“Financial crisis and bond market development in Asia: a case study of India and South East Asian countries”

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Abstact

With an incresingly integrated global financial system, shocks to individual asset markets are frequently noticed to affect not only other asset markets in the same country but also the ones in other countries. Such spillover effects were conspicuous during several past financial crises periods in general and developing economies in particular and have also been common during the current global financial crisis which started from developed countries. Using monthly data from prior to the Asian crisis through to the early stages of the current global financial crisis, this study analyzes the relationships between bond markets of the US and bond markets of Hong Kong, Indonesia, Malayasia, Philippines, Singapore, Thailand and India. The paper measures the benefits that might be generated through, inter alia, financial market diversification and interest rate convergence. It also deals with appoaches concerning liquidity problem such as the creation of Asian currency basket. This study finally throws light on the challenges and opportunities essential in deeping the local bond markets as well as creating a regional bond market in which Asian countries would be able to issue fixed income securities. It has been found that the impact of the financial meltdown on currencies of almost all Asian economies with respect to US$ and Japanese yen have been higher. However, the impact of the financial meltdown on Asian currencies with respect to euro was less. It is also important to mention that the impact of financial meltdown was on the Asian currencies, however, the degree of impact was less than the Asian Crisis which has happened in 1997. It has also been noticed that the interest rate of economies have fallen considerably as compared to 1994-2000 and economies have become more stable.

Keywords: bond market, integration, interest rate, inflation rate, currency basket.
JEL Classification: G20.

Introduction

The landscape of contemporary organizations is undergoing major shifts largely triggered by technological development and globalization of markets. The world is experiencing the negative impact of the financial meltdown in the US and Europe and its reverberations in different parts of the world including Asia. The meltdown has created new tectonic shifts, posing new challenges for organizations, both financial and non-financial, the world over. The sense of shifting global economic power is being experienced as a beleaguered world looks the East to become the engines of global economic growth. Indeed this cusp in time may provide new opportunities for Asian countries.

To fuel the rapid economic growth of Asian economies, a vibrant corporate bond market is important to foster the credit culture, market discipline and observable benchmarks for issuers, bond investors and other providers of capital as bond market offers access to longer-dated, unsecured financing for growth businesses. In addition, primary and secondary corporate bond spreads can be used by banks to assess mark-to-market loan positions. Thus, a robust corporate bond market can add to the depth of the capital market, even in a small economy. Therefore, the presence of a well-developed corporate bond market has a strong positive effect on an economy. However, in the absence of a sufficiently developed corporate bond market free from excessive regulation, an overly large burden of corporate ending is taken on by the banking system, where government typically direct the credit allocation as per its priorities (Bose and Coondoo, 2003).

The Asian bond market development has been on a high priority for the policy makers after the Asian Financial Crisis of 1997-1998 (Rakshit, 2000; Herring & Chatusripitak, 2000). The development of local currency bond market has been seen as a way to avoid crisis and also to provide an access to international capital markets, with these markets helping to reduce potential currency and maturity mismatches in the financial system (Ma and Remolona, 2005). Local bond market can also be beneficial in diversifying funding resources, especially for corporate borrowers, from their generally heavy reliance on domestic banks. In addition, improving local bond markets can help strengthen corporate governance and transparency, develop a credit culture in emerging market countries. Accordingly, almost all governments in Asian countries in general and emerging market countries in particular have been actively taking steps to develop local bond markets. However, there are regional differences in recent developments of local bond markets. The thrust to develop local government bond market has become strong after the Asian financial crisis in 1997-1998 (Chuan Teck Lee, 2005). The governments of Asian countries need to finance budget deficits and also to recapitalize banking systems. The weakness in bank lending has also contributed to some extent to increase in corporate bond issuance in Asia.

Bond markets globally have been growing at a remarkable rate. The size of the world bond market in 2008 was US$83,529 billion, more than 137% of global GDP, more than two times from 60% in 1990 and up from 98% in 1999. Much of this increase is due to robust growth in the corporate bond market which constitutes 85 per cent of the total global GDP. The total outstanding amounts of debt securities issued by Asian countries in both local and international capital markets has increased rapidly to reach $304 billion at the end of March 2009 of which a slightly more than two-thirds of the total outstanding amount issued by only five countries, i.e., Korea, Malaysia, Indonesia, Philippines and Thailand. Together, however, emerging bond markets account for just 3.04 per cent of the global bond market of which Asia account for only 1.88 per cent in 2008. Compared with other regions, emerging Asia has issued less international bonds, more government bonds in local markets, but not so dominating, and a large private sector share: for financial institutions and for corporate. However, the composition of Asian bond markets is thus similar to that of mature bond markets. The reason against the development of a well functioning corporate bond market in these countries is that family-based corporations/business conglomerates in these countries tended to prefer a combination of internal earnings, banks and the government (Sharma, 2000).

