Eli M Remolona
+852 2878 7150
eli.remolona@bis.org

Ilhyock Shim
+852 2878 7147
ilhyock.shim@bis.org

Credit derivatives and structured credit: the nascent markets of Asia and the Pacific[1]

Nascent markets for credit derivatives and structured credit in Asia and the Pacific were poised for rapid growth when the global financial turmoil hit. While there has been no significant deterioration in the quality of the underlying names, credit markets in the region have been swept up in the global widening of spreads and aversion to structured finance.

JEL classification: G12, G13, G15.

In recent years, new instruments have transformed the global markets in credit risk. Indeed, the use of such instruments as credit default swaps (CDS), traded CDS indices and collateralised debt obligations (CDOs) has evidently contributed to an overall narrowing of credit spreads over nearly five years. Since mid-2007, however, as the global financial turmoil has unfolded, CDS spreads have widened sharply and issuance of CDOs has stalled. While the markets that involve Asia-Pacific names have largely avoided any fundamental deterioration in the quality of underlying assets, they have been swept up in the global widening of spreads and the slowdown in structured credit deals.

The three most significant instruments in the transformation of global credit markets have been single-name CDS contracts, traded CDS indices and CDO structures.[2] These innovations all serve to reallocate credit risk among investors. A single-name CDS contract is an over-the-counter derivative in which the buyer pays a fixed premium in return for protection against losses in the event of default by a specified borrower. CDS contracts are most actively

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[2] The 2007 BIS Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity showed that positions in global over-the-counter credit derivatives had increased more than elevenfold since June 2004, to reach $51 trillion in June 2007. CDS contracts accounted for 88% of that total. Data from the Securities Industry and Financial Markets Association show that the total global issuance of CDOs increased about fourfold between 2004 and 2006, to reach $552 billion in 2006.

traded in the form of CDS indices, which consist of standardised portfolios of single-name CDS contracts. A CDO is a securitisation where the risk of a credit portfolio is transformed into tranches of varying risks by means of a subordination structure. The possibility of arbitrage transactions across the three instruments ties their prices closely together.

By the late 1990s, these instruments had started to reference borrowers in Asia and the Pacific. CDS contracts became available for names from the region and collateral portfolios for CDOs began to include these entities. The first CDS indices focusing on the region began trading in 2003. Nonetheless, these markets remained relatively small and illiquid compared to their counterparts in Europe and the United States. They were in fact seen as mere appendages to the larger markets, with investors coming largely from outside the region.

It was not until late 2006 that these Asia-Pacific markets began to emerge as potentially serious markets in their own right. There was a surge in bond issuance in the region, much of it by new large borrowers. Single-name CDS contracts were written on these new names, CDS indices were reconstituted to include them, and CDOs were structured to take advantage of the diversification opportunities they offered. The traded indices gained liquidity, which spilled over into single-name CDS contracts. All this activity, however, has now been severely dampened by the global financial turmoil.

This special feature provides an overview of the credit risk markets in Asia and the Pacific, focusing on the instruments that involve local names as underlying assets. We start with the single-name CDS market, then discuss traded CDS indices before surveying the CDO market, all based on debt issued by entities from the region.[3] Finally, we discuss how these markets have fared during the recent episode of market turbulence.

