BANK FOR INTERNATIONAL SETTLEMENTS

BIS Quarterly Review

June 2006

International banking and financial market developments

BIS Quarterly Review
Monetary and Economic Department

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Special features

Notations used in this Review

e	estimated
lhs, rhs	left-hand scale, right-hand scale
billion	thousand million
…	not available
.	not applicable
–	nil or negligible
$	US dollar unless specified otherwise

Differences in totals are due to rounding.

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1. Overview: retreat from risky assets

Yields on government bonds rose substantially up to the middle of May, reflecting expectations of robust growth as much as concerns about inflation. Initially, the rise in yields had little effect on the prices of risky assets or on investor risk appetite as strong fundamentals outweighed the impact of higher discount rates. Equity and commodity markets continued to rally into May, and spreads on lower-rated corporate and emerging market debt tightened further. The dollar depreciated significantly against other major currencies in late April and early May, with little apparent effect on other markets.

Concerns about the pace of recent gains in a broad range of markets culminated in an abrupt end to the rally in mid-May. Thereafter markets around the world fell. Emerging equity markets were the hardest hit, but losses were also recorded in other markets. Rather than a reassessment of fundamentals, the drop in the price of higher-risk assets seemed to represent a weakening of investors' appetite for risk. This resulted in a reallocation of portfolios in favour of highly rated instruments such as government bonds.

Support from fundamentals

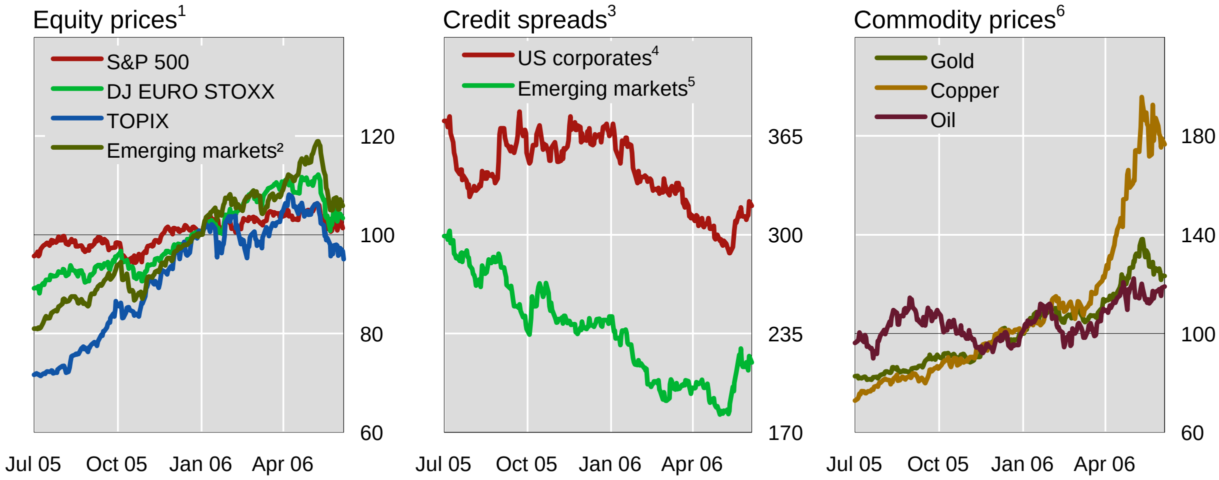
Prices of higher-risk assets soar in early 2006 …

The first four months of 2006 saw a continuation of the shift by investors towards higher-risk asset classes. Equity, commodity and high-yield debt prices all soared, extending the already impressive gains recorded in 2005. For example, emerging equity markets rose by 19% between end-2005 and mid-May 2006, and euro area equities by 12% (Graph 1.1). Copper prices almost doubled over the same period, and gold prices climbed by nearly 40%. Spreads on high-yield corporate bonds and dollar-denominated emerging market bonds tightened by more than 60 basis points, to levels close to, or in some cases below, their earlier lows.

… and government bond yields rise

During this period, government bond yields in the major markets also rose substantially. Yields on 10-year US Treasury notes finally broke out of the range in which they had traded since mid-2004. They peaked at 5.2% on 12 May, 80 basis points higher than at end-2005 and about 30 basis points above their 2004 high (Graph 1.2, right-hand panel). In the euro market, yields on 10-year German bunds also rose by about 80 basis points between end-2005 and mid-May 2006, to 4.1%. Japanese yields increased by 50 basis points to around 2%, a level last observed in the late 1990s.

Risky asset markets



[1] In local currency; 31 December 2005 = 100. [2] Morgan Stanley Capital International index. [3] Spreads over government bond yields, in basis points. [4] Merrill Lynch US High Yield Master II index. [5] JPMorgan Chase EMBI Global Diversified. [6] Spot prices; 31 December 2005 = 100.

Sources: Bloomberg; JPMorgan Chase; Merrill Lynch. Graph 1.1

Support for the initial rally from robust growth …

The initial rise in government bond yields and rally in the prices of risky assets were to some extent underpinned by stronger fundamentals. Data releases boosted confidence in the strength of the global economy. The consensus forecast for economic growth in Japan increased sharply in the first quarter and continued to improve thereafter (Graph 1.3, left-hand panel). In the euro area, very strong survey data led analysts to upgrade their growth forecasts, even though actual data releases turned out to be considerably weaker than forward-looking indicators. The German Ifo index for April posted the highest reading since the post-unification boom in the early 1990s, triggering a 5 basis point jump in bund yields on 25 April. In the United States, economists foresaw a moderate slowing of the economy, but expected growth to remain close to potential.

… strong earnings …

The announcement of better than expected corporate profits for the first quarter of 2006 provided additional support for the rally in equity and credit markets. In the euro area in April, analysts revised their earnings forecasts upwards at the fastest pace for some time (Graph 1.3, right-hand panel). In the United States, earnings forecasts were raised for the largest number of companies since early 2005. Only in Japan had the improved outlook already been anticipated by equity investors, and so the TOPIX struggled to surpass its end-2005 level.

… low default rates …

Further attesting to the strength of corporate finances, default rates for corporate borrowers fell to their lowest level in years, although they were expected to increase going forward. In the United States, less than 1% of rated issuers defaulted in the year to April 2006, down slightly from 1.1% a year earlier and the lowest rate since 1997. Outside the United States, over the same period no rated issuers defaulted on their outstanding bonds. That said, signs that corporate credit quality had peaked had already begun to emerge last year. For example, in the year to April 2006, downgrades accounted for

57% of all rating actions by Moody's concerning US companies and 54% of those concerning European companies, up from 54% and 43%, respectively, in the year to April 2005.

… and unchanged outlook for policy rates

Risky asset markets were also bolstered by the limited impact that the apparent strength of underlying economic conditions had on the outlook for policy rates. After edging up in March, short-term interest rate futures were more or less unchanged in April and May, indicating that market participants did not materially revise their expectations regarding the pace of monetary policy tightening (Graph 1.2, left-hand panel). The Bank of Japan announced the end of its quantitative easing policy in March 2006 and a move towards the use of more conventional policy instruments. Yet the announcement had no immediate market impact because it had been widely anticipated and the central bank emphasised its intention to keep the policy rate target at zero for a sustained period of time.

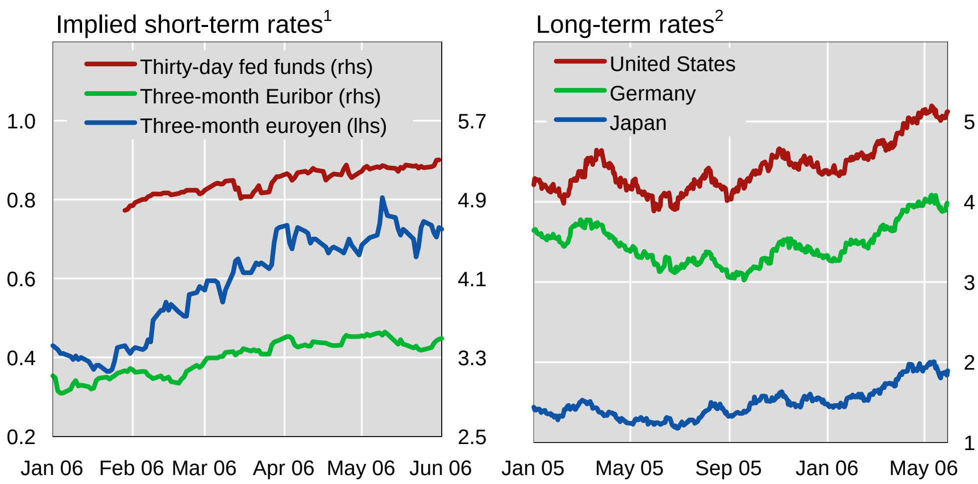
In the United States, federal funds futures and equity prices reacted strongly to news about inflation, but the impact usually did not last for long. For example, on 7 April strong labour market data were perceived to increase the likelihood of further rate hikes by the US Federal Reserve, thus contributing to a 1% drop in the S&P 500 Index. Then on 18 April, the released minutes from the March meeting of the US Federal Reserve were interpreted as suggesting that the tightening cycle might be nearing its end, leading to a 1.8% rebound in the S&P 500.

Inflation concerns push up yields starting in April

In bond markets, however, concerns about inflationary pressures became an important driver of longer-term yields starting in early April, especially in the United States. Whereas the inflation compensation demanded by investors had accounted for only one quarter of the rise in US Treasury yields between mid-January and the end of March, its contribution went up to two thirds between the beginning of April and the middle of May (Graph 1.3, centre panel). In the

Interest rates

In per cent

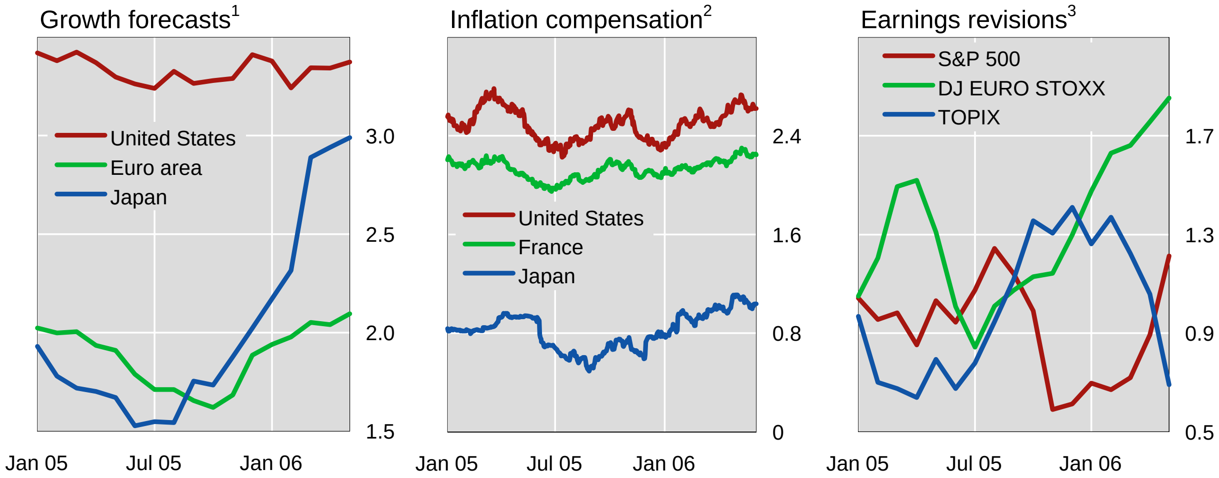


[1] Interest rates implied by the prices of futures contracts expiring in December 2006. [2] Ten-year government bond yields.

Source: Bloomberg.

Graph 1.2

Macroeconomic outlook



[1] Forecasts for 2006 as published monthly by Consensus Economics; observations are positioned in the month in which the forecast was made; percentage change over the previous year. [2] Nominal minus real 10-year government bond yields, in per cent. [3] Diffusion index of monthly revisions in forecast earnings per share, calculated as the percentage of companies for which analysts revised their earnings forecast upwards plus half of the percentage of companies for which analysts left their forecast unchanged; to adjust for analysts' systematic overestimation of earnings, the mean of the diffusion index over the 2000–02 period (S&P 500 = 43.8; DJ EURO STOXX = 40.8; TOPIX = 45.9) was subtracted from each monthly observation; three-month moving average.

Sources: Bloomberg; © Consensus Economics; I/B/E/S; BIS calculations. Graph 1.3

euro area and Japan, too, the break-even rate of inflation computed from the yields on nominal and inflation-indexed government bonds increased, albeit by a much smaller amount: less than 10 basis points between mid-April and mid-May, compared to about 20 basis points in the United States. Notwithstanding such increases, inflation compensation in the major markets remained relatively low and within the range observed over the previous year.

Search for yield continues in early 2006

In addition to strong fundamentals, a heightened appetite for risk appeared to contribute to the rally in credit and equity markets over the first four months of 2006. For much of the previous two years, investors had bid up the prices of risky assets in their search for higher yields. This process continued in the early part of 2006 even as the level of nominal bond yields rose and global monetary conditions tightened further.

Search for yield helps credit spreads to tighten …

Investors' search for yield was most readily evident in emerging markets. Emerging market issuers raised record amounts in international debt securities markets in the early part of 2006 on very favourable terms, including substantial amounts in local currencies (see "The international debt securities market" on page 27). Spreads tightened even for those countries where fundamentals were relatively weak. For example, credit default swap (CDS) spreads for the Philippines tightened by 100 basis points between the end of 2005 and early May 2006, to about 150 basis points, despite the slow progress of fiscal consolidation.

… even as issuance accelerates

In corporate debt markets, too, investors accepted narrower spreads even as issuance surged. In the United States, gross issuance of corporate bonds was about 40% higher over the first five months of 2006 than in the same period a year earlier. Bank lending also increased rapidly. This increase was driven in large part by financing for mergers and acquisitions (M&As). The announced volume of M&As was about 50% higher over the first five months of 2006 compared to the same period a year earlier (Graph 1.4, left-hand panel). Whereas during the previous M&A boom, in 1999–2000, about 70% of all deals had been paid for with equity, since 2005 only 30% have been. The majority of recent deals have been paid for in cash, often raised in debt markets.

Record lending for LBOs

Demand for higher-yielding corporate debt was especially strong. While spreads on investment grade corporate bonds were little changed over the first five months of 2006, spreads on high-yield bonds tightened significantly, to within a few basis points of their March 2005 low. Furthermore, spreads on new leveraged loans – loans to speculative grade borrowers – narrowed to record lows in the early part of 2006, even as the volume of such loans soared. For example, loans to finance leveraged buyouts (LBOs) averaged $10 billion per month during the first four months of 2006, up from $7 billion on average in 2005 (Graph 1.4, right-hand panel). Volumes were similar to those at the peak of the previous LBO wave in 1989.

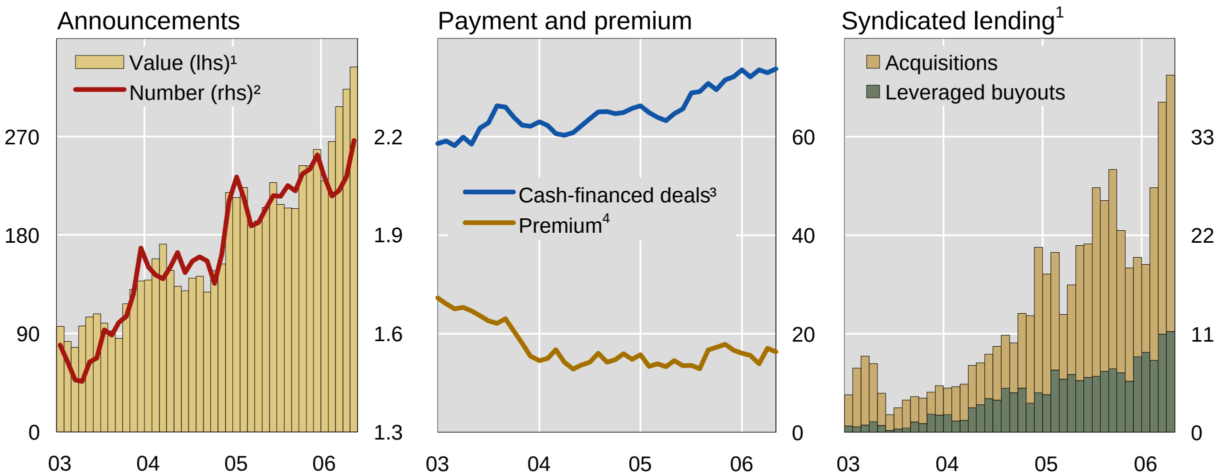
This demand reflected in part the strength of investor interest in structured credit products. A large proportion of new leveraged loans was purchased by managers of collateralised debt obligations (CDOs), who repackaged them into higher-rated, often AAA-rated, securities. CDOs typically trade at much wider spreads than similarly rated corporate bonds and so are popular among investors seeking to maximise yield for a given credit rating.

