to 2006, while total banking lending was reduced to less than 80% of GDP compared with 128% in 1997.

In many ways Thailand has also been a victim of its own success with anti-foreign sentiment resurfacing after the successful coup in late 2006, a period also characterized by extensive intervention by the Bank of Thailand (BoT) in foreign exchange markets to stabilize the Thai baht (THB). These recent actions by the BoT have distorted prices in bond (and FX) markets due to the extensive issues in the THB government bond market required to purchase incoming US dollar (USD).² To impede the flow of foreign capital, controls were imposed in December 2006, with changes then made to the Foreign Business Act in April 2007 to tighten foreign engagement in various industries. In short, it is a very interesting time to examine the Thailand bond market, 10 years after the financial crisis.

This chapter is set out as follows. Initially, a succinct review is made of the expanding literature on domestic bond market development. Then, a perspective of the scale and scope of the Thai international bond market is briefly undertaken. Finally, some key points to expanding international bond issuance are discussed and conclusions provided.

2. BOND MARKET DEVELOPMENT

There is a rich literature – and opinions – from authors investigating the lack and variation of domestic corporate bond markets, especially in the Asia-Pacific or East Asian markets (e.g. Benzie, 1992; Emery, 1997; Schinasi & Smith, 1998; Kim, 1999; Herring & Chatusripitak, 2000; Batten & Kim, 2001; Rhee, 2003, 2004; Eichengreen & Luengnaruemitchai, 2004; Jiang and McCauley, 2004; McCauley and Jiang, 2004; IMF, 2005; Burger & Warnock, 2006b; amongst others). These authors highlight many of the obvious technical obstacles: supply side impediments (providing an enabling environment, maintaining the reform of corporate governance), demand side impediments (strengthening the role of institutional investors and mutual funds, considering private placement as a short-term option), and infrastructure impediments (ensuring that credit ratings are reliable, creating benchmark yield curves, ensuring that there is an effective and enforceable regulatory framework, providing quality settlement and risk management systems and technology). The latter cannot be underestimated since the absence of deep and rich derivatives markets prevents the hedging of interest and exchange rate risk of international investors and issuers (Burger & Warnock, 2006a, 2006b).

Issues concerning the inadequacy of investor protection and governance remain a major concern with investors and issuers within Thailand and must act as a major impediment to further bond market development. An investigation of these issues by the IMF highlights many of these deficiencies, by providing information on the relative position of borrowers and lenders' legal rights in the Asia-Pacific region compared with mature and more developed markets.³ Table 1 provides a summary.

Overall, Thailand's score of 5 compares favourably with other countries in the region but is below that of countries of more mature markets (score of 7). However, this overall score disguises some key externalities that require the attention of government. First, the time taken for contract enforcement is generally long and specifically in the case of Thailand (390 days) is second longest only to India (425 days). Second, while the cost of contract enforcement in Thailand (13.4% of the face value of debt) is not the highest in the region where the average is 22%, the length of the bankruptcy process (2.6 years) and the cost (38% of the estate) are the highest in the region. In addition, there is poor judicial efficiency (3.3 is the lowest in the region) despite reasonable accounting standards (6.4 compared with the G3 measure of 6.6) and rule of law measures (6.3 compared with the G3 average of 9.4). These areas all need to be addressed along with

Table 1. The Importance of Legal Rights and Investor Protection.

Country	Borrowers' and Lenders' Legal Rights Index	Contract Enforcement Time (Days)	Contract Enforcement Cost (as Percentage of Debt)	Length of Bankruptcy Process (Years)	Bankruptcy Costs (as Percentage of Estate)
China	2	241	25.5	2.4	18
India	4	425	43.1	10	8
Korea	6	75	5.4	1.5	4
Malaysia	8	300	20.2	2.3	18
Thailand	5	390	13.4	2.6	38
Asia	5	286	22	4	17
Mature markets	7	165	9	2	7

Country	Accounting Standards	Rule of Law	Judicial Efficiency	Contract Repudiation	Expropriation Risk
India	5.7	4.2	8	6.1	7.8
Korea	6.2	5.4	6	8.6	8.3
Malaysia	7.6	6.8	9	7.4	8
Thailand	6.4	6.3	3.3	7.6	7.4
Asia	6.5	5.7	6.6	7.4	7.9
G-3	6.6	9.4	9.7	9.5	9.9

Source: IMF (2005) (Chapter IV on "Recent Trends in Corporate Finance").

improvements in the efficiency of the judicial process more generally and through specific measures such as the adoption of ISDA master agreements in standardizing the diverse contractual agreements – and interpretations – that may otherwise exist.

A region-wide perspective on the obstacles, omissions and policy disparities has already been undertaken by [Lejot, Arner, and Qiao \(2006\)](#). The authors provide a comprehensive coverage of the legal, fiscal, regulatory and systematic reforms necessary for regional and domestic bond market development. Relevant reforms will be discussed in more detail in the conclusions.