In terms of the size of domestic bond markets relative to GDP, Asia is around 54.29%, of which the corporate sector is about 23.5%. By contrast, the US bond market is about 212% of its GDP and the corporate market is about 157.6%. Japan's corporate bond market is about 48.1 per cent of GDP, while Germany's is over 104 per cent of GDP. Asian local bond markets have become an important source of funding for both public and private sectors. In 1997 local bond markets supply less than 3% of the funds raised by Asian entities in all local and international loan, bond and equity markets. In 2009, the share of local bond markets rose to 58% of total financing, as local bond market volume of $320 billion catching up with domestic bank lending of $400 billion. The largest corporate bond markets in Asia are in Malaysia and South Korea, which together account for about half of the raised by the corporate bond market. Thus, despite their relatively rapid development, Asian local bond markets still somewhat underdeveloped by the standards of mature markets-even though there is a wide regional variation in terms of size, depth, liquidity and sophistication. As a percentage of GDP in 2008 bank assets, stock market capitalization and bond market accounted for 132%, 60%, 54%, respectively. It shows that after the Asian crisis the bond market has taken on a much more important role which was limited before the Asian crisis in 1997.

The corporate bond markets in India remain undeveloped, despite a fast growing economy, a rapidly transforming financial sector (ADB, 2008) and government efforts (Chakrabarti, http://ssrn.com), in comparison with corporate bond markets in the most developed and developing countries. India like other Asian economies has had a bank-dominated[1] financial system (Sharma & Sinha, 2005) with the corporate sector served relatively inadequately by the domestic capital market. The corporate sector has been borrowing capital more effectively from domestic banks and financial institutions but with a harshly rising share of loans raised from abroad. Since 1996 India's stock market capitalization as a percentage of GDP has risen to 108% from 32.1 %, while the banking sector's ratio to GDP jumped to 78.2% from 46.3% in 2008. On the contrary, bond markets grew to a humble 43.4% of GDP from 21.3%. India's government bond market, at 38.3% of GDP, stands ahead of most emerging East Asian markets, with the need to finance a large fiscal deficit stimulating issuance activity. Corporate bonds, however, accounted for only 3.2 per cent of GDP. In absolute terms, the total outstanding volume of government bonds in India stood at $364 billion, behind only China and South Korea (ADB, 2008). However, the dominance of the private placement market in India (Reddy, 2007), its corporate bond market development lagged most emerging East Asian countries.

The resilience of emerging markets to US growth slowdown is a striking development and the associated strong and positive global growth trends of the emerging markets, led by China and India. The world is looking at India and China which represents a significant offsetting influence on global growth. Particularly the rapid growth of India and her considerable progress towards becoming a major global trading economy and financial services center presents a particular opportunity and a challenge for not only the world in general but Asian economies in particular. The opportunity is for the Asian developed markets is to play a pivotal role in providing expertise in global financial services to an economy that is rapidly increasing its share of world trade, while building on the advantages of the historically strong links of the Asian financial centers to India.

[1] Banks hold around 90% of the assets of the financial sector (ICMA, 2008)

The rapid growth of corporate sector in India which is also expected to continue its contribution to the global economy needs corporate financial services which provides huge potential for Asian economies to provide both primary and higher value added products and services effectively; however it will put pressure on conventional/largely bank-based sources of financing (ICMA, 2008). India also needs an increasingly integration into the network of international financial centers in general and Asian financial centers in particular. The connectivity between financial centers of developed countries and Asian countries will be an important support to the efficient use of capital. Efficient capital markets ensure resources are well directed to sustainable development.

In the wake of recent financial crisis which affected almost all countries in the globe, the Asian countries have been seeking means to prevent future financial crisis through financial diversification. This includes rectifying currency and maturity mismatches, providing better vehicles to price risk, opening up alternative course of longer-term capital flows, fostering more efficient asset management and establishing a greater presence on international capital market development, i.e., through reforms at the national and regional levels. While the bond market is certainly not the only capital market that needs to be developed is Asian countries – in fact, in the short run taking care of the banking sector is more urgent in most Asian countries – it merits a high ranking among the policy exigencies of the Asian countries.