Demand for structured credit products remains strong

In the first quarter of 2006, CDO issuance was exceptionally high, especially the issuance of CDOs backed by CDSs, so-called synthetic CDOs (Graph 1.5). Indeed, demand for structured credit products was so strong that it caused investment grade bond and CDS spreads to decouple temporarily. After

Global mergers and acquisitions

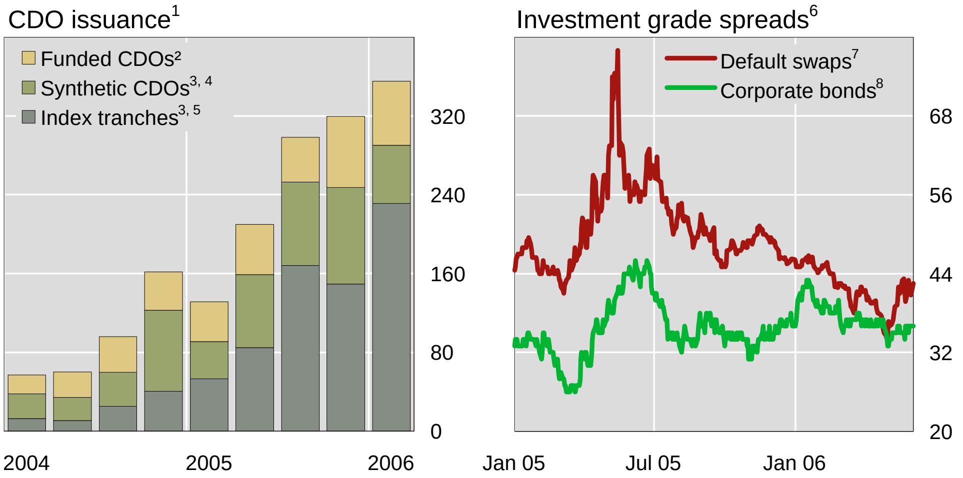
Three-month moving averages



[1] In billions of US dollars. [2] In thousands. [3] As a percentage of the total value of announced deals. [4] Premium over the equity price on the day the deal was announced, in per cent.

Sources: Bloomberg; Loanware; national data. Graph 1.4

Structured credit bid



[1] In billions of US dollars. [2] Cash flow CDOs. [3] Notional amount, not adjusted for the riskiness of different tranches. [4] Portfolio CDSs referenced to corporations, sovereigns and asset-backed securities. [5] Portfolio CDSs referenced to CDS indices. [6] In basis points. [7] On-the-run five-year DJ.CDX.NA index. [8] Merrill Lynch US corporate bond index; asset swap spreads.

Sources: Bond Market Association; Credit*flux*; JPMorgan Chase; Merrill Lynch. Graph 1.5

the turmoil in credit markets in the second quarter of 2005, CDS spreads tightened almost continuously even as bond spreads showed no signs of revisiting their previous lows. CDO managers tend to prefer CDSs over cash instruments as the underlying asset in CDOs because CDS-based products are quicker to launch, easier to customise and easier to hedge. All of this structuring activity apparently put greater downward pressure on CDS spreads than on bond spreads in the early part of 2006.

Hints of trouble ahead

Worries about valuations emerge in early 2006 concerning …

Even while credit and equity markets were rallying between January and early May 2006, there were hints of possible trouble ahead. In some markets, the optimism that had driven up the prices of higher-risk assets waned as the rally pushed valuations ever higher. The consequent increase in uncertainty about future returns tended to amplify investors' response to any negative market developments.

… high-yielding currencies …

The potential for negative developments in one market to spill over to other markets was starkly illustrated in late February 2006, during an unwinding of carry trades involving the Icelandic króna. In the two days following Fitch's announcement of a negative outlook on Iceland's sovereign rating, the króna depreciated by 7% (Graph 1.6). Such an event would not normally influence other foreign exchange markets. Yet within hours the unwinding of positions involving the króna led to sharp, albeit brief, falls in other high-yielding currencies like those of Australia, Brazil, Hungary, New Zealand and South Africa.

… Middle East equities …

While in the above episode there was a clear trigger, this was not always the case. The Saudi Arabian equity market began to fall in late February, and soon afterwards almost all markets in the Middle East plummeted. By mid-May, the Saudi Arabian market was 50% below its peak. Despite the severity of the correction, it is difficult to identify a precipitating event. The fall seemed unrelated to any change in fundamentals. Indeed, the sell-off coincided with a further rise in oil prices, which would normally boost the outlook for Saudi Arabia and other oil-exporting countries. Rather, just as a mutually reinforcing process of investor optimism and herding had led to a doubling of Middle East equity prices in 2005, a similar process worked in reverse in the early part of 2006. Despite favourable underlying economic conditions, the growth of earnings in Middle East markets had lagged the rise in prices; local investors flush with oil revenues had driven price/earnings multiples well above levels justified by fundamentals. Such high valuations eventually undermined the optimism that had earlier supported the rally.

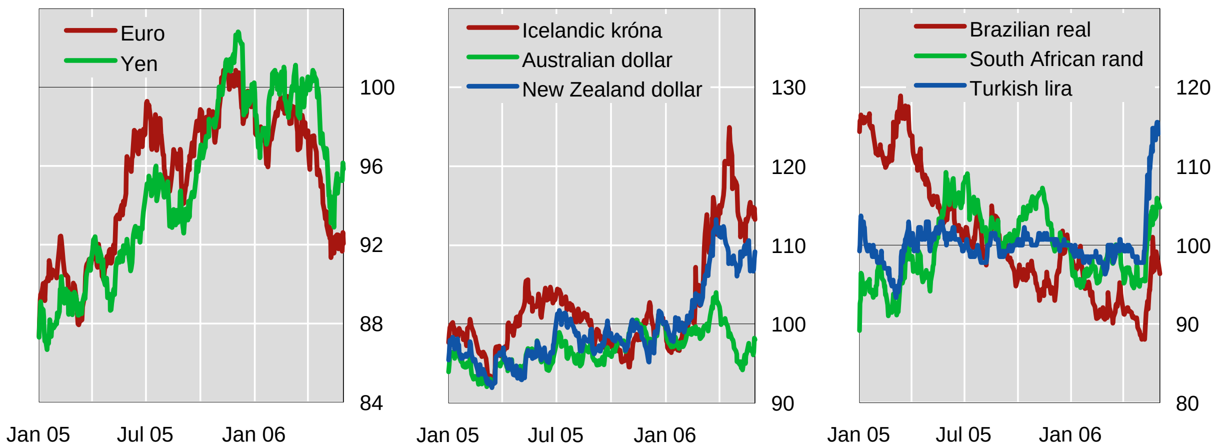
... commodities ...

Unease with valuations was also evident in commodity markets. Implied volatility in copper and gold markets began to rise sharply in mid-April (Graph 1.7). Unusually, prices were rising quickly at the same time; rallies are typically associated with declines in volatility. The positive relationship between implied volatility and prices suggests that uncertainty about valuations increased as the rally in commodity markets progressed. Notably, implied volatility in the oil market remained unchanged even as that in other commodity markets rose. This could indicate that underlying supply and demand conditions were perceived to be more supportive of oil prices than of other commodity prices.

... and the US dollar

In foreign exchange markets, too, uncertainty increased in late April. The US dollar depreciated by about 6% against both the euro and the yen between mid-April and mid-May, around the same time that inflation concerns emerged in dollar bond markets (Graph 1.6). As the US dollar fell, implied volatility in foreign exchange markets soared to its highest level since early 2005 (Graph 1.7).

Exchange rates against the US dollar[1]



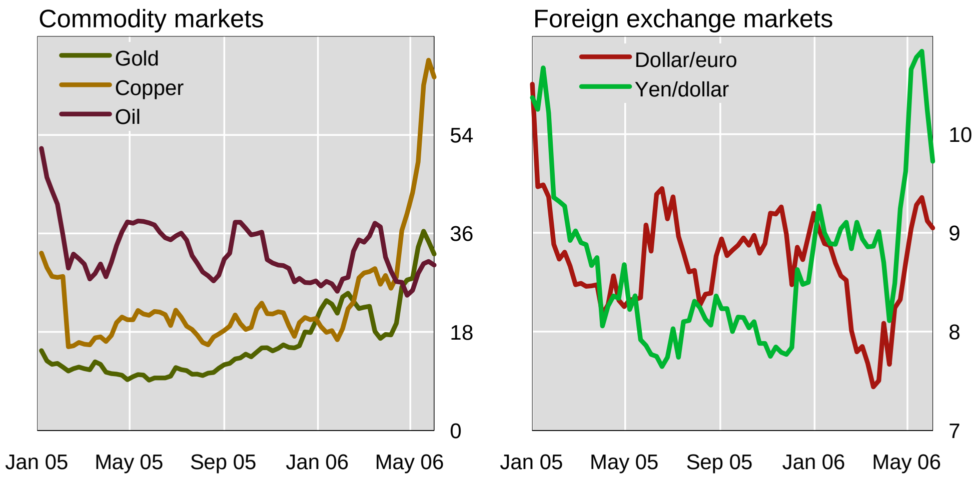
[1] Spot rates; 31 December 2005 = 100; a decline indicates a depreciation of the US dollar.

Sources: Bloomberg; national data.

Graph 1.6

Implied volatility[1]

Weekly averages, in per cent



[1] Derived from one-month at-the-money call options.

Source: Bloomberg. Graph 1.7

Market-wide repricing of risk

Equities hardest hit …

Against this background of rising uncertainty about valuations in some markets, in mid-May many markets reversed direction. Starting around 10 May, the prices of highly rated government bonds rose, while those of riskier assets fell. The scope of the shift in market sentiment was in some ways surprising; almost all markets were caught up in the sell-off, even those where investors had previously seemed comfortable with valuations. Equities in industrial countries, for instance, did not appear to be obviously overvalued. In fact, price/earnings multiples in the major markets had declined in the early part of 2006 (Graph 1.8). Yet equity markets were the hardest hit during the sell-off. The DJ EURO STOXX fell by 10% between 10 and 22 May, the TOPIX by 6% and the S&P 500 by 5% (Graph 1.1).

Corporate debt markets were arguably more vulnerable to a repricing than equity markets, considering that spreads remained close to their cyclical lows despite rising LBO activity. Nevertheless, the widening of spreads was relatively modest. US high-yield corporate bond spreads widened by 25 basis points, far less than during the turmoil in credit markets in April and May 2005. Similarly, while commodities dropped from their highs, they stayed well above their end-2005 levels.

… especially in emerging markets

The mid-May correction was especially severe in emerging markets, although again debt prices held up better than equity prices. The MSCI emerging markets equity index declined by 11% in local currency terms between 10 and 22 May (Graph 1.1). Some individual markets fell by even more, for example Russia by 24% and India by 17%. Many currencies depreciated substantially against the US dollar, with the Turkish lira falling by 14% and the Brazilian real by 12% (Graph 1.6). At the same time, in several countries yields on local government bonds jumped noticeably. While spreads on dollar-denominated external debt widened by about 30 basis points, they remained below their end-2005 level (Graph 1.8).

Unchanged fundamentals …

It is difficult to identify a specific precipitating event for the sharp correction that began in mid-May. The sell-off was neither synchronous across markets nor sudden: some markets peaked on 9 May, and others a few days later; some markets experienced unusually large daily falls, and others modest declines. This suggests that new information was not the primary cause of the correction. Indeed, fundamentals did not change in any significant way in mid-May. To be sure, there were concerns about inflation. For example, on 15 May the announcement of a larger than expected increase in US consumer prices led to a 1.7% drop in the S&P 500 and even larger declines in European and Latin American equity markets. Yet these concerns had emerged well before mid-May. In addition, concerns about inflation were greatest in the United States, but US markets fell by less than most others.

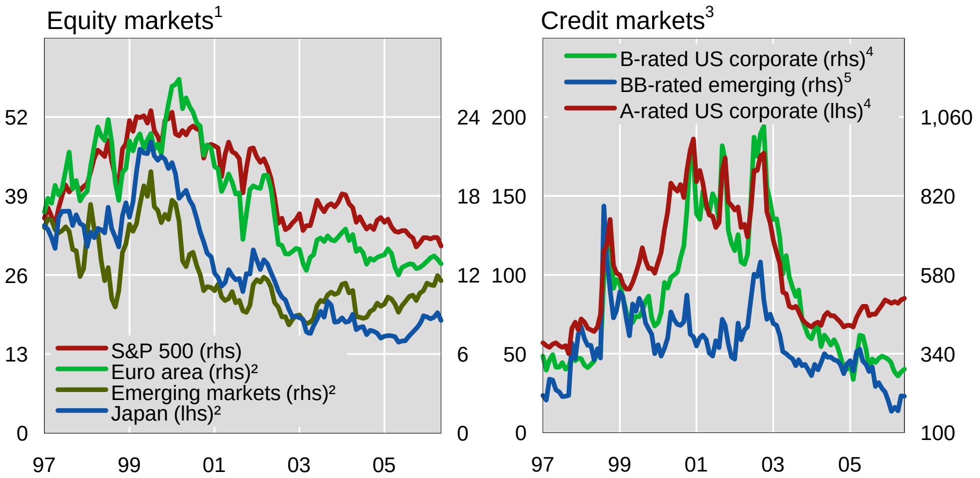
… suggest decline in risk appetite as main driver …

If not fundamentals, then risk appetite would seem to have been a key driver of the sell-off. If the sell-off had one defining characteristic, it was that those markets that fell the most tended to be the ones that had risen the farthest in previous months. Price declines in some markets appeared to have a contagious effect, increasing uncertainty about the sustainability of recent gains in other markets and thereby prompting investors to rush for the exits in an attempt to lock in their profits.

… consistent with rising implied volatilities

The marked increases in implied volatility that accompanied the sell-off were consistent with a broad repricing of risk. In most of the major equity markets, implied volatility rose to its highest level since mid-2004, during the global sell-off in bond markets (Graph 1.9). Implied volatility for Japanese equities remained below the levels reached in January, when the TOPIX had peaked, but went up nonetheless. Implied volatility for the S&P 500 Index rose to a peak of 20% during intraday trading on 24 May, after fluctuating around

Valuations

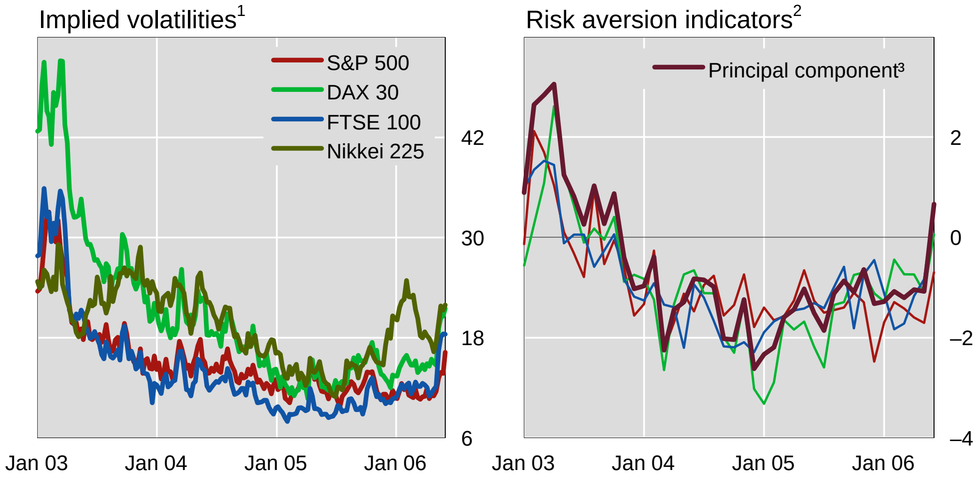


[1] Price/earnings multiples, based on consensus forecasts of one-year-ahead operating earnings. [2] MSCI index. [3] Spreads over government bond yields, in basis points; month-end. [4] Merrill Lynch index. [5] Based on the constituents of the EMBI Global Diversified index.