The simultaneous development of domestic corporate and government bond markets has been the initial focus for many countries ([Batten & Kim, 2001](#); [Fernandez & Klassen, 2006](#)). This focus included strategies to build infrastructure, including settlement systems ([Park & Rhee, 2006](#)), establish reputable credit ratings ([Kisselev & Packer, 2006](#)) and establish benchmark

yield curves (Wooldridge, 2001).⁴ In part this need was driven by reluctance on the part of local and regional issuers to issue in foreign currency due to exchange rate revaluation implications; many governments and corporations suffered massive increases in the market value of their liabilities following the depreciation of local currencies in the post-Asian Crisis period. Nonetheless, given the more stable macroeconomic environment that pervades the region in recent times, it is appropriate to now reconsider this view.

Such an approach is in effect an extension of regional bond market initiatives such as the Changmai Proposal at the meetings of the Asian Cooperation Dialogue on the 23rd June 2003 in Changmai, Thailand, which called for the development of an Asian or regional bond market (Pei, 2006) and the establishment of an Asian Bond Fund (Leung, 2006). These initiatives have established the credentials of local governments as being committed to the ongoing reform of local and regional financial markets. However, the failure of these regional markets to take-off is likely due to the presence of non-viable domestic bond markets (Park & Park, 2004). Thus, building domestic bond markets through the simultaneous development of global markets may prove to be a better overall strategy than tackling the more difficult task of coordinating regional bond market development.

There have been other initiatives within the region, which fit more clearly with the global strategy advocated by McCauley and Park (2006). Initially, under the working group of the ASEAN + 3 Asian Bond Market Initiative (ABMI), an additional focus was determining the effects of bond issuance by foreign corporations and supranational institutions on the development of local markets. Multilateral development banks have a significant presence in the Australian foreign bond market and have issued in other regional markets, especially Korea (Hoschka, 2006). Following this lead, foreign corporations have also become more involved in domestic bond markets as issuers (Batten & Szilagyi, 2007), while foreign investors (Bae et al., 2006) are now beginning to build a presence.

Foreign bond markets have now been established in Australia and the Samurai market has been revived in Japan, while smaller markets are underway in Korea, Hong Kong and Singapore. Foreign bond markets have clear advantages for multinationals since they allow better risk management by allowing the matching of foreign currency assets (from foreign direct or portfolio investment) with foreign currency denominated liabilities. From a balance sheet and revaluation viewpoint, this strategy “termed natural hedging” minimizes net foreign translation (currency) exposure. This is

especially important in Thailand for many multinational firms currently investing or considering further investment in manufacturing capability in areas such as automobiles and electronics.

Benefits also accrue to local investors who obtain more diverse yield and risk offerings to what was previously available in local markets, while there are clear macroeconomic benefits in the form of the alternate channelling of domestic savings. Investment corporations such as provident funds, social security and life insurance organizations are especially interested in the quality and fixed rate side of the market.

This last point is especially important for many Asian countries (such as China) where the savings build-up (mostly in bank deposits) may be linked to the formation of bubbles in other asset markets, such as stock and property markets. Finally, there are positive exchange rate benefits, especially for countries suffering from excessive foreign reserve build-up: by borrowing in domestic currencies, and not in foreign currency that otherwise requires conversion, multinational corporations alleviate balance of payments pressures. The recent decision (2007) by China to allow foreign companies to sell yuan denominated bonds accommodates both of these concerns. Next, we examine the state of international bond markets in Thailand.

3. THE THAI DOMESTIC AND INTERNATIONAL BOND MARKETS

The scale and scope of international bond issuance can be regarded as a barometer of general development in the respective local bond market, although admittedly they are frequently substitutes for domestic issues. There is also the improved diversification provided to both local and international investors through the offer of quality, longer dated securities than may be currently available in domestic markets. International bonds being denominated in non-local currency may also be more appealing to investors who require higher yield but are reluctant, or unable, to take on local currency risk. They also offer the advantage of globalizing a country's bond market without necessarily needing the authorities to internationalize the currency, which occurred in Australia (McCauley, 2006) and is now taking place in Korea (Batten & Szilagyi, 2007). Overall, the lessons and experiences of these initially high-quality issuers can then serve as a template for issuance by less-credit worthy local issuers in international markets.

Burger and Warnock (2006b) report the scale and scope of domestic and international bonds. Table 2, taken from their study, reports the scale and scope of domestic and international bond issues in emerging Asia compared with other key emerging and world markets. Taken from this global perspective, the total bonds outstanding in the emerging markets represent only a small component of the world bond market (about 7%). The ratio of

Table 2. Domestic and International Bond Markets in Thailand and the Asia-Pacific Region.

	Total Bonds Outstanding			Local Currency Bonds Outstanding			
	\$ Billions	% in World Bond Market	% of Country's GDP	\$ Billions	% in World Bond Market	% of Country's GDP	% of Country's Total Bonds
Emerging markets	2183	7	38	1652	5.3	28	76
Latin America	596	1.9	34	314	1.0	18	53
Emerging Asia	1124	3.6	40	1013	3.3	36	90
China	329	1.1	28	316	1.0	27	96
India	141	0.5	29	137	0.4	28	97
Indonesia	50	0.2	34	48	0.2	33	97
Korea	325	1.0	77	281	0.9	66	86
Malaysia	89	0.3	101	73	0.2	82	82
Pakistan	27	0.1	44	27	0.1	44	100
Philippines	32	0.1	45	16	0.1	22	50
Thailand	43	0.1	37	35	0.1	30	81
Taiwan	89	0.3	32	82	0.3	29	92
Financial centres	91	0.3	36	55	0.2	22	61
Hong Kong	44	0.1	27	23	0.1	14	53
Singapore	46	0.1	54	32	0.1	37	69
Emerging Europe	227	0.7	31	138	0.4	19	61
Other emerging markets	146	0.5	56	132	0.4	51	90
World	31168	100	105	28711	92	97	92

Note: The table reports the total domestic and local currency bonds issued by various emerging and developed countries in US dollar billions and as a percent relative to each countries GDP and relative to the total world bond market.