Objectives. This study analyzes the relationships between bond markets in the US and bond markets of Singapore, Hongkong, Japan, Malayasia, Thailand and India. This paper also considers the challenges and opportunities associtaed with the creation of a vibrant Asian bond market. The paper also measures the benefits that might be generated through, inter alia, financial market diversification and interest rate convergence and also deals with appoaches to be expected liquidity problem such as through the creation of Asian currency basket. This study finally throws light on the challenges and opportunities essential in deeping the local bond markets as well as creating a regional bond market in which Asian countries would be able to issue fixed income securities.

The reminder of the paper is organized as follows. Section 1 explians the methodology which has been followed in the paper. Sector 2 considers benefits through interest rate convergence. Section 3 focusses on a salient problem in developing national and a regional bond market: liquidity and the currency issue. The final section presents the conculsion and suggestions.

1. Methodology

Monthly data of currencies of Hong Kong, Indonesia, Malayasia, Philippines, Singapore, Thailand and India which ranges from 1990 to 2010 was collected. This period of the study is from **Asian** crisis to recent global financial crisis. Nominal and real interest rates of these countries have been studied at individual country level and then they are also compared with the United States, Japan and Germany. This is done to identify potential gains and for further development of the Asian bond market. The Asian currency basket is formed with currencies of the selected Asian countries. The basket of currencies has been formed to diversify the risk similar to the much famous European currency unit basket (Plummer and Click, 2005). Currencies in the basket are weighted with GDPs and foreign trades of their respective countries, therefore, they are subject to change over time.

The correlation of weighted basket of Asian currencies with dollar, yen and euro has been analyzed and the extent of their linkages with developed economies' currencies has been examined. Thus, the study has been based mainly on secondary data collected mainly from International Monetary Firm, World Bank, Governmental Statistical Information, published and unpublished reports, articles, research papers, books, news papers, unpublished Ph.D. thesis, etc. The collected data has been scientifically classified, tabulated, analyzed and presented as per the requirements of research work. Suitable statistical techniques wherever necessary, have been used.

2. Interest rate analysis and comparison

Table 1 (see Appendix) presents the statistics of the interest rate analysis across major Asian economies both with regards to individual member states and in contrast to the United States, Europe and Japan. It exhibits averages of nominal interest rates in three categories (government bonds, treasury bills and money markets) and inflation rates, and calculates the ex post real interest rate for the periods of 1994-2000 and 2000-2008. It has been noticed that real interest rates in Thailand seem to be higher than real interest rates in the US, Japan and Germany during 1994-2000 which suggests that there would be gains by integrating the market with bond markets in the major financial centers of the world. However, during 2000-2008, it is interesting to note that real interest rates in Philippines seem to be higher then real interest rates in the US, Japan and Germany which explains that integration of bond market had been leading to additional capital inflows to Thailand during 1994-2000 and would now lead to additional inflows to Philippines as investors seek to higher return on Philippine bonds, and hence con-

vergence of interest rates. Thus, Philippines would have more capital and lower interest payments.

It has further been observed that treasury interest rate has been relatively high in Philippines and relatively low in Malaysia during 1994-2000, in both nominal and real terms. However, during 2000-2008, interest rate has also been relatively high in Philippines and relative low in Hong Kong and Thailand. It may be because of higher risk in Philippines market and low risk in other countries due to capital controls. As per theory, the integration of Asian markets would allow more capital to move from Malaysia, Hong Kong, Thailand, Singapore, Japan into the high-interest rate country such as Philippines. Such capital flows would benefit both the capital owners in Malaysia, Hong Kong, Thailand, Singapore, Japan and borrowers in the Philippines as they would borrow at lower cost. It is also interesting to note that interest rates in Malaysia have generally been lower than those in the US and Germany during 1994-2000 and 2000-2008. However, during 2000-2008, interest rates of Singapore, Thailand, and Hong Kong have been lower than in the US and interest rate of Singapore is lower than the inflation rate.