Sources: JPMorgan Chase; Merrill Lynch; Morgan Stanley Capital International; BIS calculations.

Graph 1.8

Volatility and risk appetite in equity markets



[1] Volatility implied by the price of at-the-money call option contracts on stock market indices; weekly averages, in per cent. [2] Derived from the differences between two distributions of returns, one implied by option prices, the other based on actual returns estimated from historical data. [3] First principal component of risk appetite indicators estimated for the S&P 500, DAX 30 and FTSE 100.

Sources: Bloomberg; Chicago Mercantile Exchange; Eurex; London International Financial Futures and Options Exchange; BIS calculations.

Graph 1.9

11% over the first four months of 2006. Volatility subsequently declined, but as of 2 June was still noticeably higher than in the early part of the year.

Implied volatility is influenced by both perceptions of future market volatility and investors' aversion to such volatility. These two influences can be disentangled by comparing the distribution of expected returns implied by option prices with the distribution of historical returns. Measures of risk aversion derived in this way show a sharp increase across markets in late May (Graph 1.9). The common component of the various measures rose to its highest level since mid-2003. This suggests that, although inflation concerns might have raised the perceived future volatility of market returns somewhat, the increase in implied volatility was driven by greater aversion to risk. If sustained, it could indicate that the search for yield that has characterised financial markets since 2004 might finally have abated, albeit to an uneven degree across market segments.

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2. The international banking market

BIS reporting banks' cross-border claims continued to expand in the fourth quarter of 2005. The expansion largely took the form of greater intra-euro area lending, although new credit to borrowers in the United States and Japan also contributed. Yen-denominated claims rose noticeably, in line with a trend evident since mid-2004. The increase in yen borrowing by residents of the United Kingdom and offshore centres suggests a growing volume of yen-funded carry trades.

Bank lending to emerging economies was quite strong in the fourth quarter, reflected in a net *inflow* of funds to emerging Europe and Latin America. More generally, international credit to emerging markets has picked up in recent years and has been channelled mainly to emerging Europe and the Asia-Pacific area. There is some evidence that this new credit has been extended to borrowers with a lower average credit rating and on terms that are increasingly advantageous to fund-raisers.

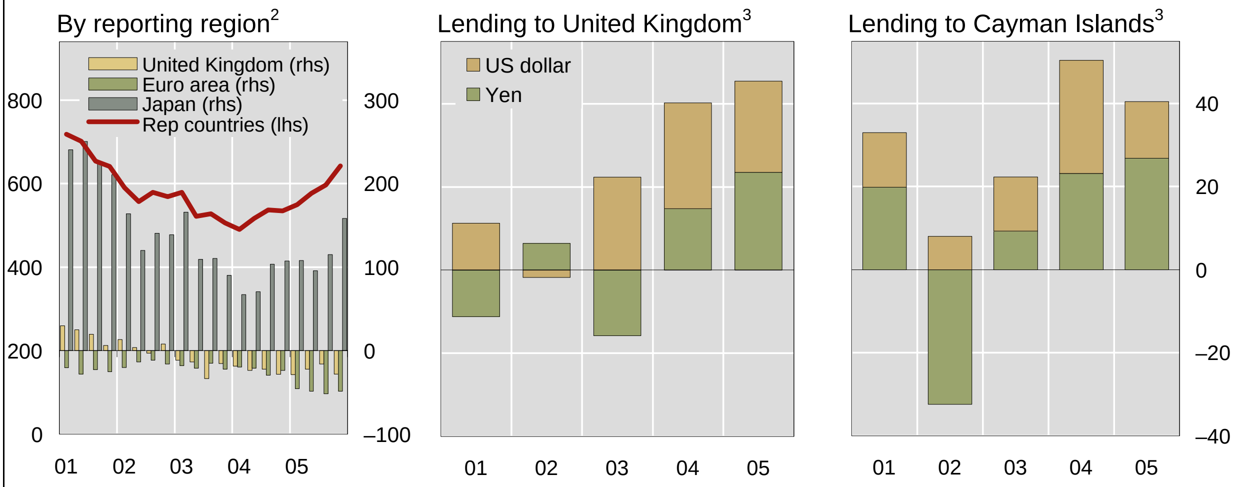
In contrast to emerging Europe and Latin America, large deposit placements in BIS reporting banks were behind a record net *outflow* from Asia-Pacific in the fourth quarter of 2005. Such placements have become more common in recent years, as a portion of Asia's external surpluses is channelled through the international banking system. Asia's deposits are an important source of funds for BIS reporting banks, but represent only a small share of Asia's total invested funds.

A pickup in yen-denominated claims

The total cross-border claims of BIS reporting banks continued to expand in the fourth quarter of 2005, by roughly the same amount as in the third quarter. This rise, of $567 billion, was primarily the result of new claims on the euro area and the United States, and pushed total cross-border claims of BIS reporting banks to $21.1 trillion. Year-on-year, total claims rose by 17%, a slightly lower rate than that recorded in the previous quarter.

Claims on euro area borrowers rose the most. Roughly half of the new credit, or $135 billion, flowed to non-banks, mainly in France, Germany and the Netherlands, while much of the remainder was due to interbank lending from banks in France, the United Kingdom and offshore centres. Almost three quarters of the overall growth in claims on the euro area represented credit

Bank lending in yen[1]



[1] Based on stocks outstanding adjusted for valuation effects using a constant 2005 Q4 exchange rate. [2] Net claims (for reporting countries total, gross claims), in billions of US dollars. Excludes claims on and liabilities to residents of Japan. [3] Year-on-year growth, in per cent. Graph 2.1

granted by banks located in the euro area. Over the longer term, intra-euro area claims have accounted for an increasingly large share of the total claims on the region (up from 48% at end-2001 to 55% in the most recent quarter).

A pickup in yen borrowing ...

The stock of outstanding yen-denominated claims rose noticeably in the fourth quarter of 2005, in line with a trend evident since mid-2004. On the lenders' side, this has largely been driven by banks in Japan. Over the last seven quarters, claims of these banks accounted for three quarters of the $161 billion increase in reporting banks' yen-denominated claims (Graph 2.1, left-hand panel).[1] Roughly $120 billion of this increase was channelled to borrowers in international financial centres, most notably banks in the United Kingdom and Singapore and non-banks in the Cayman Islands.

... suggests carry trade positions

This pickup in yen borrowing provides some evidence, albeit incomplete, of a rise in yen-funded carry trade positions. A carry trade is the combination of a short position in a low-yielding currency and a long position in a higher-yielding currency, and is profitable to the extent that exchange rate adjustments do not counterbalance the nominal yield differential. Thus, an increase in carry trade activity is a potential factor behind the recent growth in yen borrowing by financial centres, and the parallel slowdown in the growth of US dollar borrowing (Graph 2.1, centre and right-hand panel). Similarly, banks in the euro area might also have been engaged in carry trades, as they reported a steady decline in their yen-denominated *net* claims together with a recent increase in US dollar-denominated net claims (Graph 2.1, left-hand panel).

[1] The analysis of yen-denominated lending incorporates data only from reporting countries that provide a currency breakdown of bank credit. In addition, in order to abstract from issues related to domestic demand for a particular currency, yen claims on and liabilities to Japanese residents have been filtered out from the data underlying Graph 2.1 and the statistics reported in this paragraph.

Cross-border claims of BIS reporting banks

Exchange rate adjusted changes in amounts outstanding, in billions of US dollars[1]

	2003	2004	2004	2005				Stocks at end-Dec 2005
	Year	Year	Q4	Q1	Q2	Q3	Q4	
Total cross-border claims	1,061.2	2,269.2	573.6	1,028.3	1,079.3	534.8	566.7	21,109.6
on banks	519.7	1,351.9	346.9	590.9	767.4	279.2	343.5	13,376.0
on non-banks	541.5	917.2	226.7	437.4	311.9	255.7	223.2	7,733.5
of which Loans: banks	443.6	1,122.6	284.3	480.1	697.0	219.9	221.9	11,339.2
non-banks	274.3	344.8	124.7	292.8	97.4	141.8	1.8	3,844.3
of which Securities: banks	74.5	154.1	36.6	110.1	45.1	54.8	78.2	1,485.8
non-banks	207.6	456.7	58.3	81.7	235.4	77.3	162.4	3,347.9
Total claims by currency								
US dollar	578.4	1,125.3	435.4	253.0	517.6	245.2	216.6	9,289.1
Euro	499.5	807.9	124.7	589.0	382.9	169.2	175.4	8,008.4
Yen	–127.6	89.6	23.7	–33.1	68.6	24.4	92.7	1,145.9
Other currencies[2]	110.9	246.4	–10.1	219.4	110.2	96.0	81.9	2,666.2
By residency of non-bank borrower								
Advanced economies	448.0	673.7	150.8	373.6	224.5	186.1	167.8	5,956.7
Euro area	156.4	239.2	43.8	110.5	152.0	58.7	134.5	2,661.5
Japan	38.4	73.3	36.2	–31.5	10.1	–11.0	6.1	223.3
United States	172.1	164.7	45.8	207.2	33.7	110.6	30.8	2,026.0
Offshore centres	99.8	239.8	57.9	56.5	64.8	45.4	8.5	1,024.8
Emerging economies	6.0	50.2	22.4	13.6	21.3	22.2	50.9	713.3
Unallocated[3]	–13.5	–41.5	–4.7	–6.6	0.0	–1.6	–1.8	9.9
Memo: Local claims[4]	*408.6*	*219.9*	*–6.1*	*233.5*	*–4.6*	*26.6*	*–54.9*	*2,782.3*

[1] Not adjusted for seasonal effects. [2] Including unallocated currencies. [3] Including claims on international organisations. [4] Foreign currency claims on residents of the country in which the reporting bank is domiciled. Table 2.1

Strong growth in lending to emerging markets

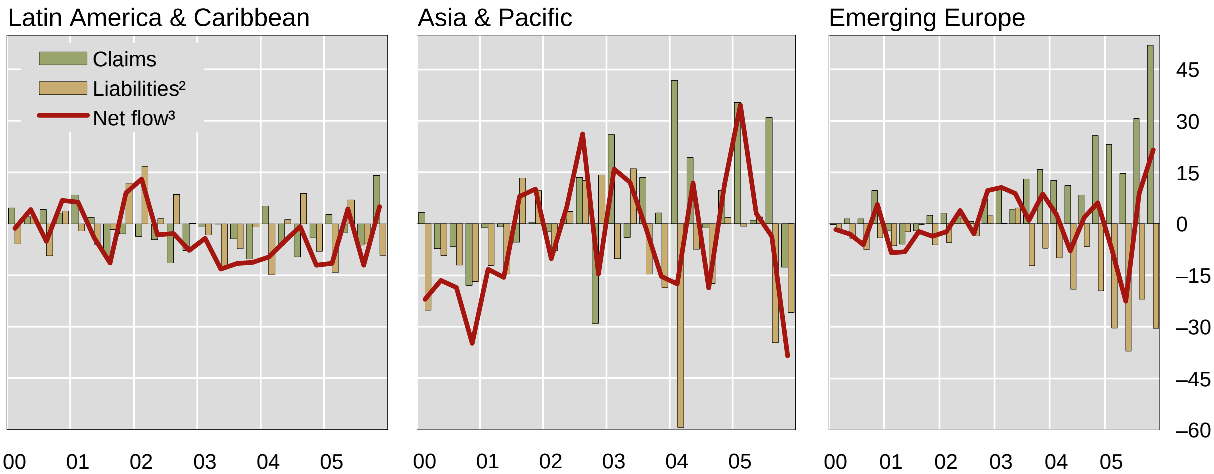
Claims on emerging market economies expanded strongly in the fourth quarter of 2005, continuing the trend evident since end-2002. At the same time, fund-raising by emerging markets has evolved in two respects. The available data suggest that the risk profile of credit to some emerging markets has recently deteriorated, while the terms of this credit have become more advantageous to borrowers. In addition, securities have gained in importance as a substitute for bank-based financing.

Lending to emerging Europe …

In the most recent quarter, the growth of cross-border bank claims on emerging markets was driven primarily by lending to emerging Europe, while claims on Asia-Pacific fell for the first time in five quarters (Graph 2.2). Across all emerging market regions, the stock of total claims reached $1.4 trillion at end-2005, up by $230 billion since end-2004. Roughly three quarters of the $72 billion rise in claims in the most recent quarter was extended to emerging Europe, while claims on Africa-Middle East and Latin America rose more modestly (by $18 billion and $14 billion respectively). For Latin America, this

Bank flows to emerging economies[1]

Exchange rate adjusted changes in amounts outstanding, in billions of US dollars



[1] A positive value represents an inflow to emerging economies from banks in the BIS reporting area, and a negative value an outflow from emerging economies. [2] A positive value indicates a decrease in BIS reporting banks' liabilities vis-à-vis emerging economies, and a negative value an increase. [3] Changes in claims minus changes in liabilities. Graph 2.2

was the largest increase in claims since the first quarter of 1998. Conversely, lending by reporting banks to Asia-Pacific fell by $13 billion, the result of a decline in claims on banks in China, Malaysia, Taiwan (China),[3] Korea and Thailand.

... and Asia-Pacific drives long-term growth in claims ...

Over the longer term, increased borrowing by emerging Europe and Asia-Pacific has underpinned the steady growth in international credit to emerging markets. In contrast, international credit to Latin America has still not recovered fully from its drop in the aftermath of the Argentine default. Using both the BIS banking and securities statistics, Graph 2.3 provides estimates of total international credit (ie bank and bond financing) to emerging markets.[4,5] The stock of such credit extended to Asia-Pacific and emerging Europe has increased by 74% and 130% respectively since the beginning of 2002, reflecting a surge in new issuance of debt securities and signings of syndicated

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[3] Hereinafter Taiwan.

[4] The graph uses data on cross-border bank claims and international debt securities. Cross-border bank claims are obtained from the BIS locational statistics and include inter-office claims. International debt securities comprise all foreign currency issues by residents and non-residents in a given country and all domestic currency issues launched in the domestic market by non-residents. In addition, domestic currency issues launched in the domestic market by residents are also considered as international issues if they are specifically targeted at non-resident investors.

[5] Total international credit is measured as the sum of the outstanding stocks of international debt securities and cross-border bank claims. Cross-border holdings of debt securities by BIS reporting banks are netted out in order to avoid double-counting. This measure of total international credit overstates the true total to the extent that international debt issues are purchased by domestic investors. It may understate the total if BIS reporting banks' cross-border investment includes debt securities that are classified as domestic.