Credit default swaps

One out of four CDS names is from Asia and the Pacific

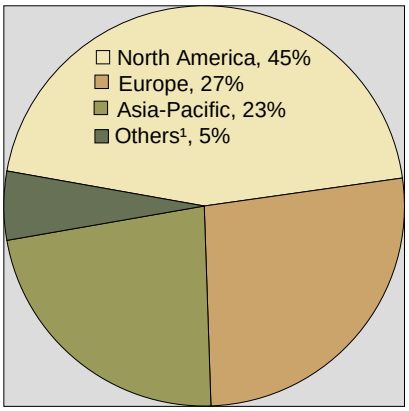
There are now an impressive number of names from the region that can be traded in the form of single-name CDS contracts. The left-hand panel of Graph 1 is constructed from the Markit database, which has the most comprehensive global coverage, and shows that Asia-Pacific names comprise almost a quarter of all those traded around the world. For a breakdown by economy within the region, we combine Markit data with a list assembled from three major dealers in Hong Kong of Asia-Pacific names that were traded as of early December 2007 and early January 2008. Our list shows a total of 921 names. In terms of the number of names from each economy, Japan, India, Taiwan (China), Australia, Hong Kong SAR and Korea dominate the market. There are also CDS contracts for names from Malaysia, Indonesia, China, Thailand and Singapore (Graph 1, right-hand panel).

As is the case in Europe and North America, the CDS market in Asia and the Pacific is concentrated in borrowers considered to have some but not too

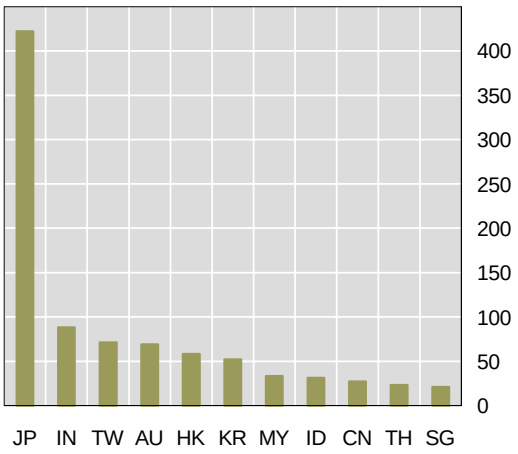
[3] Note that there are significant Asian investments in global CDS and CDO markets which are mainly based on North American and European assets.

CDS names by geographical location

Distribution by region



Number of names by economies in Asia and the Pacific



AU = Australia; CN = China; HK = Hong Kong SAR; ID = Indonesia; IN = India; JP = Japan; KR = Korea; MY = Malaysia; SG = Singapore; TH = Thailand; TW = Taiwan, China.

[1] Comprises Africa, the Caribbean, Latin America, the Middle East, offshore centres and supranationals.

Sources: Citibank; Deutsche Bank; Markit; Merrill Lynch. Graph 1

much credit risk. Indeed, close to four fifths of the traded names in the region have ratings between A and BB. The typical maturity is five years. Credit events tend to be defined so as to include bankruptcy, failure to pay and restructuring.[4] Almost all large banks make markets for single-name CDS in the region. However, only a small number of names are traded every day. These are those that are part of a traded CDS index, and they trade at bid-ask spreads of 10 to 20 basis points.

The market tends to be limited to international investors

The Asia-Pacific CDS market still tends to be limited to *international* investors. One reason for this is that the local currency bond markets in the region still tend to accept only issuers with the highest ratings from the point of view of *domestic* investors, who would therefore see little need for protection in the form of CDS contracts.[5] From the perspective of international investors, however, what is highly rated by domestic rating agencies might not be so highly rated by international rating agencies. Depending on the economy, domestic AAA names are often rated only A or BBB internationally, and foreign investors would thus be interested in hedging the concomitant credit risks.