Table 1 also exhibits the data of the money market interest rates which throws light on the interesting facts. In Indonesia interest rates have been relatively high in both nominal and real terms during 1994-2000. However, during 2000-2008 though interest rates have been the second highest (after India) in nominal terms but lowest in real terms mainly because of high inflation rate which shows the volatility at the domestic economic policy. It has also been noted that interest rates have been relatively very high in India in both nominal and real terms. It further suggests that capital market development and integration would attract capital into the country. In addition, nominal interest rates have also been high in India and Indonesia suggests that further market development and integration could attract capital into these countries. Thus, the integration of Asian economies including India will help all economies in the region and will provide fuel for the growth which will take the economies in the next orbit of growth which is needed at this juncture where world is looking at Asia for the growth of global economy.

3. Encouraging liquidity in an Asian market

The majority of the Asian economies suffer from liquidity problems in primary and secondary markets, although at different degrees. Sufficient liquidity in the bond trading is a must for bond market because insufficient liquidity in the market causes to be the yield curve less consistent as a means of pricing risk in the economy and also the lack of liquidity discourages foreigners to become active in the market. Thus, without sufficient liquidity in bond trading, it is difficult for bond markets to serve their most important purposes (Plummer and Click, 2005).

A key problem in promoting liquidity in Asian bond markets relates to the currency question (Adam, 2000). Asian countries have different currencies. This diversity in the number of currencies presents several salient problems in the creation of Asian bond market. The currency issue is one the most critical in the creation of a regional bond market, as well as being one of the most difficult to approach. It will no doubt be one of the biggest obstacles in developing active cross-issuance in the Asian bond market. Experts have suggested many possibilities of cross-issuance of bonds. However, in this paper, a currency basket consisting of the Asian currencies has been taken to measure the deviation of Asian currencies and individual countries in the line with European currency unit (ECU) which was introduced during 1980s and 1990s. The ECU was a basket of currencies of the member countries of the EC, weighted in line with each country's GDP and foreign trade. The advantage of using a currency basket is that the bond becomes an obvious vehicle for holding a portfolio of Asian currencies, and is typically views as a safe alternative to holding just one currency because diversification reduces the exchange risk. Moreover, it would allow for greater liquidity in the Asian market, which would also be important to obtain, inter alia, critical mass for the clearing and settlement system (Plummer, 2005; 2002a; 2002b; Kwan, 2001). Currency basket of Asian countries might aggregate the currencies in proportions according to country GDP. It would be similar to the Table 2 (see Appendix) compares the risk of Asian currencies to a GDP-weighted currency basket using the historical data from 1990-2008. The currency basket serves to diversify the risk of holding Asian currencies to some degrees, but there are several individual currencies with lower risk than the basket. This analysis is based on historical data, though and expectations of the future could be different. In general, investors will prefer the currency basket if they view its riskiness as low as moderate compared to the risk of the underlying currencies.

It has been noted that during 1990-2000, GDP-weighted currency basket with respect to US dollar was 4.01 which declined to 3.53 during 2001-2010. It has also been noticed that GDP-weighted currency basket was 3.49 during 2001-2005 which has slightly increased to 3.61 during 2006-2010. The standard deviation of currencies of Malaysia, Philippines and Singapore are less than the standard deviation of the basket during 1990-2000. It is also

interesting to note that the standard deviation of all currencies except Indonesia was less than the standard deviation of the basket during 2001-2010. Table 3 presents the GDP-weighted currency basket including India. There is slight change in the basket value has been noticed which has increased from 3.16 during 2001-2005 to 3.32 during 2006-2010. It has also been noticed that there has been increase in the standard deviation of all currencies except Hong Kong in both the time periods.

GDP-weighted currency basket with respect to Euro is presented in Table 4 (see Appendix) which shows slight fall in basket from 3.42 during 2001-2005 to 3.33 during 2006-2010. After including India in the basket, the value has declined to 3.17 during 2001-2005 to 3.08 during 2006-2010. It has further strengthen the analysis that Indonesian currency has high risk as compared to other currencies in the region as it has higher standard deviation that the basket. Table 5 reveals the data related to GDP-weighted currency basket with respect to yen. It is interesting to note that the basket value has increased significantly from 3.56 during 2001-2005 and to 4.89 during 2006-2010. However, it has also been noted that except Indonesia, the standard deviation of individual currencies are less than the basket value. Thus, it is clear from the above analysis that the impact of financial meltdown on Asian currencies has not been significant which was noticeable during the Asian financial crisis.