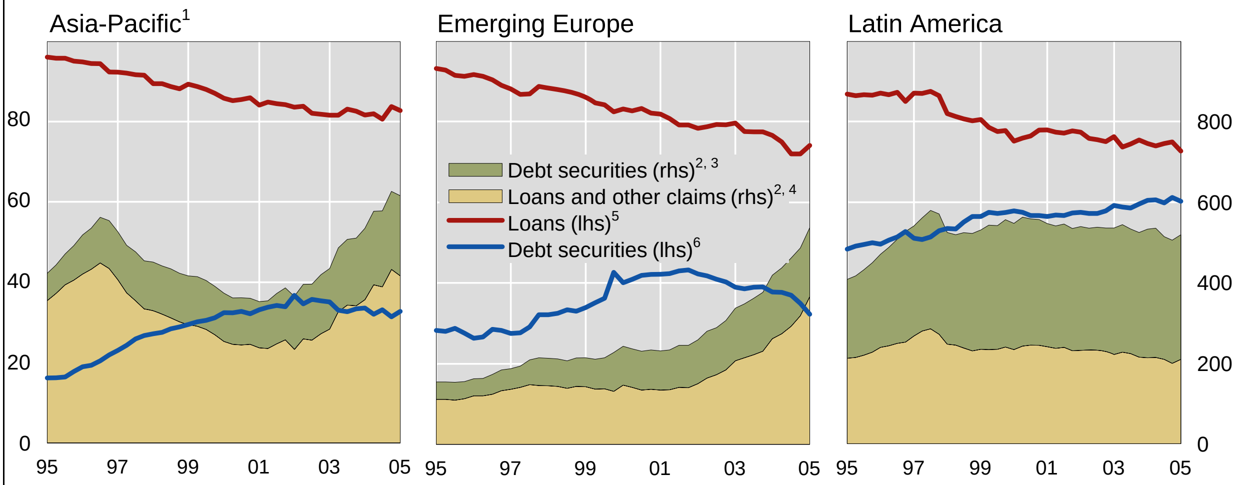
Cross-border bank flows to emerging economies Exchange rate adjusted changes in amounts outstanding, in billions of US dollars									
	Banks' positions[1]	2003	2004	2004	2005				Stocks at end-Dec 2005
		Year	Year	Q4	Q1	Q2	Q3	Q4	
Total[2]	Claims	65.1	131.3	36.1	70.4	19.0	68.2	71.9	1,410.7
	Liabilities	71.7	201.8	23.6	61.8	62.6	115.4	78.9	1,721.7
Argentina	Claims	–8.5	–5.3	–0.7	–1.3	–2.4	0.4	–0.2	14.8
	Liabilities	–0.8	–0.4	–0.5	–0.1	0.6	–1.9	0.5	23.1
Brazil	Claims	–7.2	–7.4	–3.1	2.9	1.4	0.8	4.1	85.0
	Liabilities	14.2	–4.8	1.3	13.3	–9.4	–0.5	–5.3	49.2
China	Claims	13.5	24.0	3.2	10.0	–2.8	13.1	–4.7	105.5
	Liabilities	–6.6	25.8	–13.7	–3.0	6.7	5.2	13.0	137.7
Czech Rep	Claims	3.7	2.8	3.2	0.6	–0.3	2.3	3.4	28.5
	Liabilities	–2.4	0.8	1.3	–0.9	2.3	0.3	4.7	16.9
Indonesia	Claims	–4.7	0.3	0.7	–0.7	1.8	–0.1	1.5	33.5
	Liabilities	0.2	–2.3	–0.6	0.1	0.6	1.4	0.9	13.1
Korea	Claims	–1.0	12.6	6.1	8.8	–2.7	4.0	–1.9	100.7
	Liabilities	7.3	13.8	–5.9	–4.5	–8.9	7.6	–0.7	48.2
Mexico	Claims	–0.7	–0.9	–1.0	0.5	–3.2	–7.6	5.7	60.4
	Liabilities	6.2	–4.7	–1.6	–1.5	2.1	4.2	–1.2	60.0
Poland	Claims	3.2	5.8	–0.2	5.6	2.4	4.2	0.9	55.6
	Liabilities	–0.1	11.0	4.2	2.0	1.3	0.9	0.2	34.1
Russia	Claims	12.1	8.9	7.6	3.3	1.9	6.4	17.0	91.3
	Liabilities	16.5	24.7	5.9	29.2	28.8	2.7	13.7	153.3
South Africa	Claims	–1.2	0.4	0.3	–0.2	3.5	–2.3	0.9	20.4
	Liabilities	9.5	6.8	0.1	0.7	1.8	4.1	–3.6	40.9
Thailand	Claims	–1.7	0.2	–0.1	0.5	4.2	3.0	–2.3	25.3
	Liabilities	5.8	2.4	1.1	2.4	1.3	5.0	1.1	29.5
Turkey	Claims	5.3	9.0	1.5	3.0	3.0	5.4	10.6	75.6
	Liabilities	–0.4	6.9	2.0	–1.5	3.4	5.4	3.7	37.5
Memo:									
New EU countries[3]	*Claims*	*20.9*	*30.4*	*11.6*	*15.0*	*8.0*	*14.6*	*16.1*	*217.5*
	Liabilities	*–0.5*	*17.5*	*8.9*	*0.8*	*1.8*	*8.2*	*9.7*	*101.4*
OPEC members	*Claims*	*–6.5*	*21.4*	*5.5*	*5.4*	*6.3*	*13.0*	*12.9*	*189.7*
	Liabilities	*–14.7*	*34.5*	*–4.2*	*8.2*	*28.1*	*47.8*	*18.4*	*383.4*

[1] External on-balance sheet positions of banks in the BIS reporting area. Liabilities mainly comprise deposits. An increase in claims represents an inflow to emerging economies; an increase in liabilities represents an outflow from emerging economies. [2] All emerging economies. For details on additional countries, see Tables 6 and 7 in the Statistical Annex. [3] Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia. Table 2.2

loans (Graph 2.4).[6] By contrast, the outstanding stock of international securities claims on residents of Latin America has remained roughly constant

[6] International syndicated loans are, in principle, a subset of international bank claims, which are compiled on a consolidated basis and comprise cross-border claims and local claims in foreign currencies. See B Gadanecz and K von Kleist, "Do syndicated credits anticipate BIS

Loan and securities claims on emerging markets



[1] Excluding Hong Kong SAR and Singapore. [2] Stocks outstanding, in billions of US dollars. [3] International debt securities held by banks and other investors. [4] Cross-border loans and equity holdings by BIS reporting banks. [5] Outstanding stocks of loans as a percentage of total cross-border claims of BIS reporting banks on the respective region. [6] Outstanding stocks of international debt securities as a percentage of the sum of international debt securities and BIS reporting banks' cross-border claims, excluding these banks' debt securities claims.

Sources: IMF; Dealogic; Euroclear; ISMA; Thomson Financial Securities Data; BIS. Graph 2.3

since the beginning of 2000, and cross-border loan claims have declined by 15% since mid-2001.[7] This has been a result of new international credit to the region (Graph 2.4, right-hand panels) coinciding with large repayment or writedown activity.

... extended on better terms for borrowers

The credit risk of emerging market debt and the compensation that investors require for it also seem to have evolved over time. Data on new issuance of international securities and signings of syndicated loans indicate that, as credit to emerging markets has grown, its risk profile has deteriorated (Graph 2.4). This is seen most clearly in the case of securities issued by residents of Asia-Pacific and Latin America, which have exhibited a worsening in their average credit rating together with a substantial lengthening of maturity since 2002. In parallel, spreads have narrowed across all emerging market regions since 2001, for debt securities issues, and 2003, for syndicated loan signings. In combination with worsening or stable credit ratings and lengthening debt maturities, the narrowing of spreads is an indication that international credit has been extended on increasingly advantageous terms for emerging market borrowers (see the box on page 24 and 25 for further analysis of the pricing of syndicated lending to and bond issuance by emerging market borrowers).

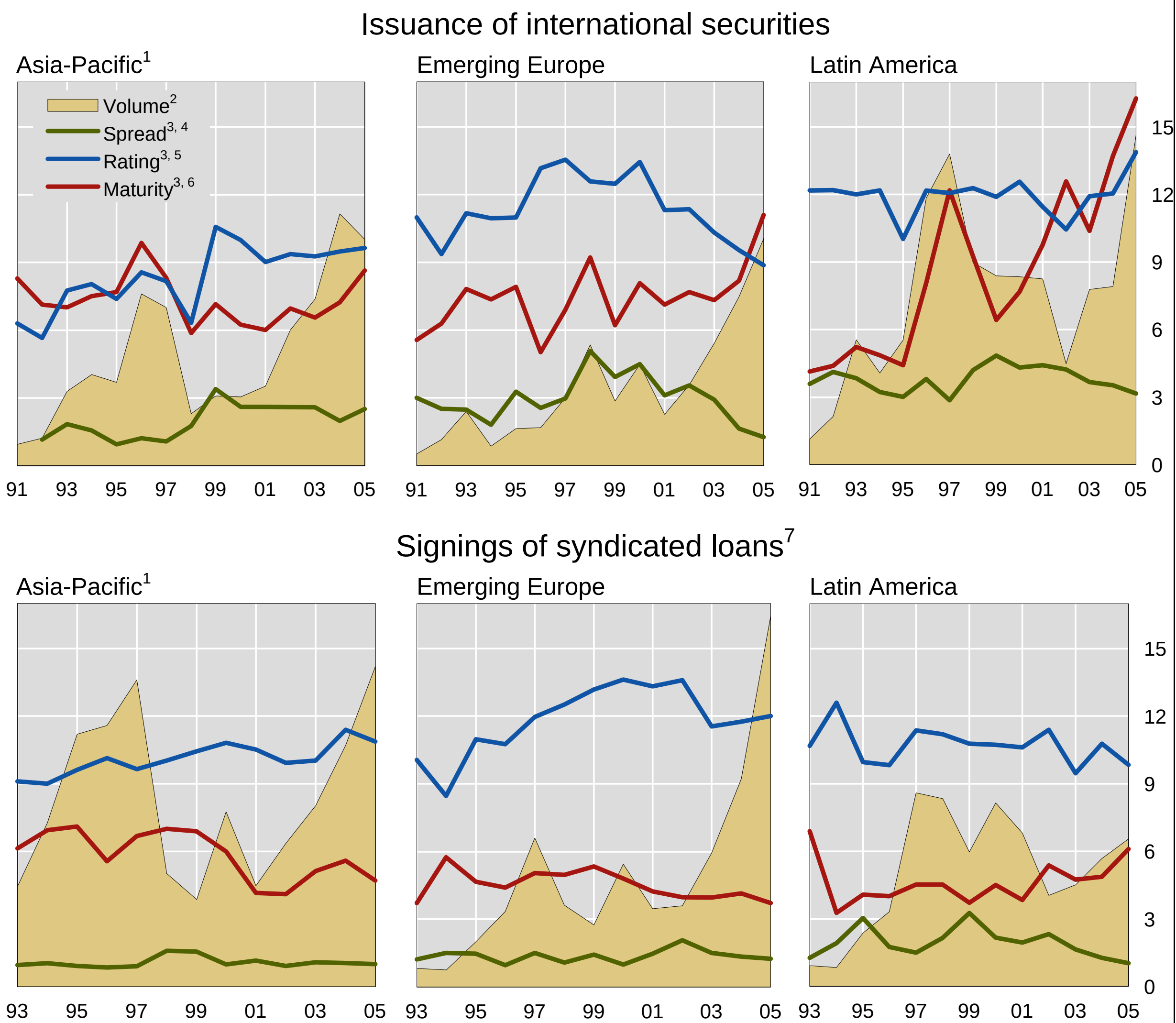
consolidated banking data?", *BIS Quarterly Review*, March 2002, for an analysis of syndicated loans and how they compare to data on international bank claims.

[7] BIS reporting banks located in Latin America have increased substantially their local currency claims on residents of this region since the first quarter of 2003. To the extent possible, the analysis abstracts from locally transacted claims because: (i) the BIS banking statistics provide an instrument breakdown of such claims only for 2005; without a breakdown into bank loans and securities holdings, combining the banking and securities data would involve substantial double-counting of securities; and (ii) it is impossible to establish what fraction of local securities claims is held by locally as opposed to foreign-headquartered investors.

Bonds are an increasingly important source of financing

In parallel with these developments, bonds have been replacing loans as a source of borrowing. This shift is most pronounced in Asia-Pacific, where the ratio of debt securities to total international credit doubled from 16% at end-1995 to 32% at end-2005 (Graph 2.3).[8] Over the same period, this ratio increased by 12 percentage points, to 60%, in Latin America, where bond financing has been dominant since at least 1995. In emerging Europe, the same ratio surged from 28% at end-1995 to 42% at end-2002 but then declined and stood at 32% in the last quarter of 2005.

Securities and loan financing in emerging markets



[1] Excluding Hong Kong SAR and Singapore. [2] In billions of US dollars. [3] Weighted averages; issue-specific weights based on announcement volumes. [4] In percentage points. [5] An increase signifies a rating deterioration. Based on a synthetic rating of Moody's, Standard & Poor's and Fitch ratings: AAA = 1, AA+ = 2, …, BBB = 9, … , C = 21, D = 22. [6] In years. [7] International facilities only.

Sources: Dealogic Bondware and Loanware; BIS. Graph 2.4

[8] This ratio may either under- or overstate the true share of debt securities in total international credit, depending on errors in the measure of debt securities. See footnote 5.

The mix of BIS reporting banks' claims has reflected this broader shift towards bond financing. The share of loans in all cross-border claims of BIS reporting banks has been on a downward path in all three regions, decreasing the most in emerging Europe, from 92% at end-1995 to 73% at end-2005 (Graph 2.3).

Asian surpluses and the international banking market

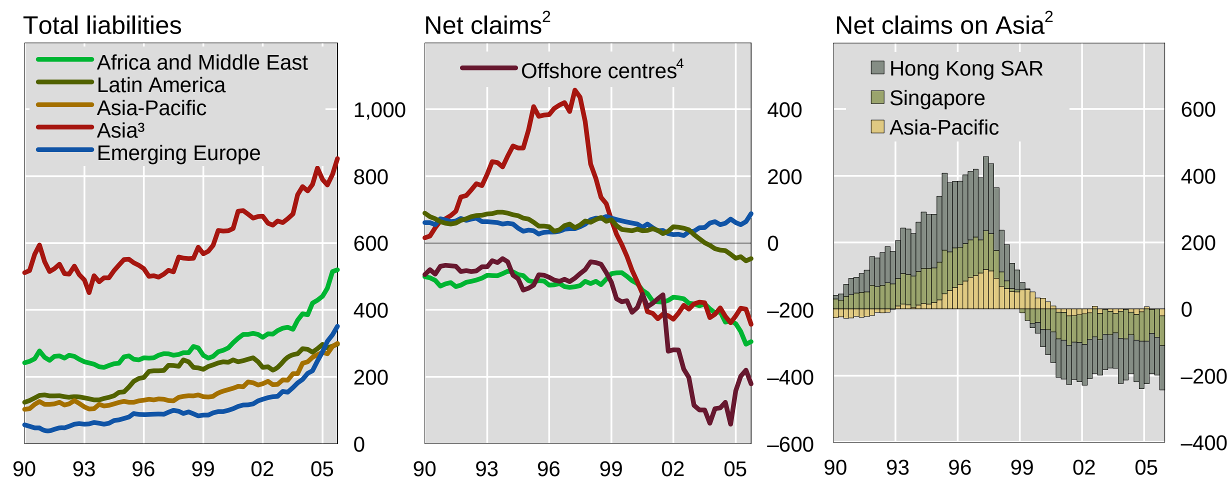
The growth in bank credit to some emerging markets in the fourth quarter of 2005 was more than offset by greater deposits placed in BIS reporting banks by residents of Asia-Pacific (Graph 2.2). This was behind an overall net outflow from emerging economies. BIS reporting banks' total liabilities to Asia-Pacific grew by $26 billion (to $521 billion) in the fourth quarter of 2005, on the back of an even larger rise of $35 billion in the third. Residents of China, primarily banks, deposited $13 billion in the fourth quarter of 2005, following deposits of roughly $5 billion in each of the previous two quarters. Residents of Taiwan, primarily non-banks, deposited $9 billion in the fourth quarter, while those of India deposited an additional $4 billion.