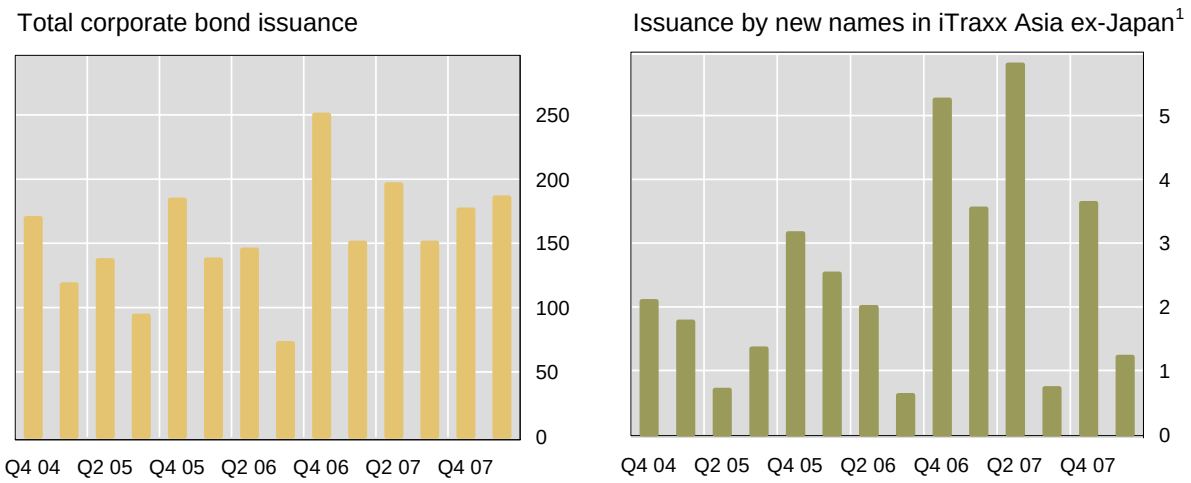
How do names come to be traded in the CDS market? Apart from the existence of significant credit risk, a critical factor is the availability of information about the entities that would allow a meaningful evaluation of the risk. Large companies that are listed on major stock exchanges and owe significant amounts of debt enter the CDS market readily. New names tend to enter this market when they go through an IPO or issue convertible bonds, since banks and investors then have good information about their credit quality.

[4] For details on contractual terms on single-name CDS, see Packer and Zhu (2005).

[5] See the discussion in Gyntelberg et al (2005) on the credit quality gap in Asia.

Bond issuance in Asia and the Pacific

In billions of US dollars



[1] The total amount of bonds issued by 11 investment grade names and 11 high-yield names newly included in the iTraxx Asia ex-Japan Index Series 8 on 21 September 2007.

Sources: Dealogic; Markit; authors' calculations. Graph 2

Late 2006 saw a surge in CDS activity

Starting in the fourth quarter of 2006, a surge of non-government bond issuance in the region led to heightened activity in single-name CDS contracts. As shown in Graph 2, issuance was up substantially over this and the following few quarters. Many of the issuers were large borrowers who had come to the market for the first time. Single-name CDS contracts for these borrowers became so important that they were made part of the most actively traded CDS indices for the region. These names included many Chinese and Indian banks on the investment grade side and several Chinese property development companies on the non-investment grade side.

Traded CDS indices

CDS indices are the most actively traded instruments

CDS indices are by far the most actively traded instruments in global credit markets, and those in the Asia-Pacific region are no exception. There are currently three groups of indices, with names from three separate subregions, namely Asia (excluding Japan), Japan and Australia. These indices consist of the more liquid CDS contracts, which can thus be traded as portfolios. For the Asia (excluding Japan) subregion, two iTraxx indices now trade actively: an investment grade (IG) index (50 names) and a high-yield (HY) index (20 names). For Japan, there is the iTraxx Japan index with 50 IG names and a sub-index, the Japan HiVol, consisting of the 25 names with the widest spreads among the 50 in the larger index. The iTraxx Australia index has 25 IG names from Australia and New Zealand. Table 1 shows the major characteristics of each of these indices.

Trading activity in the two iTraxx Asia ex-Japan indices received a big boost in 2007 after they were reconstituted to include large new issuers. These indices now often trade at bid-ask spreads of no more than 1 basis point. The iTraxx Japan and Australia indices even offer first-to-default (FTD) baskets, which allow investors to take positions in the loss distribution of a credit

The current Asia-Pacific CDS indices				
iTraxx index	Names	Economies	Maturities (years)	Average ratings[1]
Asia ex-Japan IG	50	8[2]	5	A3/A–
Asia ex-Japan HY	20	8[3]	5	Ba2/BB
Japan	50	1	3, 5, 10	Baa1/BBB+
Japan HiVol	25	1	5	Baa3/BBB–
Australia	25	2[4]	5, 10	A3/A–