Conclusions and suggestions

The importance of having a well-developed bond market was recognized after the Asian crisis. Since then Asian countries have been trying to develop local bond markets as well as regional financial cooperation to avoid of the problems that were evident during the Asian crisis to prepare their financial systems for potential future shocks. The local currency bond markets in Asia have enjoyed rapid growth, albeit at a different degrees. However, the growth has not been as fast as in case of mature economies. The impact of the financial meltdown on currencies of almost all Asian economies with respect to US dollar and Japanese yen have been higher. However, the impact of the financial meltdown on Asian currencies with respect to euro was less. At the same time it is noticed that the impact of global financial meltdown on the Asian currencies is relatively lesser than the degree of impact of Asian crisis which was happened in 1997. The stability of Asian basket of currencies has been statistically tested by comparing their behavior between two long time intervals, i.e., 1990-2000 and 2001-2010 with respect to the US dollar. The F-test results showed no significant difference in these two long time intervals. Further F-test results on two relatively small time intervals i.e., 2001-2005 and 2006-2010 showed difference in behavior of Asian basket if India is excluded from the basket. However, the difference is relatively reduced with adding Indian currency in the Asian basket. Similar trends are also observed wit respect to euro. When the Asian basket is compared to Japanese yen there is no difference in behavior of Asian basket during the small time intervals, i.e., 2001-2005 and 2006-2010. This also means that Asian economies, in general have become more stable as compared to the last decade of the last century which is also visible from the interest rate and standard deviation of individual currencies. So far as India is concerned; it is evident from the analysis that Indian economy is more stable and can contribute significantly to the stability of Asian economies.

Asian countries are now in a position to develop bond markets both within the region and to integrate them with global financial centers. Indian economy is capable of coordinating and integrating Asian financial systems with the global markets. However, there are obstacles such as lack of common market infrastructure, lack of coordination in trading system, clearing and settlement system bankruptcy codes, lack of standardized credit ratings for regional companies, etc., this makes it more challenging. In addition, there are some restrictions in Asian countries on bond transactions which also need to be eliminated to facilitate the development of an efficient regional market.

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Appendix

Table 1. Average nominal interest rates, inflation rates and ex post real interest rates (1994-2010)

	1994-2000			2000-2008		
Panel A: Government bond rates						
	Interest rate	Inflation rate	Real rate	Interest rate	Inflation rate	Real rate
Malaysia	-	-	-	3.85	2.4725	1.3775
Japan	2.09	0.28	1.81	1.44	-0.064	1.5038
Philippines	-	-	-	9.27	5.6513	3.6188
Thailand	11.08	4.28	6.8	4.96	2.9725	1.9875
USA	6.01	2.53	3.48	4.59	2.835	1.755
Korea	-	-	-	5.77	3.15	2.62
Germany	6.66	2.47	4.19	4.13	1.7688	2.3613
Korea	-	-	-	5.25	3.2625	1.9875
Panel B: Treasury interest rates						
Japan	-	-	-	0.18	-0.064	0.2438
Singapore	1.2	1.28	-0.08	1.6	1.6063	-0.006
Thailand	-	-	-	2.65	2.9725	-0.323
Hong Kong	-	-	-	1.96	0.2025	1.7575
Philippines	11.4	7.16	4.24	6.64	5.6513	0.9887
Malaysia	4.9	3.35	1.55	2.9	2.4725	0.4275
USA	4.9	2.53	2.37	3.01	2.835	0.175
India	-	-	-	-	-	-
Germany	5.43	2.47	2.96	2.62	1.7688	0.8513
Panel C: Money market interest rates						
Japan	0.7	0.28	0.42	0.17	-0.064	0.2338
Singapore	3.24	1.28	1.96	1.89	1.6063	0.2838
Thailand	7.97	4.28	3.69	2.51	2.9725	-0.463
Hong Kong	-	-	-	2.43	0.2025	2.2275
Philippines	-	-	-	7.72	5.6513	2.0688
Malaysia	5.47	3.35	2.12	2.96	2.4725	0.4875
USA	5.2	2.53	2.67	3.27	2.835	0.435
India				13.42	5.0525	8.3675
Indonesia	19.92	14.36	5.56	9.2	9.5238	-0.324
Korea				4.3	3.15	1.148
Germany				3.07	1.7688	1.3013

Notes: The interest rate is the annual average and inflation is the percentage change in the consumer price index from December to December. The real interest rate is the difference between nominal interest rate and the inflation rate.
Source: IMF, International Financial Statistics.