A source of funds for BIS reporting banks

Large placements of deposits by residents of Asia have become more common in recent years, as capital inflows and current account surpluses in the region have in part been recycled through the international banking system. At more than $800 billion, the stock of BIS reporting banks' liabilities to residents of Asia-Pacific and the offshore centres Hong Kong and Singapore is considerably larger than that to residents of other emerging market regions

BIS reporting banks'[1] positions vis-à-vis emerging markets

In billions of US dollars

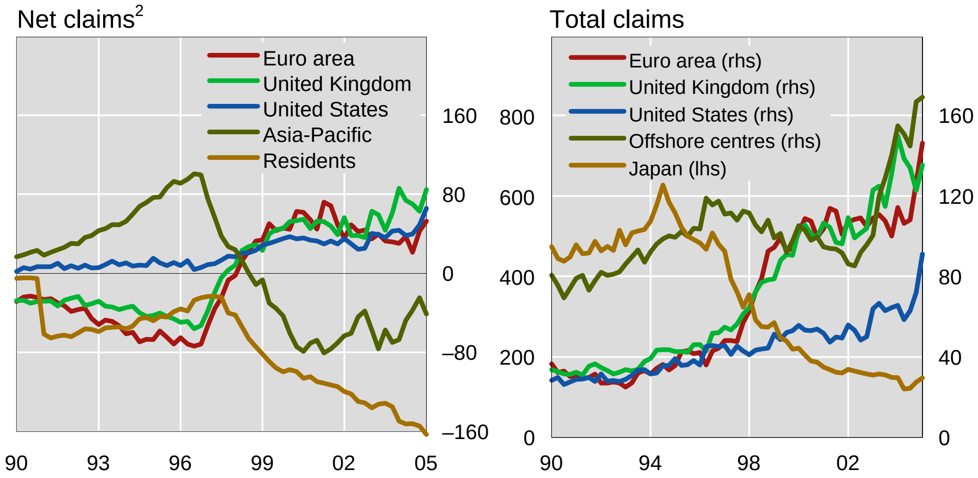


[1] Excluding banks in Hong Kong SAR, India, Korea, Singapore and Taiwan (China). [2] Total assets minus total liabilities. [3] Asia-Pacific and the offshore centres Hong Kong SAR and Singapore. [4] Excluding Hong Kong SAR and Singapore.

Graph 2.5

Positions of banks in Hong Kong and Singapore[1]

By vis-à-vis region, in billions of US dollars



[1] Aggregated positions of banks located in Hong Kong SAR and Singapore. [2] Stock of total claims minus stock of total liabilities.

Source: BIS. Graph 2.6

(Graph 2.5, left-hand panel).[9] Moreover, it has grown by more than 40%, or $239 billion, since end-1998.

Net claims on Asia-Pacific flat since 2000

However, the *net* position of BIS reporting banks vis-à-vis residents of Asia has remained relatively flat in recent years, as deposits are channelled back into the region in the form of loans (see the previous section). The stock of net claims on Asia has stabilised since end-2000, as gross claims on the region have risen along with gross liabilities. As of the fourth quarter of 2005, residents of Asia-Pacific, Hong Kong and Singapore contributed a net $243 billion in funds to BIS reporting banks outside the region (Graph 2.5, centre panel). Although this amount is significant, residents of other offshore centres (primarily in the Caribbean) and oil-exporting countries in Africa and the Middle East are larger net contributors of funds to BIS reporting banks.

Asia's surplus channelled by banks in Hong Kong and Singapore

Banks in Hong Kong and Singapore play an important role in the channelling of funds to and from Asia-Pacific. Prior to the Asian crisis, banks in these financial centres were a conduit through which residents of the developed economies transferred funds to the emerging economies in Asia-Pacific (Graph 2.6, left-hand panel). This net flow has reversed since the crisis; banks in these centres have routed funds from residents of Asia-Pacific, Hong Kong and Singapore to residents of the United States, the United Kingdom and the euro area. Total claims on borrowers in these areas grew to $373 billion by end-2005, more than double the level at end-1998. At the same time, their claims on residents of Japan fell from over $600 billion in mid-1995 to roughly $148 billion at end-2005.

[9] This calculation excludes liabilities to the region reported by banks in Hong Kong, India, Korea, Singapore and Taiwan.

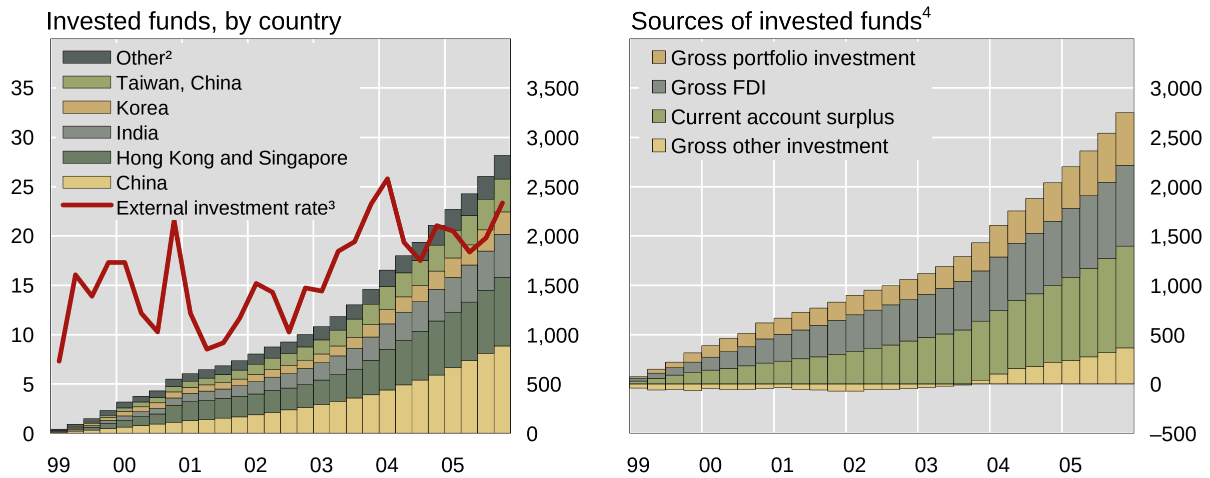
Tracking Asia's foreign investment

What appear to be large changes in BIS reporting banks' deposit liabilities actually account for a rather small share of Asia's total investment abroad. One measure of a country's total foreign financial investment – or "invested funds" – is the change in its total reserves plus gross financial outflows (ie foreign direct investment (FDI) abroad and gross portfolio and other investment).[10] Total invested funds, cumulated over 1999–2005 and across the major Asian countries,[11] are estimated to have been roughly $2.8 trillion (Graph 2.7, left-hand panel). At the same time, Asia's external financial investment rate, measured as the ratio of invested funds to total gross funds received,[12] has risen in recent years, to almost 20% from 10–15% in 2002, indicating that gross financial inflows to the region have outpaced spending on imports.[13]

Reserve accumulation drives invested funds …

Invested funds, by definition, show up as claims on the rest of the world, through purchases of foreign securities (debt and equity), FDI abroad or deposits in foreign banks. The left-hand panel of Graph 2.8 decomposes Asia's

Asia's invested funds[1]



[1] Change in reserves plus gross portfolio investment, FDI and other investment, cumulated since end-1998; in billions of US dollars. [2] Indonesia, Malaysia, the Philippines and Thailand. [3] Calculated as the ratio of invested funds to total gross external funds received, comprising total export and other foreign income plus gross financial inflows; aggregate for all Asian countries. [4] Breakdown of financial flows to Asia.

Sources: IMF; BIS calculations. Graph 2.7

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10 Alternatively, the balance of payments identity implies that invested funds is the sum of current account surpluses and gross financial inflows. Some items in the balance of payments data for some countries are not available, and are estimated by extrapolating from earlier periods. This analysis does not include derivative assets and liabilities.

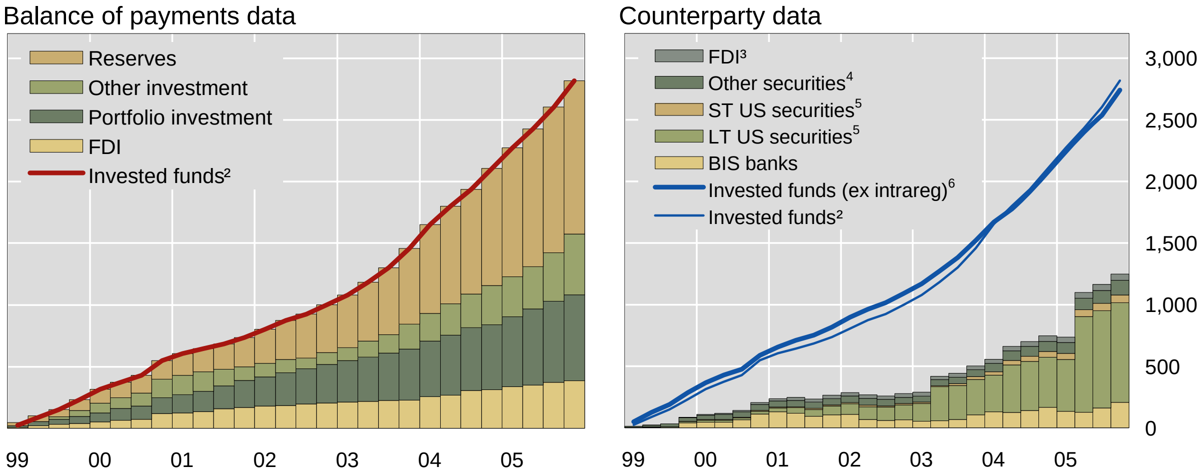
11 For the purposes of this exercise, the major Asian countries are taken to be China, Hong Kong, India, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan and Thailand.

12 Total funds received is the sum of gross income on the current account (gross exports of goods and services, gross income on investment abroad and gross current transfers from abroad) and gross financial liability flows on the financial account (inward FDI and gross portfolio and other investment liabilities).

13 There is considerable heterogeneity across countries. Korea's external investment rate has averaged 13% since end-1998, while China's and India's have been higher at 22% and 43% respectively.

Tracking Asia's invested funds[1]

Cumulative flows since 1998 Q1



[1] From China, Hong Kong SAR, India, Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan (China) and Thailand. [2] Defined as the sum of the changes in reserves, FDI abroad and gross portfolio and other investment. [3] Cumulative FDI into Australia, France, Germany, Japan, New Zealand, Switzerland, the Netherlands, the United Kingdom and the United States. Data for 2004 and 2005 are partly estimated. [4] Cumulative portfolio investment in Germany and Japan. [5] Estimated from US TIC data. [6] Invested funds excluding intraregional flows through banks in Hong Kong SAR, India, Korea, Singapore and Taiwan (China).

Sources: Bank of Japan; US Treasury; IMF; UNCTAD; BIS. Graph 2.8

estimated invested funds into the change in foreign exchange reserves and the various components of the financial account, as dictated by the balance of payments identity. By far, official investment has been the major component of these countries' invested funds. Reserve accumulation has accounted for 44% of the total cumulative invested funds since end-1998. This is primarily accounted for by China, although reserve accumulation has been the major factor behind the rise in Korea's and Taiwan's invested funds as well.

Ideally, intraregional investment should be removed from the estimate of invested funds for the region as a whole, so as to better approximate gross financial investment elsewhere in the world. Unfortunately, comprehensive data on intraregional portfolio and FDI flows are not available. However, the BIS banking statistics can be used to identify the portion of intraregional invested funds which flows through the region's banking system. The thick blue line in the right-hand panel of Graph 2.8 gives the estimate of invested funds from the region after stripping out intraregional flows reported by banks in Hong Kong, India, Korea, Singapore and Taiwan.[14] Intraregional banking flows, cumulated between end-1998 and the first quarter of 2004, were actually negative, reflecting reduced lending to the region from banks in Hong Kong and Singapore in the wake of the Asian crisis. Since mid-2004, this figure has turned positive as lending to the region resumed. Thus, invested funds *net of intraregional banking flows* cumulated up to early 2004 were actually somewhat larger – by about $90 billion in 2002 – than the estimate implied by the balance of payments statistics alone.

[14] For banks located in these five reporting countries, cumulative claim flows to the rest of the region are subtracted from these countries' invested funds. Similarly, these banks' cumulative liability flows from other countries in the region are also removed.

The remainder of the right-hand panel of Graph 2.8, which splices various sources of *counterparty* data, provides some indication of where Asia's invested funds have gone. These counterparty data comprise estimated portfolio investment in Japan and the United States, FDI in the United States and other developed countries, and deposits placed in BIS reporting banks worldwide.[15] Combined, these data can account for almost 46%, or $1.25 trillion, of Asia's invested funds (net of intraregional banking flows) cumulated since end-1998.

... which are channelled into US securities ...

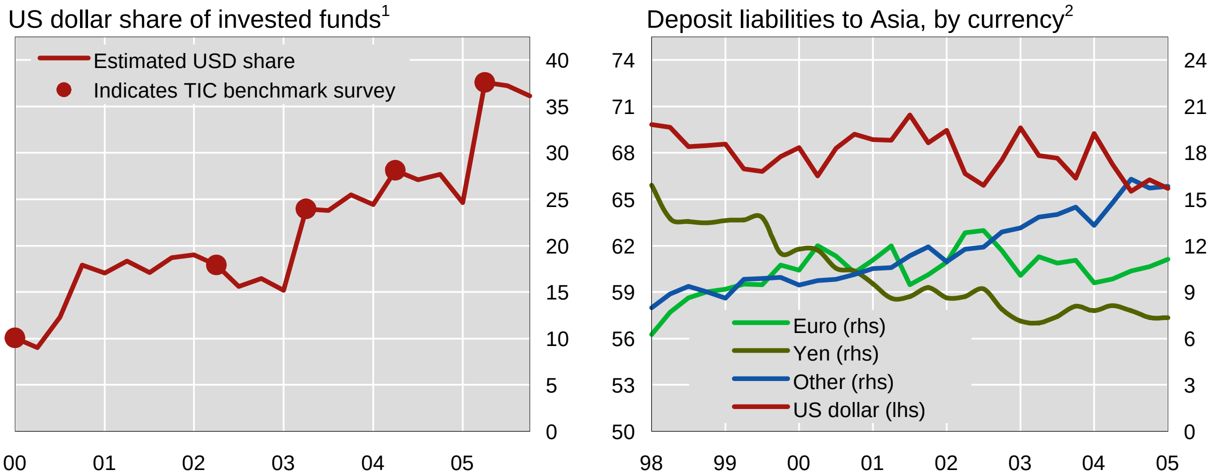
The bulk of Asia's *identified* invested funds have been channelled into US securities. Accumulation of US short-term and long-term securities by residents of these countries since end-1998 totalled an estimated $871 billion, or 32% of their invested funds. In contrast, a relatively small share of their invested funds has been channelled into BIS reporting banks. Deposits placed in these banks had accounted for as much as 20% of invested funds cumulated between end-1998 and the first quarter of 2001, but this ratio fell to less than 10% by end-2005.

... pushing up the estimated US dollar share of cumulative investment

The BIS banking statistics combined with the US TIC data and FDI data provide an estimate of the US dollar share of Asia's cumulative invested funds. This estimate is, at best, a lower bound since Asian investors can acquire US dollar-denominated securities that are not picked up in these data. As shown in

Currency composition of Asia's foreign investment

In per cent



[1] Sum of Asia's cumulative investment (since end-1998) in long-term and short-term US securities, FDI into the United States and US dollar-denominated deposits placed in BIS reporting banks outside the region, as a percentage of total invested funds. [2] Currency share of BIS reporting banks' total deposit liabilities to Asia at constant end-2005 exchange rates.