[1] BIS calculation based on Moody's/Standard & Poor's ratings. [2] The breakdown of names by economy is: China: five; Hong Kong SAR: six; India: six; Korea: 14; Malaysia: seven; Singapore: seven; Taiwan (China): two; Thailand: three. [3] The breakdown of names by economy is: China: two; Hong Kong SAR: seven; India: three; Indonesia: two; Korea: one; the Philippines: two; Singapore: two; Vietnam: one. [4] The breakdown of names by economy is: Australia: 24; New Zealand: one.

Sources: International Index Company; JPMorgan Chase. Table 1

portfolio.[6] Nonetheless, trading volumes in the Asia-Pacific indices in general are still dwarfed by volumes in the US CDX index and the iTraxx Europe index, which are the world's two most actively traded credit instruments.

Collateralised debt obligations

Different types of CDOs

CDOs can be either balance sheet or arbitrage …

Collateralised debt obligations (CDOs) are securitisations that transform credit risk by means of a subordination structure. Two basic types are balance sheet CDOs and arbitrage CDOs. In a balance sheet CDO, assets are taken from a single bank's balance sheet. In arbitrage CDOs, the manager assembles the collateral pool by buying bonds from the market. Balance sheet CDO deals have been arranged mainly to achieve regulatory capital relief and reduce constraints on fresh lending capacities. To save on regulatory capital, banks put in a CDO those loans that require relatively high capital charges for a given level of risk. Arbitrage CDOs, by contrast, are designed to profit by arbitraging between market spreads and expected losses, where the former tend to be much larger than the latter.[7] In practice, however, it is sometimes difficult to distinguish between balance sheet and arbitrage CDOs.

… and either cash or synthetic

CDOs can be further classified into cash and synthetic CDOs. In a cash CDO, the manager assembles a collateral pool of debt, transfers it to a special purpose vehicle (SPV) and uses the cash flow from the collateral to pay principal and interest to investors in the CDO. In a synthetic CDO, the manager assembles CDS contracts rather than actual debt. Compared to a cash CDO, a synthetic CDO has the advantage that the manager can quickly assemble a sufficient number of names by going to one or two CDS dealers.

[6] The Japan FTD Diversified (HiVol) basket comprises the six most liquid names from different sectors in the Japan (Japan HiVol) index. The Australia FTD Diversified basket is made up of the five most liquid names from different sectors in the Australia index, while the FTD High Beta basket consists of five non-financial entities with the highest spread from the top 15 most liquid names.

[7] See Amato and Remolona (2003, 2005).

The Asia-Pacific varieties

The history of CDOs in Asia is short compared to that in the United States and Europe. As in those regions, the first Asian CDO deals were balance sheet transactions motivated by banks' efforts to economise on capital, and were issued by Japanese banks in the late 1990s. Outside Japan, in December 2001, DBS Bank securitised USD 1.5 billion of CDS on corporate loans in the first Asian synthetic balance sheet CDO deal. Since then, the focus of CDO markets in Asia has shifted from traditional balance sheet CDOs to synthetic arbitrage CDOs and more recently to single-tranche arbitrage CDOs. The left-hand panel of Graph 3 shows that the growth in the Asia-Pacific CDO market peaked in 2006, while the right-hand panel shows that Japan and Korea accounted for more than half of the region's deals in 2005–07.