Source: Burger and Warnock (2006a).

total bonds outstanding relative to GDP of 38% for emerging markets, compared with 105% for the world, highlights the degree of their underdevelopment – the key exceptions in the table are Korea and Malaysia whose bond markets are almost the same size as the country's GDP. However, there is an interesting variation due in part to the success of recent policy initiatives that have encouraged domestic bond market development in some countries and regions. For example, the emerging markets of Asia are unique in that most bonds (90%) are issued in local currency (and in domestic markets), whereas significantly less are issued in local currency in emerging Europe (61%) and Latin America (53%). That is, while domestic bond markets have become well developed in Asia, issuers in emerging Europe and Latin America rely heavily on international bond markets for funding.

The alternative to bond market financing, either in domestic or international markets, is financing through stock market issues and banks. To illustrate the changes in financing in the Asian region, it is informative to consider the case of Thailand.⁵ Bank loan origination in Thailand remains a main funding source for the economy (about 80% of GDP in 2006), although financing by bonds has increased steadily (from about 16% of GDP in 1997 to about 50% of GDP in 2006). This process of disintermediation highlights the success of regional initiatives aimed at enhancing bond market development that have been discussed by [McCauley and Park \(2006\)](#), even though it is widely recognized that still much more must be done to fully maximize the regions' potential. As [Eichengreen and Luengnaruemitchai \(2004\)](#) noted: corruption, poor regulatory quality and the absence of quality accounting standards continue to slow development. However, it is precisely for these reasons that it is important to pursue a policy of both bank and bond market reform, since the intermediation role of banks is especially important in developing economies.⁶

Developing better bond markets enables banks to find additional funding (other than deposits) and enable them to focus on risk transformation and intermediation activities such as asset securitization or property funds. Also, the financing of mega-projects can only be done through bank loans that may be guaranteed by third party MTBs (ADB, World Bank) or other commercial banks. Overall, the presence of banking markets facilitates the development of a mature financial market by adding depth and diversity.

Despite these reservations, the Thai experience of bond market development has been impressive. [Fig. 1](#) shows the growth in domestic bond issuance by government, corporate and financial sectors for the period from 1990 to 2005. Beginning at less than USD 10 billion in 1990, the domestic

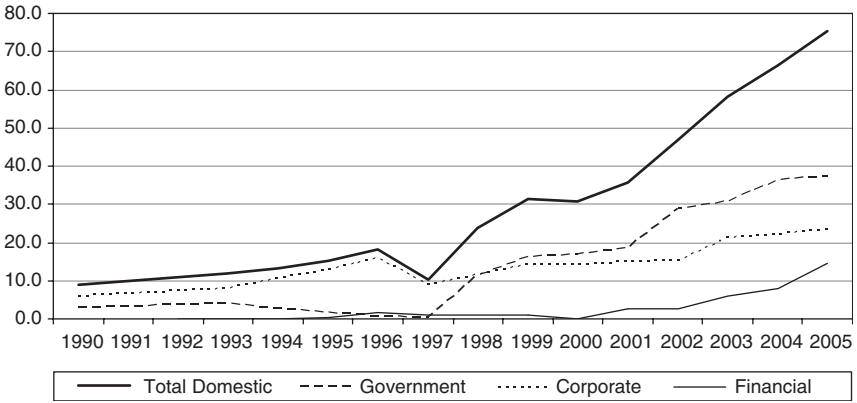


Fig. 1. Domestic Bond Issuance by Sector (1990–2005) (Billions of USD). Note: The figure shows total domestic bond issuance in US dollar billions (*y*-axis) by three segments of the Thai economy: the government, corporate and finance sectors. A total is also provided. The period covered is from 1994 to 2005 and is sourced from the Bank for International Settlements (Table 16) *BIS Quarterly Review* (2006).

market now approaches USD 80 billion. Importantly, growth has been significant across all three sectors, although the government sector now dominates the domestic bond market (and has done so since 1998), in part because of the need to finance domestic fiscal deficits.

A sectoral breakdown of Thai international bond issues for the period 1990–2005 is provided in Fig. 2. Thai international bond issuance is now rarely discussed or considered but was very important as a funding source in the period prior to the Asian Crisis period of 1997–1998, when total issues peaked at about USD 15 billion. International issues by financial corporations remain the dominant sector, although issuance is now almost 50% less than the USD 8 billion issued in 1999. While the government sector maintains a steady program of international bond issuance, the international market now represents less than 10% of total outstandings.