Graph 2.9

[15] The estimate of investment in US securities is constructed by using the TIC transactions data and the total holdings of long-term and short-term securities reported in the benchmark surveys. For long-term securities, the total stock of holdings by the major Asian countries is first estimated by taking the holdings as of the benchmark surveys, and tracking changes through time using the cumulative net purchases from the transactions data. Cumulative investment is then generated by subtracting the stock of holdings of long-term securities at end-1998. The stock of holdings of short-term securities is estimated assuming a value of 0 for 1985 and then interpolating between the benchmark survey dates. Cumulative investment in short-term securities since 1998 is then generated by subtracting the estimated holdings at end-1998.

the left-hand panel of Graph 2.9, by end-2005 almost 40% of Asia's invested funds cumulated since end-1998 had been invested in US dollar assets, up from around 20% in 2002.[16] Over this same period, the US dollar share of the stock of Asia's deposits placed in BIS reporting banks has remained fairly constant, fluctuating between 65 and 70% since end-1998 (Graph 2.9, right-hand panel). In contrast, the share of yen-denominated deposits fell from around 15% at end-1998 to 7% at end-2005.

[16] The dots in the left-hand panel of Graph 2.9 indicate the dates of benchmark TIC surveys. These surveys attempt to reallocate holdings of US securities purchased via third-party accounts back to the residence of the original purchaser, and thus lead to discrete changes in the estimated holdings of US securities.

Searching for yield in emerging markets: evidence from the issuance spreads of loans and bonds

Blaise Gadanecz

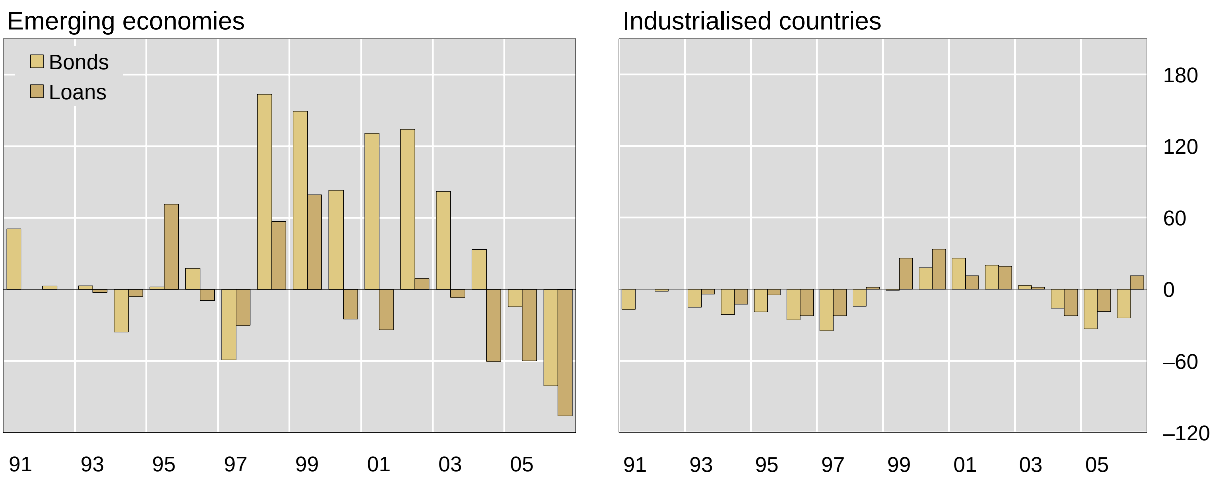
During periods of low yields and interest rates, investors have often lent to non-investment grade borrowers and to emerging markets in search of higher returns. Syndicated lending to and bond issuance by emerging markets reached record highs in 2005 ($200 billion and $231 billion, respectively). Has increased risk appetite on the part of investors lowered spreads more than improving fundamentals would have suggested? This box offers an empirical framework for analysing the pricing of loans and bonds at issuance, and concludes that primary market issuance spreads of emerging market borrowers have moved well below the levels that would have been predicted by fundamental factors, consistent with an increased appetite for risk.

We gauge the role of risk appetite by comparing actual primary loan and bond spreads with those predicted by a regression model① which expresses spreads as a function of the level of short-term interest rates at the time of signing, the borrower's credit rating, and micro-characteristics of the individual facilities.②

The graph shows yearly average differences (weighed by facility sizes) between observed and predicted loan and bond spreads. Spreads were below predicted levels in both emerging markets and industrial economies in 2004 and 2005.③ In the first quarter of 2006, while actual spreads moved above predicted spreads in industrialised countries, perhaps an indicator of a turning of the credit cycle there, emerging market spreads moved further below predicted ones on average by about 100 basis points. The negative residuals observed in emerging markets in the latest quarter, most pronounced for Asia and eastern Europe,④ are more sizeable than those experienced at the time of the previous strongest compression of spreads in 1997.

Pricing of risk in syndicated loan and bond markets

Average pricing differences[1]



[1] Facility size-weighted averages of differences (in basis points) between actual (bond or loan) spreads and those implied by the regression model. A negative number indicates that market spreads are lower than model-implied spreads. For 2006, Q1 data only.

Sources: Dealogic Loanware; BIS.

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① See *BIS Annual Report*, 2005, page 132, for a discussion of the methodology and an analysis of the worldwide results up to the first quarter of 2005. For a discussion of the various determinants of emerging market syndicated loan spreads, see, for example, Y Altunbaş and B Gadanecz, "Developing country economic structure and the pricing of syndicated credits", *BIS Working Papers*, no 132, Basel, July 2003. ② The predictions are in-sample, based on regressions estimated over the period 1991–2006 for bonds and 1993–2006 for loans. A number of factors, discussed in the literature, have been controlled for in the regression analysis: facility size, maturity, guarantees and collateral, currency risk (currency of the facility different from the borrower's home currency), borrower rating, and short-term interest rates at the time of signing. The adjusted R^2 values obtained for bonds and loans are 0.60 and 0.53, respectively. ③ Deviations of the actual from the predicted spreads have been significantly (about five times) higher for emerging market borrowers than for industrialised country borrowers since 1991. Residuals for emerging markets are also higher if normalised by the means and standard deviations of the observed spreads, to control for spread volatilities that differ between industrialised and emerging economies. ④ The negative deviation is more pronounced for loans, possibly because of the greater potential of market discipline to bring spreads closer in line with fundamentals in the case of bonds.

Developments in the syndicated loan market in the first quarter of 2006

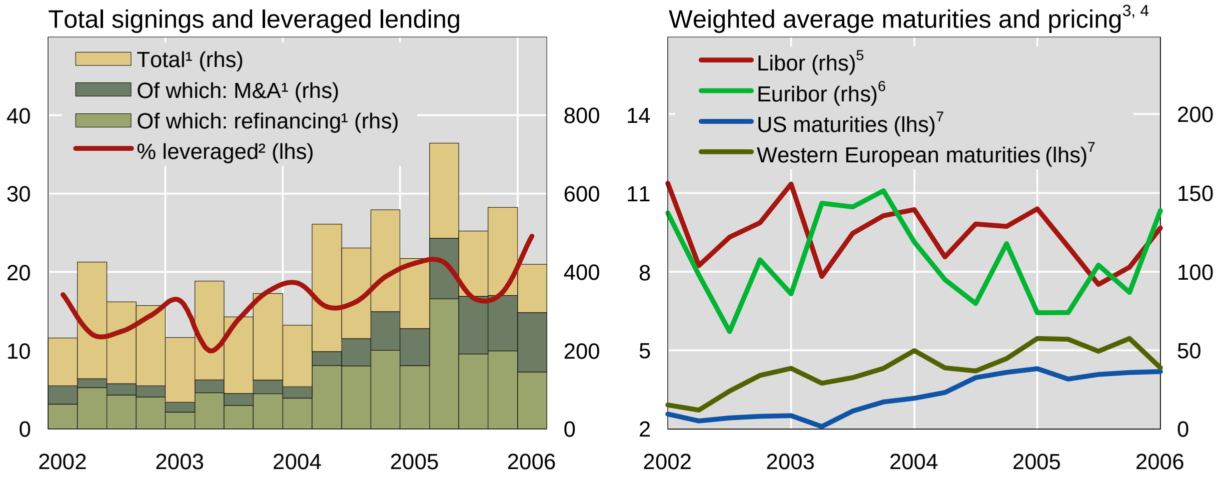
Activity in the international market for syndicated credits was subdued in the first quarter of 2006. Signings of new facilities totalled $418 billion, representing a 26% drop from the previous quarter but roughly in line with activity in the first quarter of 2005 (–3%). Volumes are usually low in the first quarter of each year; on a seasonally adjusted basis, signings in fact rose by 3%. The first quarter of 2006 was marked by an increase in primary spreads in Europe and the United States, and buoyant activity in the leveraged loan and M&A segments.

In industrialised countries, there was a widening of spreads across the credit quality spectrum for both European and US borrowers, as well as a reduction in European maturities. This might have reflected the first signals of a possible turn in the credit cycle. Meanwhile, there was record activity in the leveraged and merger-related segments, arguably boosted by demand for leveraged loans from investors in collateralised loan obligations. The share in global lending of leveraged and highly leveraged[①] facilities, often bearing no covenants or guarantees, rose to a record high of 25% (see graph). Average Libor spreads on such facilities signed by US borrowers were relatively low compared to previous quarters, at 230 basis points, but Euribor spreads on European leveraged/highly leveraged facilities peaked at 350 basis points. There was an exceptionally high percentage of LBO- and merger-related loans (9% and 36% of the total, respectively, based on the facility amounts), with the health care and telecoms[②] sectors especially active. Meanwhile, the share of refinancing deals fell to 34%. Average Libor spreads on M&A-related deals secured by industrialised country entities fell to 129 basis points.

Signings by Japanese entities reached a new high, possibly boosted by increased turnover on the secondary market. New facilities totalling $18 billion were concluded, although close to $9 billion of that went to a US subsidiary of Toyota and was arranged on the US market.

Lending to emerging market borrowers was consistent with previous first quarter volumes. The pricing of these loans was low, even after controlling for their riskiness (see the empirical analysis above). Signings totalled $27 billion and activity was concentrated in Asia and eastern Europe. Russian and Indian banks, and Russian and Korean gas and oil firms, were especially active. Taiwanese LCD manufacturers obtained $1.8 billion to build factories. Lukoil of Russia rolled over $2.1 billion. Lending to Latin American borrowers was low, at $1.7 billion.

Signings of international syndicated credit facilities



[1] In billions of US dollars. [2] Including highly leveraged. [3] Weighted by facility size. [4] Spreads plus fees. [5] US dollar-denominated facilities with Libor pricing granted to US borrowers, in basis points. [6] Euro-denominated facilities with Euribor pricing granted to western European borrowers, in basis points. [7] In years.

Sources: Dealogic Loanware; BIS.

[①] Granted to borrowers with high debt/equity ratios – typically above 1 – or resulting in high ratios for them. [②] Only two tranches, worth $8 billion in total, of the $21 billion merger-related loan arranged for Time Warner Inc were included in the statistics compiled by the BIS, as the rest was a 100% vote amendment (a restatement of an existing facility on new conditions, not covered by the methodology). Not yet incorporated into the BIS data was the unsigned €32 billion facility for E.ON, the German energy utility, to finance the purchase of Endesa.

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3. The international debt securities market

Gross issuance of bonds and notes in international debt securities markets increased by 24% in the first quarter of 2006, to $1,221 billion (Table 3.1). This represented a historical peak, suggesting that access to international credit markets remained easy for borrowers and that financing conditions continued to be favourable. Important contributors to this growth during the first quarter were, from a geographical point of view, US entities and, from a sectoral perspective, corporate issuers. Although still small in comparison with other major industrialised economies, gross issuance by Japanese entities picked up markedly in the first quarter, reaching a level close to the previous historical peak. Gross issuance in emerging markets continued to grow at a brisk pace, increasing by 19% in the first quarter, as emerging market borrowers took advantage of persistently narrowing spreads.

Global net issuance of bonds and notes rose by 9% in the first quarter, to $622 billion, the highest level ever recorded (Table 3.2). On an annual basis, the increase was 25% globally, with the Unites States and emerging markets posting particularly strong year-on-year growth rates of 126% and 45% respectively. Net issuance of bonds and notes also grew markedly among Japanese borrowers, totalling $10.7 billion in the first quarter – more than the total combined amount during the previous six quarters. Euro area net issuance grew by a more modest 4%. However, this still implied a very high level of activity, given that the last quarter of 2005 had been a strong one.

Strong US issuance

Brisk pace of US issuance as financing conditions remain favourable

Despite an unusually busy fourth quarter among US borrowers (see the March 2006 *BIS Quarterly Review*), the first quarter of 2006 displayed a 34% increase in US gross issuance of international bonds and notes, bringing it to a level of $327 billion. Net issuance also surged, by 25% to $144 billion. These growth rates were high even after seasonal adjustment. Contributing to the strong activity may have been a desire among borrowers to lock in comparably cheap finance ahead of expected increases in interest rates, in an environment where global liquidity remained abundant.

The agencies remain important players in the US market

As in recent periods, the agencies played a dominant role among US issuers of international bonds and notes, accounting for 28% of US gross borrowing. However, in contrast to the recent past, there was no sharp

Gross issuance in the international bond and note markets In billions of US dollars							
	2004	2005	2005				2006
	Year	Year	Q1	Q2	Q3	Q4	Q1
Total announced issues	3,289.0	3,839.4	1,077.3	978.7	798.0	985.5	1,220.8
Bonds	1,779.5	2,045.4	596.6	516.7	434.1	498.1	704.8
Notes	1,509.5	1,794.0	480.7	462.0	363.9	487.4	516.0
Floating rate	1,248.9	1,465.2	335.2	411.8	273.5	444.6	444.1
Straight fixed rate	1,982.8	2,331.6	725.5	560.4	518.0	527.7	759.8
Equity-related[1]	57.3	42.7	16.5	6.5	6.5	13.1	16.8
US dollar	1,146.1	1,318.1	315.5	300.2	328.7	373.8	455.1
Euro	1,595.7	1,838.3	568.9	533.7	307.1	428.5	567.4
Yen	111.2	114.6	30.6	27.0	30.7	26.3	24.6
Other currencies	436.0	568.5	162.3	117.9	131.5	156.8	173.7
Developed countries	3,001.5	3,453.5	954.5	888.1	708.5	902.5	1,117.8
United States	772.4	836.7	214.6	169.1	209.1	243.9	327.0
Euro area	1,471.6	1,796.7	534.6	520.4	297.7	444.0	544.9
Japan	62.0	53.7	13.8	12.4	17.2	10.3	23.9
Offshore centres	38.7	50.2	11.2	13.3	12.6	13.0	10.2
Emerging markets	151.7	229.8	83.3	49.1	47.2	50.2	59.6
Financial institutions	2,678.4	3,176.9	842.1	814.6	684.0	836.1	978.6
Private	2,273.6	2,748.8	696.6	682.2	612.5	757.6	865.0
Public	404.8	428.0	145.5	132.5	71.6	78.5	113.6
Corporate issuers	269.8	233.5	51.9	56.6	48.2	76.8	117.6
Private	232.6	203.1	48.5	44.2	40.2	70.1	113.6
Public	37.1	30.4	3.4	12.4	7.9	6.6	4.0
Governments	243.8	323.2	155.0	79.3	36.1	52.8	91.4
International organisations	97.0	106.0	28.3	28.2	29.7	19.8	33.1
Completed issues	3,292.6	3,826.1	1,017.0	1,021.2	775.5	1,012.3	1,148.6
Memo: Repayments	*1,747.2*	*2,005.6*	*521.3*	*512.6*	*531.4*	*440.3*	*526.4*

[1] Convertible bonds and bonds with equity warrants.