The focus has shifted to synthetic arbitrage CDOs

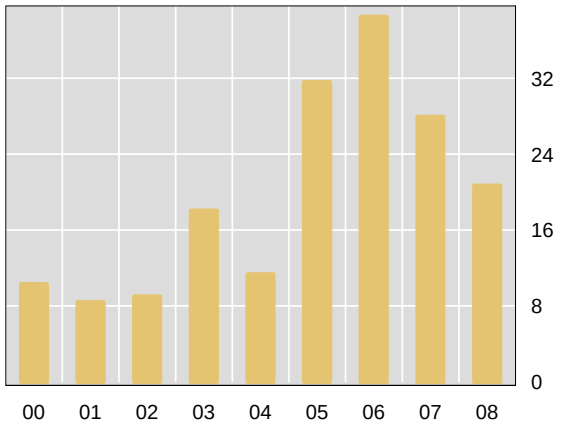
While Australia, Hong Kong SAR, Japan, Korea and Singapore have had the most active CDO markets in the region, a few banks in China, India and Malaysia have recently also completed several balance sheet CDO deals, drawing on their own loan portfolios. The most popular forms of collateral have been corporate loans and bonds, but leveraged loans, distressed loans and asset-backed securities have also been used. Banks and insurance companies form the main investor base for CDOs backed by both Asian and global assets.

In recent years, some banks from the region have structured synthetic CDOs by drawing from their own portfolios a geographically diversified collateral pool with a substantial amount of Asian exposure. Table 2 shows three examples of these deals. In each case, more than half of the underlying assets are from the Asia-Pacific region. In contrast to balance sheet CDOs, only a few arbitrage CDO transactions have relied on collateral pools consisting mainly of regional assets. This is partly because within-region diversification benefits are rather limited.

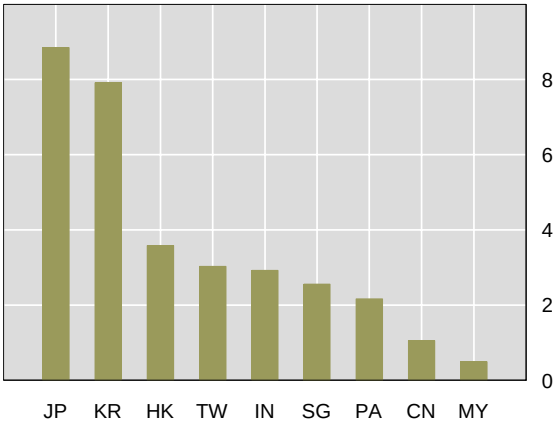
CDO issuance with Asia-Pacific names

In billions of US dollars

By year[1]



By economy[2]



CN = China; HK = Hong Kong SAR; IN = India; JP = Japan; KR = Korea; MY = Malaysia; PA = Australia and New Zealand; SG = Singapore; TW = Taiwan, China.

[1] Data from 2000 to 2004 are from Dealogic, Fitch IBCA, JPMorgan Chase, Moody's, Standard & Poor's, Thomson Financial Securities Data and national rating agencies. Data from 2005 to 2008 are from Standard & Poor's. The 2008 value is annualised based on the amount of issuance by end-March. [2] Average amount between 2005 and 2007.

Source: Standard & Poor's. Graph 3

Three Asia-Pacific synthetic balance sheet CDOs			
	ALCO 1 Ltd	Sealane Ltd[1]	Asiamea CLO Ltd
Portfolio size	USD 1.53 billion	USD 3 billion	USD 1.5 billion
Collateral pool	Corporate loans	Trade finance obligations	Mostly corporate loans[2]
Closing date	December 2001	November 2007	December 2007
Final maturity	2009[3]	November 2012	December 2013
Geographical distribution of collateral	100% Asia and the Pacific (Singapore, Hong Kong SAR, Malaysia, Taiwan (China), Japan, Australia, Korea)	84.5% Asia[4] (Hong Kong SAR, United Arab Emirates, Singapore, China, India, Malaysia, Korea)	61.4% Asia[5] (Hong Kong SAR, United Arab Emirates, Korea, China, Singapore, India, Thailand)
Originator	DBS Bank	Standard Chartered Bank	Standard Chartered Bank
Tranches by rating[6]	Super-senior, NR, 87.5% Mezzanine, AAA~BBB, 8% Equity, NR, 4.5%	Super-senior, NR, 89% Mezzanine, AAA~BBB, 10% Equity, NR, 1%	Super-senior, NR, 92% Mezzanine, BB+, NR, 6.75% Equity, NR, 1.25%