This fact is clearer when one considers Fig. 3. This figure shows international bond issuance as a percentage of total issues (including domestic issues) by each of the three sectors. For example, in 2000 the financial sector issued almost 100% of its bonds in domestic markets. Until 1997–1998, as much as 80% of government bonds issued were in international markets, while today the proportion is less than 10%. In fact

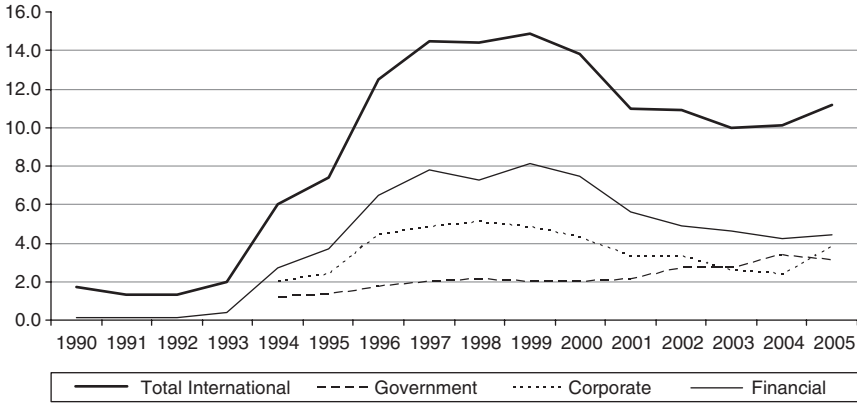


Fig. 2. Thai International Bond Issuance: Total Issuance (1990–2005). *Note:* The figure shows international bond issuance in US dollar billions (y-axis) by three segments of the Thai economy: the government, corporate and finance sectors. A total is also provided. The period covered is from 1994 to 2005 and is sourced from the Bank for International Settlements (Tables 11–15) *BIS Quarterly Review* (2006).

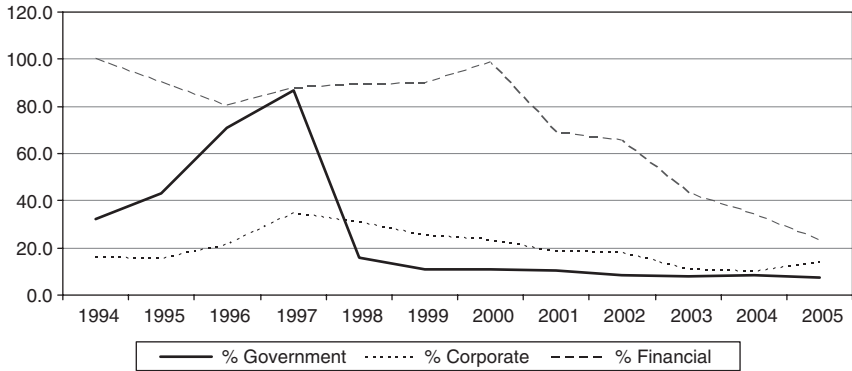


Fig. 3. Thai International Bond Issuance: Sector as a Percentage of Total Issues (1990–2005). *Note:* The figure shows international bond issuance as a percentage of total international issues by three segments of the Thai economy: the government, corporate and finance sectors. The period covered is from 1994 to 2005 and is sourced from the Bank for International Settlements (Tables 11–15) *BIS Quarterly Review* (2006).

the proportion of international bonds issued by all three sectors has declined as domestic bond markets have developed.

While some of these international bond issues (usually denominated in US dollars or yen) were unhedged with Thai issuers suffering the subsequent effect of USD appreciation after the Asian Crisis, many were not and relied upon the simultaneous development of the cross-currency USD/THB swap market (usually fixed rate USD to fixed rate THB). These swaps enabled the creation of fixed rate THB borrowings at a time when there was little domestic investor appetite for fixed long-term debt. We argue that the next round of reforms should focus on the development of floating rate domestic instruments. These could be arbitrated against forward foreign exchange contracts to ensure market completeness.

4. THE BEHAVIOUR OF THAI BONDS AND CREDIT SPREADS

4.1. Thai Bond Returns

The time series properties of individual bonds and their credit spreads (the spread of a risky bond over a riskless bond) has been the subject of recent empirical investigation. Especially noteworthy in recent times is the reduction in credit spreads to historic lows, not just in the Asian region, but across all emerging markets, despite a variety of economic and political shocks. Addressing the first of these issues, [Burger and Warnock \(2006a\)](#) argued the importance that international investors place on the skewness and volatility of bond returns. High variance and negative skewness are considered unattractive features and are present in both the unhedged and hedged USD returns from most emerging market bonds.

Key results from [Burger and Warnock \(2006a\)](#) are provided in [Table 3](#). Looking at these data from a regional perspective, the variance of unhedged USD returns is greatest in Latin America (1.048), the emerging Asia (0.926) and other emerging markets such as Africa and the Middle East (0.567), while the lowest variance is in emerging Europe. Returns are most negatively skewed in Latin America (-1.62), other emerging markets (-0.62) and emerging Asia (-0.59). Hedging for USD exchange risk significantly reduces the variance (e.g. a reduction from 0.926 to 0.399 in the case of emerging Asia), although it has the opposite effect on skewness (e.g. an increase of negative skewness from -0.59 to -1.00 for emerging Asia).