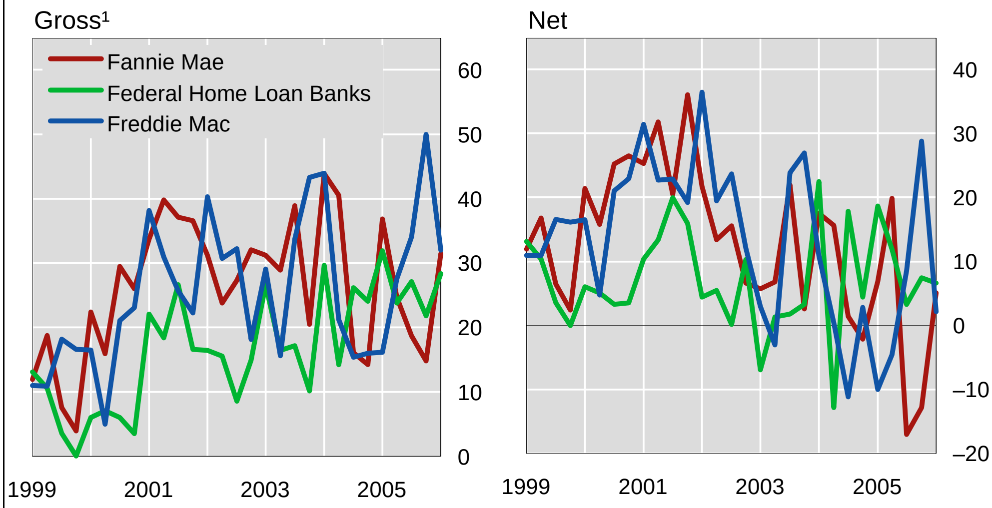
Sources: Dealogic; Euroclear; ISMA; Thomson Financial Securities Data; BIS. Table 3.1

divergence across the agencies: Freddie Mac issued international bonds and notes worth $32 billion, while for Fannie Mae the amount totalled $31 billion (Graph 3.1). Albeit similar in dollar terms, these figures implied a 36% drop for Freddie Mac but a 112% increase for Fannie Mae compared to the previous quarter. A similar pattern was evident in terms of net issuance, which for Freddie Mac fell by 92% to $2.2 billion, while in the case of Fannie Mae it rose from –$12.8 billion to $5.1 billion. The return of Fannie Mae as a net borrower in the first quarter came as its capital surplus continued to grow beyond the level required by the Office of Federal Housing Enterprise Oversight (OFHEO).

The agencies made several further very large deals in the first quarter of 2006. For example, Freddie Mac issued three medium-term notes with a face value of $5 billion each and one note valued at $4 billion. In the case of Fannie

US agencies' issuance of international bonds and notes

In billions of US dollars



[1] Announced issuance.

Sources: Dealogic; Euroclear; ISMA; Thomson Financial Securities Data; BIS. Graph 3.1

Mae, the first quarter rise in borrowing also went hand in hand with an increase in the number of transactions.

Main features of net issuance in the international bond and note markets

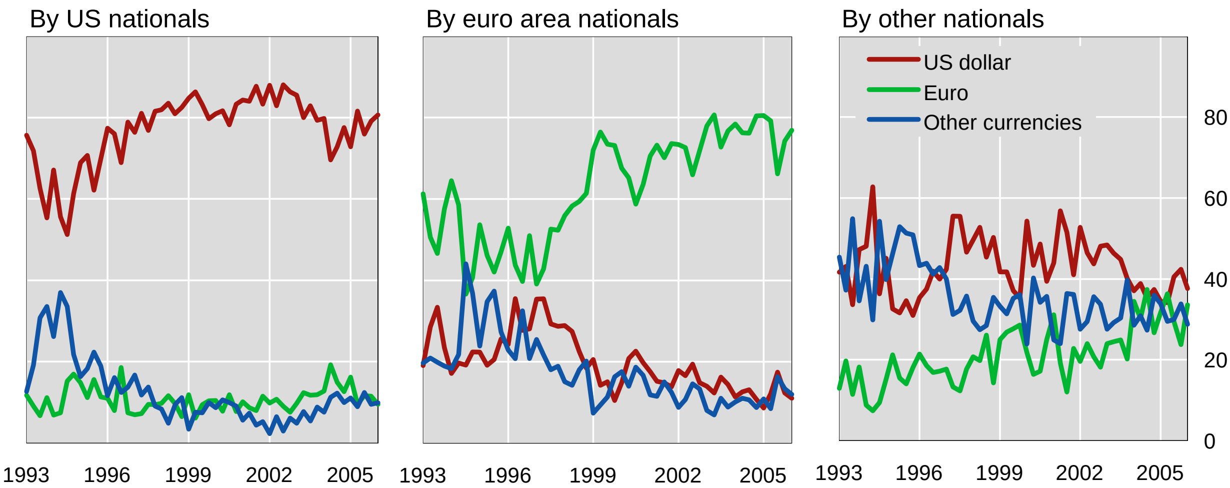
In billions of US dollars

	2004	2005	2005				2006	Stocks at end-Mar 2006
	Year	Year	Q1	Q2	Q3	Q4	Q1	
Total net issues	1,545.4	1,820.5	495.7	508.6	244.1	572.1	622.2	14,778.0
Floating rate	629.0	672.7	98.4	242.1	44.9	287.3	240.2	4,264.3
Straight fixed rate	922.6	1,167.4	399.5	271.6	207.7	288.6	379.9	10,185.6
Equity-related	–6.2	–19.6	–2.2	–5.1	–8.5	–3.8	2.0	328.1
Developed countries	1,427.8	1,671.8	461.7	475.9	199.6	534.6	569.9	13,153.8
United States	224.4	273.9	64.0	48.9	45.4	115.6	144.4	3,602.2
Euro area	781.0	943.9	285.4	317.7	55.8	285.1	295.2	6,528.0
Japan	17.4	5.9	4.8	–3.2	3.1	1.3	10.7	273.2
Offshore centres	19.0	26.9	2.8	8.4	8.8	6.9	5.2	179.3
Emerging markets	75.8	94.0	29.2	15.0	17.8	32.0	42.4	902.7
Financial institutions	1,298.8	1,584.0	394.8	446.1	230.2	512.9	495.2	11,135.4
Private	1,089.6	1,393.4	318.1	369.1	219.6	486.6	445.8	9,502.8
Public	209.2	190.5	76.7	76.9	10.7	26.3	49.4	1,632.6
Corporate issuers	73.6	58.3	7.8	13.6	–3.4	40.3	62.3	1,587.0
Private	55.8	57.2	15.9	6.7	–5.0	39.6	61.8	1,354.5
Public	17.8	1.1	–8.1	6.8	1.6	0.8	0.5	232.5
Governments	150.2	150.4	91.1	39.7	–0.7	20.3	60.0	1,513.5
International organisations	22.8	27.8	2.0	9.3	17.9	–1.4	4.7	542.1

Sources: Dealogic; Euroclear; ISMA; Thomson Financial Securities Data; BIS. Table 3.2

Currency shares in gross issuance of international bonds and notes

In per cent



Sources: Dealogic; Euroclear; ISMA; Thomson Financial Securities Data; BIS.

Graph 3.2

Despite some concerns among market participants about the risk of an adjustment in the US dollar, the share of dollar-denominated fund-raising in the international bond market changed little. The share of US dollar issuance by US entities rose slightly, from 79% to 81%, mainly at the expense of euro borrowing (Graph 3.2). However, among nationals from other countries, an opposite trend was evident. As a result, the total share of US dollar issuance in the international market for bonds and notes dropped only slightly, from 38% to 37%, whereas euro-denominated borrowing rose from 43% to 46%. Continuing a previous trend, the fraction of issues denominated in yen declined further, reaching its lowest value ever at 2%.

US dollar-denominated issuance steady amidst dollar adjustment concerns

Corporate borrowing surges

On the heels of a 59% increase in the last quarter of 2005, gross issuance of international bonds and notes by non-financial corporations climbed a further 53% in the first quarter of 2006, reaching its highest level ever at $118 billion. In net terms, non-financial corporate issuance posted similarly impressive gains, surging by 54% to $62 billion. This strength is noteworthy given past seasonal patterns, according to which first quarter net corporate borrowing typically is below average.[1] Contributing to the surge was heightened merger and acquisition (M&A) activity, as well as efforts by borrowers to lock in favourable rates.[2]

Record borrowing by corporates …

… as M&A activity intensifies

Several large deals were in evidence. These included the issuance of two $3 billion bonds by Cisco Systems (a five-year and a 10-year bond) and a $3 billion bond by Home Depot. Notable large transactions by non-US

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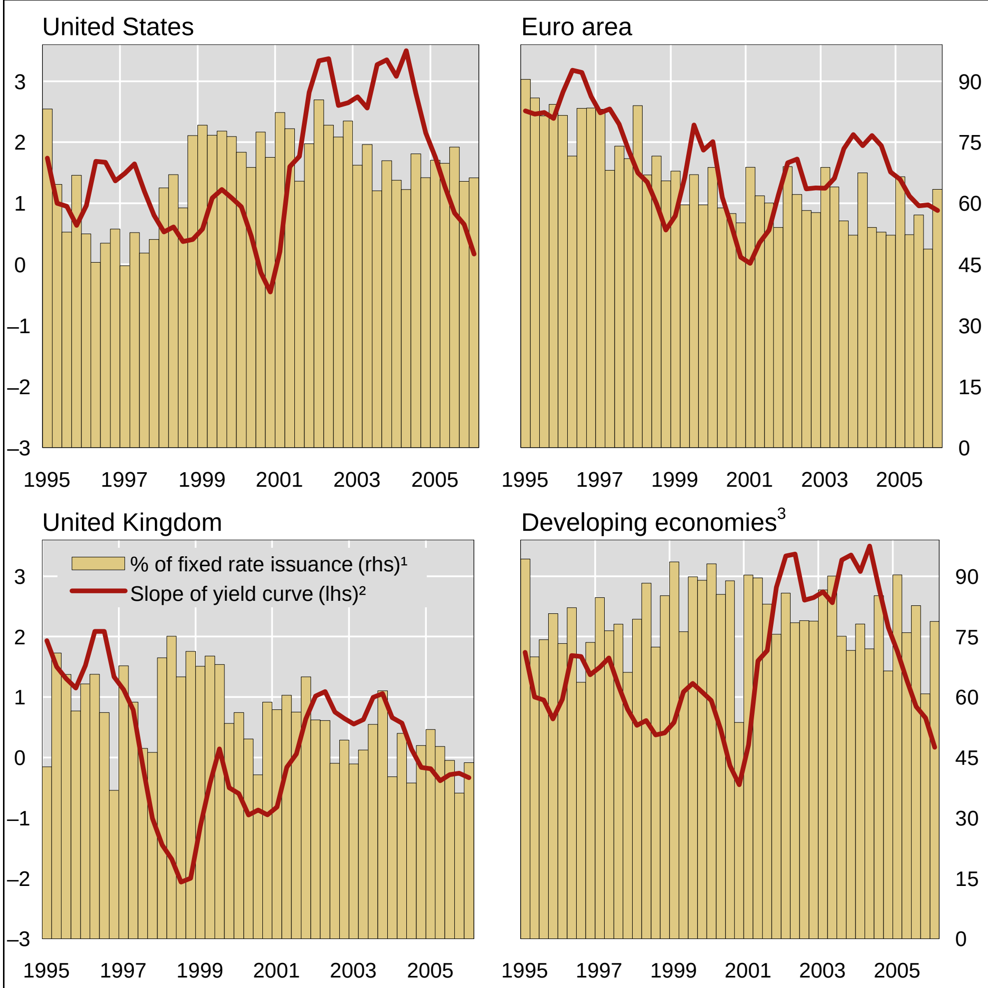
[1] See the box "Seasonality in international bond and note issuance" in the international debt securities section of the September 2005 *BIS Quarterly Review*.

[2] See the Overview in the March 2006 *BIS Quarterly Review*.

Fixed rate bond issuance and the slope of the yield curve

In per cent



¹ Announced issuance of international bonds and notes. ² Difference between 10-year and three-month government bond yields. ³ Slope of yield curve based on US Treasury yields.

Sources: Dealogic; Euroclear; ISMA; Thomson Financial Securities Data; BIS. Graph 3.3

borrowers included that by Telefónica Emisiones of Spain, which issued a four-tranche medium-term note denominated in euros and sterling with a face value equivalent to $7 billion. Perhaps indicative of the role of M&A activity in corporate bond issuance, the Telefónica deal was part of an ongoing programme to raise €15 billion of debt in order to refinance part of the company's £17.8 billion acquisition of British telecoms operator O_2. More generally, high-tech corporations in the telecoms and computer sectors were active in the international market, with a handful of companies involved in transactions exceeding $1 billion each, for a total of almost $30 billion.

Continued robust euro area activity

Euro area issuance remains strong …

Gross issuance of international bonds and notes by euro area entities increased by 23% in the first quarter, bringing it to $545 billion. In net terms, euro area borrowing grew by 4% to $295 billion. This strong activity took place in an environment where market expectations of ECB rate increases intensified and the flattening of the euro area yield curve tapered off. Against this background, it seems that euro area borrowers stepped up their efforts to secure cheap finance, as illustrated by the jump in the share of fixed rate bond issuance from 49% to 63%, although part of this increase may be attributable to seasonal factors (Graph 3.3).

Among individual countries, Germany accounted for the largest absolute increase in gross issuance, $51 billion, followed by Spain (up $32 billion). A couple of very large public sector deals contributed to the surge in German issuance. KfW Bankengruppe, a state-owned German financial institution, and the Federal Republic of Germany each issued bonds with a face value of €5 billion during the first quarter. KfW issued a number of other debt securities in the international market during this period, with the total amount exceeding $21 billion, or around 40% of its 2006 borrowing target. Among Spanish borrowers, private entities accounted for the bulk of the activity, with four bond issues in excess of $3 billion each made by private banks. While financial institutions dominated the market among Spanish borrowers, a notable non-financial borrower was Telefónica Emisiones with its aforementioned $7 billion transaction.

… largely driven by German public sector borrowing …

… and Spanish private fund-raising

Pickup in Japanese issuance

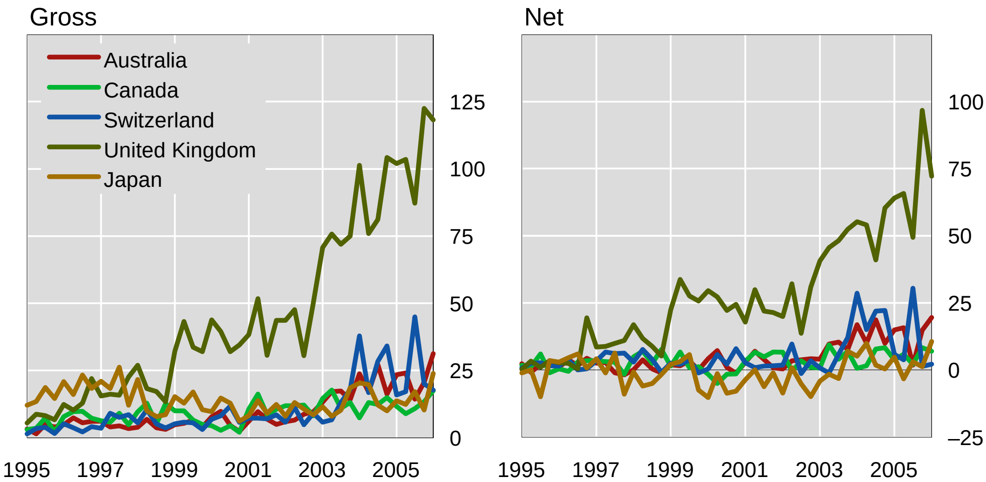
Following a period of very weak Japanese presence in the international bond and note market, both gross and net issuance picked up significantly in the first quarter of 2006. Compared to the previous quarter, gross borrowing increased by 133% to $23.9 billion, while net borrowing surged by a factor of eight to $10.7 billion (Graph 3.4). The pickup in Japanese issuance coincided with a period in which news about Japan's economy was mainly positive and the Bank of Japan announced the end of its policy of quantitative easing.

Japanese issuance rebounds as the economic outlook improves

As in previous quarters, financial institutions continued to account for almost all the activity, at 91% of gross issuance, with corporates making up the

International issuance by nationals of selected countries[1]

In billions of US dollars



[1] Gross announced and net issuance of bonds and notes.

Sources: Dealogic; Euroclear; ISMA; Thomson Financial Securities Data; BIS. Graph 3.4

remaining portion. Japanese financial institutions also completed a number of very sizeable deals, the largest of which raised a total of $4.2 billion. A notable transaction by a non-financial firm was the issuance of four convertible bonds at ¥50 billion each (total equivalent value $1.7 billion) by Keystone Capital Corporation, a finance vehicle of Fuji Photo Film Co. Perhaps illustrative of the revival in Japanese business investment, the proceeds of this deal were earmarked to increase Fuji's production capacity.