[1] Sealane (Trade Finance) Ltd is the issuer, and Sealane (Trade Finance) LLC the co-issuer. [2] Corporate loans and other obligations. [3] The mezzanine notes were redeemed back by 2006 as per the notes' option redemption provisions. [4] As well as the seven economies cited, includes 16 economies from Asia, the Americas, Europe and the Middle East. [5] As well as the seven economies cited, includes 29 economies from Asia, the Americas, Europe and the Middle East. [6] NR = not rated.

Source: Standard & Poor's. Table 2

Single-tranche CDOs

Single-tranche CDOs are a recent innovation

A more recent innovation in the CDO markets that has spread to Asia is the single-tranche CDO, a synthetic arbitrage CDO in which the sponsor sells only one tranche from the capital structure, usually to satisfy an investor's request for a particular level of credit quality. Most single-tranche CDO deals in Asia have been based on portfolios of global names with a small number of Asian names included. An example of a single-tranche CDO deal based substantially on Asian names is the Silk Road Plus series, which was launched in Singapore in 2006 and sold more broadly than most private deals.

For sponsors of single-tranche CDOs, hedging the credit risk is a challenging task. For European and North American names, this risk can largely be hedged using CDS indices as well as single-name CDS contracts. For Asian names, some sponsors use CDS indices to hedge part of the unsold credit risk but others do not hedge at all. Because of their liquidity, the iTraxx Asia ex-Japan indices are a popular hedging instrument for single-tranche CDOs with Asian names.

How the region's markets have fared in the global turmoil

No actual losses from default in traded names …

So far there have been no actual losses from default in traded names from Asia and the Pacific during the current financial market turmoil. There is also still no evidence of any significant deterioration in the credit quality of these names. Indeed, average credit ratings in the region have drifted upwards. The structured investment vehicles and the more complex CDO structures that have caused so much trouble in the US and European credit markets have not been

seen in Asia. Yet the recent turbulence in global financial markets has, to some degree, spilled over into the region's credit markets.

… yet spreads on CDS indices have risen sharply …

This spillover has been most evident in the spreads on traded CDS indices. As shown in the left-hand panel of Graph 4, the iTraxx Asia ex-Japan index has risen sharply since mid-2007, along with the major CDS indices of Europe and the United States. In addition, the growth of CDO issuance in Asia and the Pacific has stalled since 2007, as shown by the left-hand panel of Graph 3, following the decline in global CDO issuance.