Table 3. The Mean, Variance and Skewness of Historical Returns in Thailand and the Asia-Pacific Region.

	Unhedged USD Returns			Hedged USD Returns		
	Mean	Variance	Skewness	Mean	Variance	Skewness
Emerging markets	0.004	0.809	-0.95	0.076	0.431	-1.35
Latin America	-0.041	1.048	-1.62	0.049	0.665	-1.89
Emerging Asia	0.073	0.926	-0.59	0.088	0.399	-1.00
China	0.096	0.043	0.70	0.096	0.043	0.68
India	0.077	0.037	-1.43	0.119	0.024	-0.92
Indonesia	-0.168	3.245	0.28	-0.081	1.370	-0.94
Korea	0.208	0.753	-2.86	0.144	0.227	-1.76
Malaysia	0.104	0.615	0.13	0.098	0.352	-0.38
Philippines	0.037	0.739	-1.05	0.100	0.321	-2.28
Thailand	0.160	1.048	0.07	0.143	0.454	-1.44
Financial centres	0.052	0.041	0.12	0.092	0.027	-0.35
Hong Kong	0.107	0.042	-0.02	0.109	0.041	-0.01
Singapore	-0.003	0.040	0.26	0.076	0.013	-0.69
Emerging Europe	-0.077	0.567	-0.62	0.084	0.233	-0.78
Other emerging markets	-0.007	0.696	-1.46	0.092	0.427	-2.55
World ex US	0.006	0.483	-0.20	0.072	0.240	-0.92

Note: The table reports the mean, variance and skewness of hedged and unhedged returns for bonds issued by various emerging and developed countries.

Source: Burger and Warnock (2006b).

It is especially noteworthy that within the Asian region there is extensive variation in both variance and skewness, which underpins both the difficulty of regional market integration, while also highlighting the potential benefits to investors who are able to adequately diversify their portfolios.

Looking at these data from the perspective of Thailand, the variance of unhedged Thai bonds returns in terms of US dollars (1.048) is second highest in the region to Indonesia (3.245), although the skewness is more favourable (0.07). Hedged US dollar returns have considerably less variance – suggesting that Thai baht–US dollar currency risk is a major factor that must be overcome – although the skewness is now negative (-0.35). Overall, Thai bonds have less appeal to international investors than bonds issued by other similarly rated countries (such as China).

While this may be true, there is considerable variation in the variance and skewness of individual bonds, which is also linked to the currency of denomination. Table 4 reports the results of average monthly returns, variance and skewness for six Thai government bonds denominated in both

Table 4. The Variance and Skewness of Thai Government International Bonds Denominated in Yen and US Dollars.

Foreign Bond Issue (Maturity Date, Coupon and Currency)	Average Monthly Return	Average Monthly Variance	Average Monthly Skewness	Source: Bloomberg (B)/Reuters (R)
THAILAND KINGDOM 03/27/2006 3.35% JPY	0.000	0.858	0.737	B
THAILAND KINGDOM 12/20/2006 2.85% JPY	0.000	0.793	0.629	B
THAILAND KINGDOM 12/21/2006 1.13% JPY	0.000	0.816	0.666	B
THAILAND KINGDOM 12/19/2008 1.70% JPY	0.001	0.703	0.494	B
THAILAND KINGDOM 4/15/2007 7.75% USD	0.002	0.769	0.592	B
THAILAND KINGDOM 9/30/2013 7.07% USD	0.003	1.024	1.049	R

Note: The table reports three key moments (mean return, variance and skewness) for six Thai government international bonds denominated in yen and US dollars. The results were averages calculated over a rolling one-month (22-day) period. The period is from September 2002 to March 2006 and was sourced from either the Bloomberg (B) or the Reuters (R) Fixed Income databases.

US dollars and yen. The data available cover the period from September 2002 to March 2006 and were sourced from either the Reuters or Bloomberg Fixed Income databases. There were a maximum of 910 observations for each bond, though on some days there were no prices available from either Reuters or Bloomberg. There is very little trading in any of these bonds in secondary markets and most prices were indicative and based on dealers' quotes rather than actual trades.

Interestingly, and possibly not surprisingly, the bonds of longer maturity have higher variance. However, there does not appear to be a significant difference in variance between the US dollar and the yen denominated bonds. Importantly for international investors, the skewness is positive and for these six bonds ranges from 0.494 to 1.049. Thus, key features of Thai international bonds for international investors – irrespective of currency denomination – are that (1) they are positively skewed and (2) the degree of positive skewness of these international bonds is significantly higher than the skewness reported for either hedged or unhedged domestic Thai bonds (Table 3).