Table 2. Standard deviations of currencies and a GDP-weighted currency basket (monthly percentage changes in exchange rates, 1990-2010, February)

With respect to US dollar (without India)				
	1990-2000	SD (2001-2010)	SD (2001-2005)	SD (2006-2010)
Indonesia	10.11	3.67	3.63	3.75
Malaysia	3.3	0.94	0.20	1.36
Philippines	3.27	1.58	1.42	1.75
Singapore	1.72	1.26	1.16	1.36
Thailand	4.1	1.67	1.47	1.88
Hong Kong		0.14	0.14	0.14
Basket[1]	4.01	3.53	3.49	3.61
F-test	1.29		1.06	
P value	0.08		0.39	

Table 3. Standard deviations of currencies and a GDP-weighted currency basket (monthly percentage changes in exchange rates, 1990-2010, February)

With respect to US dollar (with India)			
	SD (2001-2010)	SD (2001-2005)	SD (2006-2010)
Indonesia	3.67	3.63	3.75
Malaysia	0.94	0.20	1.36
Philippines	1.58	1.42	1.75
Singapore	1.26	1.16	1.36
Thailand	1.67	1.47	1.88
Hong Kong	0.14	0.14	0.14
India	1.72	0.92	2.35
Basket[2]	3.22	3.16	3.32
F-test	1.10		
P value	0.35		

Source: IMF, International Financial Statistics and http://www.chartflow.com/fx/averageRate.asp.

Table 4. Standard deviations of currencies and a GDP-weighted currency basket (monthly percentage changes in exchange rates, 1990-2010, February)

With respect to euro (without India)			
	SD (2001-2010)	SD (2001-2005)	SD (2006-2010)
Indonesia	3.48	3.55	3.44
Malaysia	2.28	2.57	1.90
Philippines	2.68	2.72	2.63
Singapore	1.71	1.79	1.60
Thailand	2.29	1.91	2.66
Hong Kong	2.44	2.33	2.58
Basket	3.37	3.42	3.33
F-test	1.05		
P value	0.42		

[1] The weights of the currencies in the basket are based on 2006 GDP: Indonesia – 4.38%, Malaysia – 18.48%, Philippines – 13.90%, Singapore – 16.44%, Thailand – 24.38%, and Hong Kong – 22.44%.

[2] The weights of the currencies in the basket are based on 2006 GDP: Indonesia – 2.11%, Malaysia – 8.90%, Philippines – 6.69%, Singapore – 7.91%, Thailand – 11.74%, Hong Kong – 10.80% and India – 51.85%.

Table 5. Standard deviations of currencies and a GDP-weighted currency basket (monthly percentage changes in exchange rates, 1990-2010, February)

With respect to euro (with India)			
	SD (2001-2010)	SD (2001-2005)	SD (2006-2010)
Indonesia	3.48	3.55	3.44
Malaysia	2.28	2.57	1.90
Philippines	2.68	2.72	2.63
Singapore	1.71	1.79	1.60
Thailand	2.29	1.91	2.66
Hong Kong	2.44	2.33	2.58
India	2.56	2.52	2.64
Basket	3.12	3.17	3.08
F-test	1.05		
P value	0.41		

Table 6. Standard deviations of currencies and a GDP-weighted currency basket (monthly percentage changes in exchange rates, 1990-2010, February)

With respect to yen (without India)			
	SD 2001-2010	SD (2001-2005)	SD (2006-2010)
Indonesia	4.32	3.68	5.01
Malaysia	2.50	2.22	2.81
Philippines	2.79	2.40	3.22
Singapore	2.13	1.62	2.62
Thailand	2.42	1.56	3.16
Hong Kong	2.34	2.16	2.51
Basket	4.20	3.56	4.89
F-test	1.88		
P value	0.009		

Table 7. Standard deviations of currencies and a GDP-weighted currency basket (monthly percentage changes in exchange rates, 1990-2010, February)

With respect to yen (with India)			
	SD (2001-2010)	SD (2001-2005)	SD (2006-2010)
Indonesia	4.32	3.68	5.01
Malaysia	2.50	2.22	2.81
Philippines	2.79	2.40	3.22
Singapore	2.13	1.62	2.62
Thailand	2.42	1.56	3.16
India	2.99	1.99	3.84
Hong Kong	2.34	2.16	2.51
Basket	3.95	3.27	4.66
F-test	2.03		
P value	0.004		