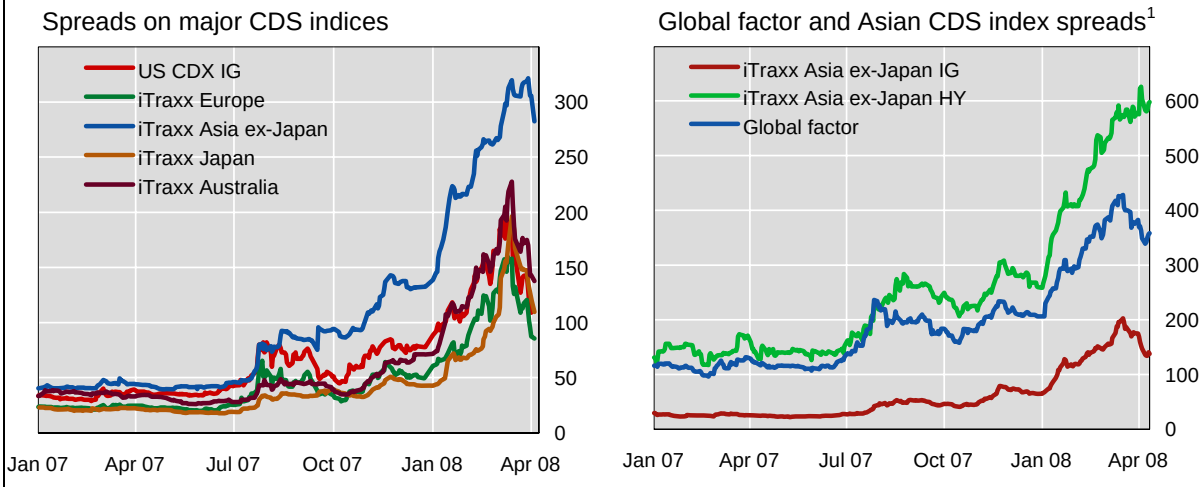
In the case of CDS spreads, one explanation for the spillover is that the spreads are driven primarily by risk premia rather than expected losses from default, and these premia depend largely on the changing risk aversion of global investors.[8] As mentioned above, the CDS market for Asian names is confined to international investors, with domestic investors finding little use for it. To measure the extent to which movements in CDS spreads for Asian names can be attributed to global risk aversion, we can use principal component analysis to extract the common factors that explain the movements of various CDS indices around the world. The right-hand panel of Graph 4 shows the most important of these factors. We can attribute to this global factor 95% of the daily movements of the iTraxx Asia ex-Japan IG index and 98% of the daily movements of the iTraxx Asia ex-Japan HY index. Unless we believe that default risks can be so highly correlated between Asia and the rest of the world, it is plausible to interpret the global factor as something that tracks global investor risk aversion, which has risen sharply since mid-2007.

… probably driven by global investor risk aversion

The arbitrage opportunities opened up by the widening of CDS spreads have so far not led to an increase in arbitrage CDO deals, as they would have

Spreads on CDS indices and the global factor

In basis points



[1] The global factor is an index constructed from the first principal component of the movements in the following eight indices from the United States, Europe and Asia and the Pacific: US CDX IG, US CDX Crossover, iTraxx Europe, iTraxx Europe Crossover, iTraxx Japan, iTraxx Australia, iTraxx Asia ex-Japan IG and iTraxx Asia ex-Japan HY.

Sources: JPMorgan Chase; Thomson Financial Datastream; authors' calculations. Graph 4

[8] Amato and Remolona (2003, 2005) decompose CDS spreads and show that the larger portion of the spread is accounted for by risk premia rather than expected losses from default.

in the past. On the contrary, such CDO issuance has shrunk for Asian names as well as for others. Since the diversification requirements of arbitrage CDOs require non-Asian names, the fact that global investors have become suspicious of CDOs in general has dampened such activity everywhere.[9]

Conclusion

Credit risk market innovations such as single-name CDS contracts, traded CDS indices and CDOs have made significant inroads in Asia and the Pacific. Single-name CDS referring to almost a thousand Asia-Pacific entities now trade in the market. There are actively traded CDS indices, separately covering names in Asia (excluding Japan), Japan and Australia. Synthetic CDO deals have been put together with names from within the region, albeit in combination with names from elsewhere.

In 2006, a surge of bond issuance in the region provided a major boost to the use of these innovations. This growth, however, has been interrupted by the recent global financial turmoil, which has caused spreads to widen sharply even for Asian names and reduced investors' interest in structured credit. Nonetheless, active trading in CDS indices has continued and the markets in the region are likely to resume their growth once global conditions settle down. These markets have been confined to international investors, and greater issuance of local currency debt by lower-rated borrowers in the region would induce more active participation by domestic investors.

Meanwhile, Asian market participants will draw lessons from the recent global market turbulence. They have seen the limitations to the use of complex financial structures and the inadequacies of risk management approaches used by financial institutions. Although the borrowers in Asia-Pacific credit markets appear to have strong fundamentals, the authorities in the region may wish to strengthen market oversight and encourage more robust risk management before fostering the further development of new credit risk instruments.

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[9] See Financial Stability Forum (2008) for a narrative of the global developments.