While this feature of international bonds is attractive for international investors, it is important to also note that both variance and skewness are time-varying. This is very clear in Figs. 4 and 5, which plot the monthly variance and skewness of the 7.75% coupon USD Eurobond returns over

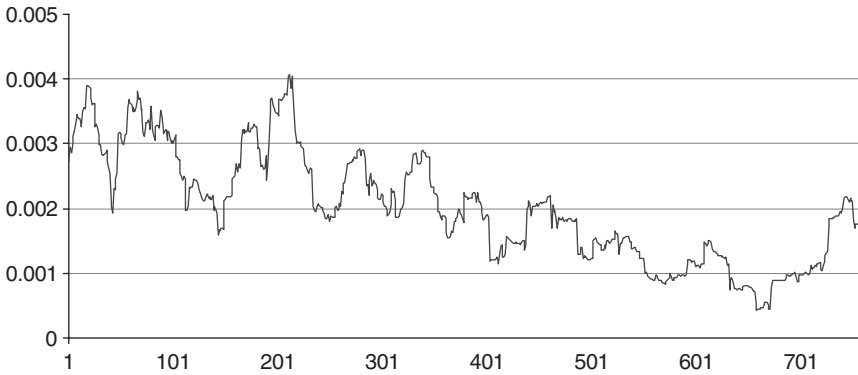


Fig. 4. Time-Varying Monthly Volatility (Standard Deviation) of the THAILAND KINGDOM 4/15/2007 7.75% USD Eurobond. Note: The figure shows the daily standard deviation calculated over a rolling one-month (22-day) period. The period is from September 2002 to March 2006 and was sourced from the Bloomberg Fixed Income database.

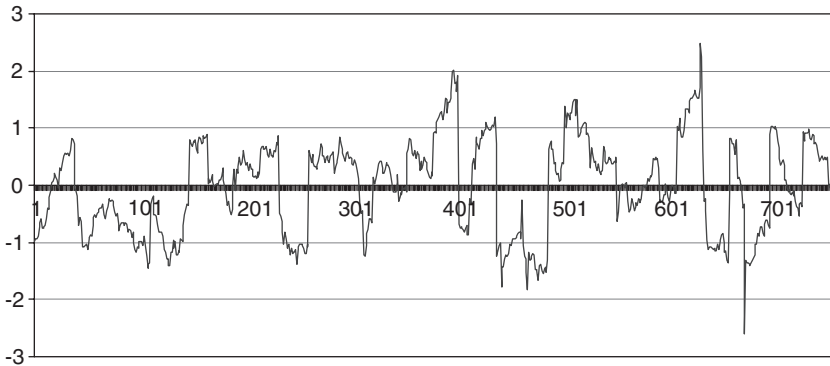


Fig. 5. Time-Varying Monthly Skewness of the THAILAND KINGDOM 4/15/2007 7.75% USD Eurobond. Note: The figure shows the daily skewness calculated over a rolling one-month (22-day) period. The period is from September 2002 to March 2006 and was sourced from the Bloomberg Fixed Income database.

the sample period (all the bonds displayed similar patterns). It is interesting to note that while the standard deviation tended to oscillate down over the sample period (from around 0.004 to about 0.003), the corresponding skewness (both negative and positive) tended to increase (from below ± 1 to above ± 2). Hence the time-varying variance and skewness will affect the performance of international portfolios, and while some of this risk may be diversifiable, the portfolio returns will be clearly unstable over time.

4.2. Credit Spreads on International Bonds

Batten, Fetherston, and Hoontrakul (2002, 2006) have previously reported the results from modelling the credit spreads of a group of nine Asian international bonds. These bonds included those issued by China (three bonds), Korea (one bond), Malaysia (one bond), Philippines (three bonds) and Thailand (one bond).⁷ The dependent variable was the change in the credit spread (yield) for each of these nine bonds, where the spread was estimated by matching the maturity of each Asian bond with an equivalent maturity US Treasury benchmark bond. Credit spread theory suggests that credit spreads on risky bonds are negatively related to the underlying risk-free interest rate (in this case a US Treasury bond) and an asset factor, proxied by the return on the local stock market index (see Batten & Hogan, 2003; Batten, Hogan & Jacoby, 2005). Exchange rate variables are also considered to proxy macroeconomic stability.

Tables 5a and 5b report the key results for all bonds; although particular attention is paid to the 7.75% coupon 2007 Thai Eurobond. The results from these tables may be summarized as:

- The intercept term (a) reflects a risk premium that could exist on the spread return. However, the value was less than 0.01 (0.005 in the case of the Thai bond) suggesting that it was not important in explaining the spread return.
- The interest rate factor (Y) was in fact both statistically and economically significant in all nine cases. In the case of Thailand, the value of -2.39 suggested that changes in the underlying US Treasury bond were the single most important factor that affected credit spreads. The negative value also suggested that the spread would increase or decrease opposite to changes in the underlying US yield change (i.e. if US Treasury bond yields increased then the credit spread would decrease and vice versa).

Table 5a. The Credit Spreads of Key Asian International Bond Issues against US Treasury Bonds.

Credit Spread Pair	Credit Spread Equation (Independent Variables)					
	a	$b\Delta Y_t$	$c\Delta(Y_{30}-Y_2)_t$	$d(\Delta Y)_t^2$	$e\Delta I_t$	$f\Delta e_t$
CHU04-US2	-0.004 0.002	-1.234 0.000	0.107 0.026			
CHU06-US5	-0.005 0.000	-2.242 0.000	0.319 0.000	0.099 0.000	0.363 0.010	
CHU08-US5	-0.007 0.000	-2.458 0.000	0.157 0.000	0.063 0.000		
KOG08-US5	-0.006 0.001	-2.520 0.000	0.157 0.000	0.067 0.000		
MYG09-US5	-0.001 0.002	-0.681 0.000	0.046 0.000	0.016 0.000		
PHG08-US5		-0.412 0.000			-0.206 0.000	0.217 0.033
PHG19-US10		-3.639 0.000				
PHU24-US10	-0.003 0.057	-3.726 0.000			-0.479 0.001	0.702 0.037
THU07-US5	-0.005 0.001	-2.389 0.000	0.110 0.072	0.084 0.000		

Note: The table reports the key regression results from [Batten et al. \(2006, Table 3\)](#) for the credit spread of East Asian issuers with US Treasury bonds (China 2004, 2006, 2008 maturities (CHU04, CHU06, CHU08), Korea 2008 maturity (KOG080), Malaysia 2009 maturity (MYG09), Philippines 2019 and 2024 maturities (PHG19 and PHU24) and Thailand 2007 maturity (THU07)) with near maturity US government Treasury bonds with 2- (US2), 5- (US5) and 10-year (US10) maturities. Note that the designation “G” or “U” in the bond code refers to whether the bond was a global bond or a Yankee bond, respectively. The data were sourced from the Reuters Fixed Income database. A simplified model of their model is $\Delta S_t = a + b\Delta Y_t + c\Delta(Y_{30} - Y_2)_t + d(\Delta Y)_t^2 + e\Delta I_t + f\Delta e_t + \varepsilon_t$, where ΔS_t is the change in the credit spread (for the various Asian bond issues as described in [Table 5b](#)) at time t , ΔY_t is the change in the risk-free interest rate (identical in maturity to the riskless bond used to calculate the spread), $\Delta(Y_{30}-Y_2)_t$ is the change in the slope of the yield curve for 30- and 2-year maturities, $(\Delta Y)_t^2$ is the change in the squared spot rate (rates with the same maturity as the riskless bond), ΔI_t is the change in the logarithm of the stock market index and Δe_t is the change in the spot exchange rate.

- The interest rate variable to accommodate the change in the shape of the yield curve due to inflation expectations between a 30- and 2-year US Treasury bond ($Y_{30}-Y_2$) was generally statistically significant, with a positive sign suggesting that a steepening of the yield curve results in a rise in the credit spread. In the case of the Thai bond, the value was 0.110.

Table 5b. Information on Sovereign Bonds of Asian Issuers.

Issuer	Code	Coupon	Issued	Maturity	Rating
CHINA, PEOPLE'S REPUBLIC OF	CHG08	7.3	12/9/1998	12/15/2008	BBB
CHINA, PEOPLE'S REPUBLIC OF	CHU06	7.75	7/1/1996	7/5/2006	BBB
CHINA, PEOPLE'S REPUBLIC OF	CHU04	6.5	2/2/1994	2/17/2004	BBB+
FEDERATION OF MALAYSIA	MYG09	8.75	5/27/1999	6/1/2009	BBB-
KOREA, REPUBLIC OF	KOG08	8.875	4/7/1998	4/15/2008	A-
PHILIPPINES, REPUBLIC OF	PHU24	9.5	10/14/1999	10/21/2024	BB+
PHILIPPINES, REPUBLIC OF	PHG19	9.875	1/6/1999	1/15/2019	BB+
PHILIPPINES, REPUBLIC OF	PHG08	8.875	4/2/1998	4/15/2008	BB+
THAILAND, KINGDOM OF	THU07	7.75	4/10/1997	4/15/2007	BBB-

Note: The table shows key East Asian issues in international markets, sourced from the Reuters Fixed Income database, used by Batten et al. (2006). It also reports the coupon of the bond, the date of issue and maturity and the credit rating. Note that the designation “G” or “U” in the bond code refers to whether the bond was a global bond or a Yankee bond, respectively.

- The interest rate variable to accommodate possible convexity in the yield curve (Y^2) was statistically significant in five of the nine cases, although the actual coefficient was small and generally not economically significant. The value for the Thai bond was 0.084.
- The asset factor (I) was only significant in three of the nine cases. A positive relationship suggests that a rise in the stock market is associated with an increase in the spread and vice versa. This suggests that the linkage between stock and international bond markets was not so clear-cut. In the case of the Thai bond this variable was statistically insignificant, suggesting there was no relationship between changes in the Thai credit spread and the stock market.
- The exchange rate variable (e) was not significant with the exception of Philippine bonds where a positive value suggests that a rise in the exchange rate (a depreciation of the peso) was also associated with an increase in the credit spread and a fall in the stock index. In the case of the Thai bond this variable was also not statistically insignificant, suggesting there was no relationship between changes in the Thai credit spread and the exchange rate.

These two sets of results suggest that Thai international bonds benefit from positive skewness, which should make them more attractive to international investors than bonds issued within Thailand. From the issuer perspective, the single most important factor affecting the change in the credit spreads on international bonds – for all Asia-Pacific issuers not

just Thailand – is the negative relationship with changes in US Treasury bond yields. Also, exchange rate changes are not especially important factors. This is especially important for international investors since they would hope that buying a sovereign bond denominated in a foreign currency (such as USD and yen) would avoid local currency volatility spillover effects.

5. CONCLUSIONS

After the 1997 financial crisis, to reduce the dependence by the corporate sector on the bank funding channel and stock market ventures for refinancing and investment, East Asian policymakers developed a financial market vision that encompassed three key dimensions for bond market development:

- (1) an enhanced, but not necessarily integrated series of domestic bond market;
- (2) a regional bond market denominated in regional currencies for regional integration; and
- (3) a global market where national bond markets are developed with ultimate goal of global financial integration and foreign participation.

Enhancing global integration requires greater foreign participation in the domestic market (Burger & Warnock, 2006a), which incorporates additional issuance activities of multilateral development banks (Hoschka, 2006), foreign cooperations (Batten & Szilagyi, 2007), the engagement of foreign investors (Bae et al., 2006) and an expanded role for domestic issuers in international markets. This contribution focuses on the international bond market, which we believe holds important benefits for both issuers and investors in the form of better risk and maturity management than that currently exists in many domestic markets.

Specifically, we focus on Thailand's issuance activities in international markets. Thailand is an excellent candidate for such a study since after the 1997 crisis it was required under IMF guidelines to become more receptive to foreign investment and capital market participation. Specifically, we raise the importance of bond return volatility and skewness as an impediment to greater involvement by international investors. We also highlight the time-varying nature of both variance and skewness of bond returns, which can only be overcome through government policy that focuses upon stabilizing the macroeconomic environment and not simply relying upon the enhancement of domestic and regional financial market infrastructure.

Nonetheless, we do not want to understate the importance of quality infrastructure in encouraging participation in bond markets by investors and issuers and do recognize the accomplishments made in recent year, including the establishment of better dealing, trading and settlement systems (Park & Rhee, 2006; Wooldridge, 2001) and enhanced regional cooperation such as the development of the ASEAN+3 bond fund (Leung, 2006; Pei, 2006). However, much more still needs to be done, including improving the reliability of credit ratings, enhancing derivatives markets to facilitate risk and maturity management and better investor protection and governance (Kisselev & Packer, 2006; Bae et al., 2006). Enhanced risk management capability can only arise through the development of deeper markets for floating rate instruments, such as Forward Rate Agreements (FRAs) and the ability to swap cash-flow type and currency, though instruments such as cross-currency swaps. These are invariably traded over-the-counter (OTC) and remain the province of leading foreign banks. Reform to facilitate trading is therefore essential and requires an ongoing commitment by government in conjunction with industry. Eventually, floating rate futures markets could be developed modelled on the Singapore and Hong Kong experience. However, it is important to recognize that these markets are used by financial rather than non-financial institutions for hedging and trading purposes.

The need for developing alternate investment vehicles to house the vast build-up of savings in each individual country and across the region cannot be underestimated. Possibilities include the development of better, deeper and more diverse markets in asset-backed securities – as has occurred in Korea – where the assets are traditional mortgages or infrastructure such as those in the German Pfandbrief market (see Fernandez & Klassen, 2006). One possibility to better motivate reform would be to set a national target for each domestic bond market to approach a size that is equal to 100% of GDP – a ratio common in many developed markets.

In conclusion, we argue that the next step necessary for bond market development throughout the East Asia region is to direct policy towards the internationalization of domestic markets, instead of a single policy aimed at regionalization. This proposal is consistent with McCauley and Park (2006). The two important steps towards this goal involve making domestic markets more attractive to foreign issuers, in line with the recommendations of Hoschka (2006), Bae et al. (2006) and Batten and Szilagyi (2007), and to encourage local issuance in international markets. Both these steps will invariably lead to further internationalization of domestic currency (McCauley, 2006), as has occurred in Australia and is developing in Korea.

Consequently, exchange rate policies must be more accommodating (such as minimizing capital flow restrictions and providing withholding tax exemptions). Overall, this positive economic climate will lead to positive national benefits such as the reduction in the risk attached to investment, which should further encourage foreign direct investment.

NOTES

1. For example, the ASEN Bond Fund, based on a basket currency incorporating the yen, the euro, and the US dollar was proposed and implemented in 2004. ASEM task force for closer economic partnership between Asia and Europe, Final report and recommendations presented to the ASEM V summit in Hanoi, October 8–9, 2004.

2. When the BoT buys USD in foreign exchange markets, it must sell the equivalent amount of THB in spot or forward markets. When THB is sold in spot markets, the authorities must issue domestic bonds to fund the short THB cash position and also then invest the US dollar proceeds. Detailed information on the scale and scope of the Thai foreign exchange market is provided in BIS (2005).

3. See Lu and Batten (2001) and Batten and Szilagyi (2004) for further discussion.

4. The importance of establishing benchmark yield curves is critical for corporate bond pricing although liquidity related distortions exist even in developed markets such as Japan (In, Batten & Kim, 2003).

5. Batten and Szilagyi (2003) and Szilagyi and Batten (2004) provide a detailed discussion of corporate bond market development in Japan.

6. As Eichengreen (2006) noted: Banks provide underwriting services for prospective domestic issuers, advising the issuer on the terms and timing of the offer; they provide bridge finance in the period when the marketing of bonds is still underway; they provide distribution channels for government bonds and form an important part of the primary dealer network; their institutional support may also be conducive to secondary-market liquidity; and finally, and most directly, banks owing to their relatively large size can be major issuers of domestic bonds themselves.

7. See Table 5b for details of each bond.

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