Japanese borrowers cut their yen financing …

… and turn to euro-denominated debt

At the same time as Japanese borrowers became more active in the international bond market, their share of yen-denominated borrowing dropped significantly, from 43% to 32% in the first quarter – close to the lowest levels seen in the past 10 years. Instead, Japanese borrowers turned increasingly to euro-denominated securities. This development might partially reflect changes in the relative strength of the euro vis-à-vis the yen, as issuance typically strengthens in currencies that appreciate.[3]

Among other developed economies, UK nationals reduced their borrowing somewhat following a particularly active fourth quarter (Graph 3.4). Australian borrowers were significantly more active in international bond markets, boosting their fund-raising by 51% in gross terms. An important factor behind this was a surge in issuance of residential mortgage-backed securities (RMBSs) by Australian banks, in an environment of declining spreads for such products. A number of very large deals of this type were concluded, including a $4.1 billion equivalent transaction by the Commonwealth Bank of Australia, through its financing vehicle.

High-yield borrowing rebounds

US borrowers behind rebound in high-yield segment

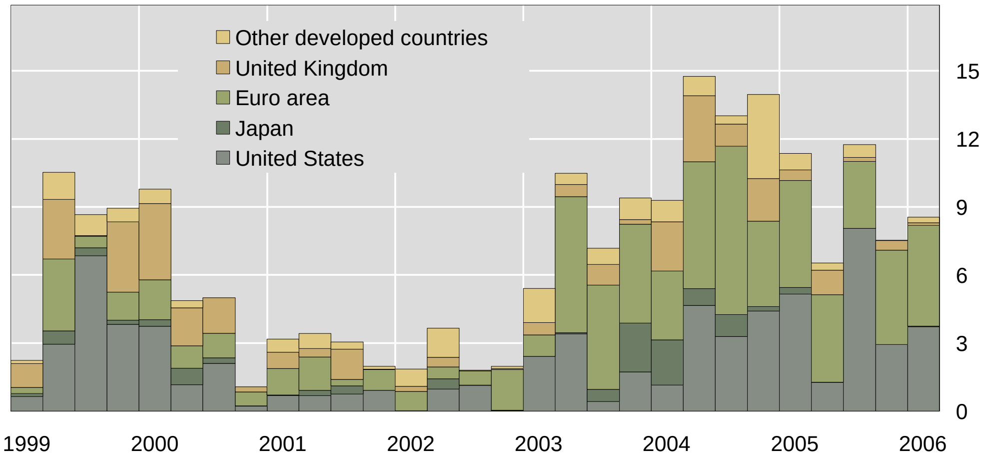
Gross issuance of high-yield international bonds and notes by borrowers in developed economies rose by 13% in the first quarter of 2006, following a decline in the previous quarter. This rebound was mainly the result of a 27% increase in borrowing by US non-investment grade borrowers (Graph 3.5). Elsewhere, high-yield issuance grew by 6% in the euro area but fell by 72% in the United Kingdom. After remaining absent for two consecutive quarters, Japanese borrowers returned to this segment, albeit in a modest way.

While the United States saw the largest increase in non-investment grade borrowing in the first quarter, euro area entities still accounted for more than 50% of the total amount issued in this segment. Notable deals were completed by Italian car maker Fiat, which issued a €1 billion bond, and by US-owned German cable TV operator Iesy Hessen GmbH, which brought €1.35 billion worth of floating rate notes to the market in order to refinance its debt.

[3] See the special feature "Currency choice in international bond issuance" by Benjamin H Cohen in the June 2005 *BIS Quarterly Review.*

Issuance of non-investment grade international bonds[1]

In billions of US dollars



[1] Issues rated BB+/Ba1 or lower.

Sources: Dealogic; BIS. Graph 3.5

Issuance in emerging market economies continues to rise

Emerging market issuance surges to record levels …

Last year's record-breaking issuance of international bonds and notes by emerging market borrowers was followed by continued robust activity in the first quarter of 2006. Gross emerging market borrowing rose by 19% compared to the last quarter of 2005, reaching a new high of just below $60 billion, while net borrowing jumped by 33% to $42 billion – also a record level (Graph 3.6).

… as the search for yield continues among investors

While improving fundamentals have underpinned this strength for some time, the recent brisk pace seems also to have been fuelled to some extent by the search for yield among international investors. Correspondingly, spreads on emerging market bonds reached new lows in the first quarter of 2006, whereas flows into mutual funds rose to record highs (see the Overview). The increasing risk appetite among investors may even have pushed emerging market spreads below levels that seem justified based on historical experience.[4]

Strong activity in emerging Europe, Africa and the Middle East …

Gross borrowing grew in all regions, with emerging Europe leading the field with a 39% gain. In net terms, the Africa and Middle East region posted the largest increase at 240%, reaching a total sum of $11.6 billion. Net borrowing also rose in emerging Europe and Asia-Pacific, but fell in Latin America.

… largely driven by government borrowing

From a sectoral perspective, governments accounted for the lion's share of the increase. Government borrowing fuelled gross issuance across all regions, especially in emerging Europe (+130%) and the Africa and Middle East region (+107%). While corporate borrowers also played an important role in the latter region, they scaled back their funding in emerging Europe and Asia. At the same time, financial institutions had little impact on overall financing trends in emerging markets.

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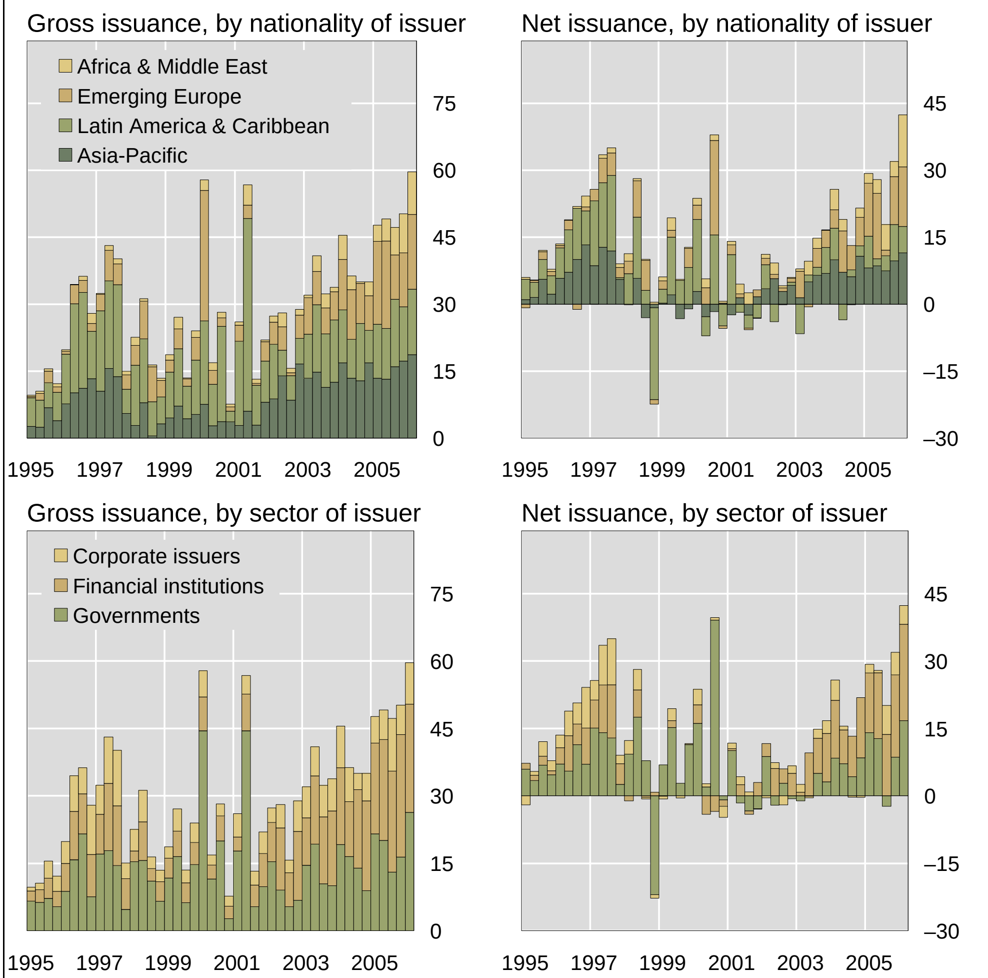
[4] See the Overview in the March 2006 *BIS Quarterly Review*.

International bond and note issuance by emerging market entities[1]

In billions of US dollars



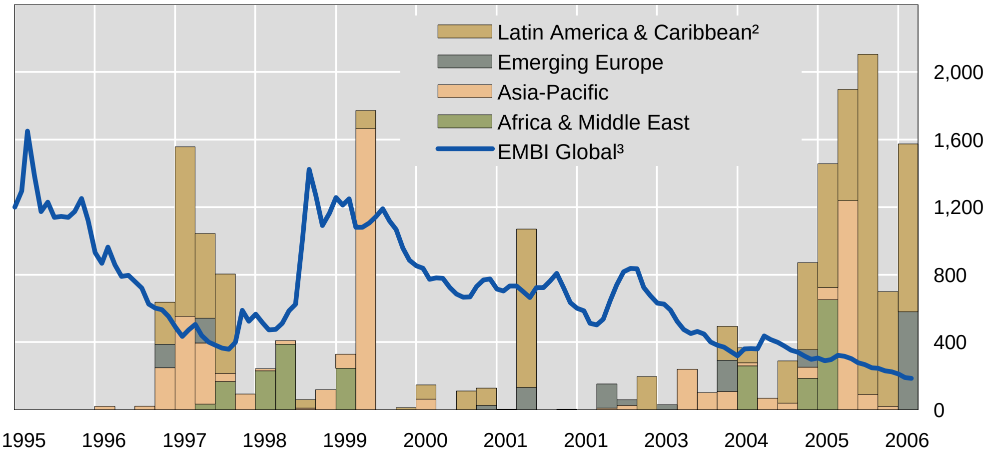
[1] Excluding issuance by the Argentine Republic in the first and second quarters of 2005.

Sources: Dealogic; Euroclear; ISMA; Thomson Financial Securities Data; BIS. Graph 3.6

Borrowing in the Africa and Middle East region was boosted by the restructuring of the debt of the Republic of Iraq, which brought a 22-year $2.7 billion US dollar-denominated bond to the market. As in many other regions, M&A activity contributed to increased borrowing during the first quarter. Teva Pharmaceutical Industries of Israel, for example, tapped the market for a total of $2.9 billion, in order to finance its acquisition of a US pharmaceutical firm.

Among emerging Europe borrowers, several large deals were concluded by governments. The Republic of Poland issued a 10-year €3 billion medium-term note, while the Republic of Hungary, the Slovak Republic and the Republic of Turkey each completed transactions in excess of $1 billion. Sovereign borrowers were also active in Latin America, with the United Mexican States issuing a $3 billion 11-year bond and the Federative Republic of Brazil a $1 billion 31-year bond, among others. Another notable presence in this region was Mexican oil company Pemex, which raised funds totalling $1.5 billion.

International debt securities issuance in local currency[1]



[1] Announced issuance by nationality of issuer, in millions of US dollars. [2] Excluding issuance by the Argentine Republic in the first quarter of 2005. [3] Adjusted for Argentina; monthly averages, in basis points.

Sources: Dealogic; Euroclear; ISMA; Thomson Financial Securities Data; BIS. Graph 3.7

Big deals by Indonesia and the Philippines …

The Republic of the Philippines and the Republic of Indonesia carried out the largest transactions from Asia. At the very beginning of the year – well ahead of the political tensions that would later surface – the Philippines issued a 25-year $1.5 billion bond and a 10-year €500 million bond at yields of 7.875% and 6.375% respectively. This represented two thirds of the Philippines' 2006 borrowing target in the international bond market. Indonesia brought two $1 billion bonds with maturities of 11 and 29.5 years to the market, in the midst of increasing political instability in Thailand and the Philippines. Despite these tensions in the region, the deal was successful, as evidenced by the pricing of the bonds and the fact that the issue was several times oversubscribed. The 11-year bond yielded 235 basis points above US Treasuries, while for the longer-maturity bond the spread was 264 basis points – around 140 basis points less than when Indonesia had issued 30-year debt in the last quarter of 2005. Contributing to this was strong demand from mutual funds, which bought over two thirds of the amounts offered.

… despite political tensions in the region

Emerging market borrowers turn to long-term financing in favourable conditions

The average maturity of international bonds and notes issued by emerging market entities rose significantly, increasing from 8.5 years in the previous quarter to 13.5 years. By contrast, in developed markets the average maturity fell slightly. The move among emerging market borrowers towards longer maturities was seen across all regions and types of borrower.[5] This could have reflected efforts to secure funds at favourable rates, as the likelihood of higher interest rates in developed markets as well as the risk of rising spreads may have been perceived as increasing. At the same time, it signalled a high demand for longer-dated emerging market paper among investors, pointing to a high appetite for risk.

[5] For a discussion on the extension of the maturity structure of government debt in Latin America, see the special feature "Domestic bond markets in Latin America: achievements and challenges" by Serge Jeanneau and Camilo Tovar in this *BIS Quarterly Review*.

Local currency issuance bounces back …

… as borrowers from emerging Europe return to this segment

Issuance of international debt securities in local currencies by emerging market entities rebounded in the first quarter of 2006, after a temporary lull in the previous quarter (Graph 3.7). The recovery in this market segment was due to a 46% increase in Latin American local currency borrowing, as well as the return of borrowers from emerging Europe to this segment after four consecutive quarters of absence. Overall, European entities raised $580 million worth of local currency denominated debt, with the bulk of this attributable to Russian special purpose vehicle Red Arrow International Leasing PLC's issuance of rouble-denominated debt amounting to $488 million, the proceeds of which would be used to acquire rolling stock to lease to Russian Railways. First quarter Latin American local currency borrowing was almost entirely due to Colombian peso financing by the Republic of Colombia, Mexican peso borrowing by Teléfonos de México SA de CV, and fund-raising in Brazilian reais by various Brazilian financial institutions.

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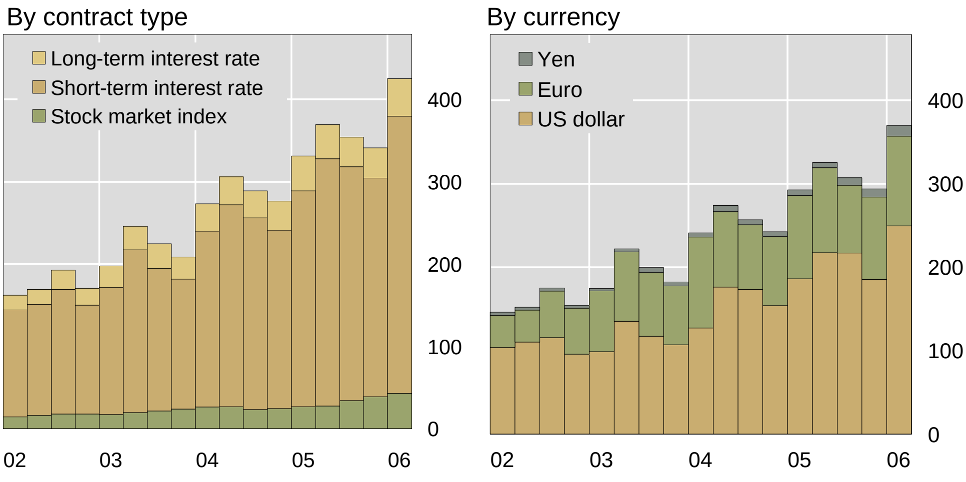
4. Derivatives markets

The pace of trading on the international derivatives exchanges quickened in the first quarter of 2006. Combined turnover measured in notional amounts of interest rate, equity index and currency contracts increased by one quarter to $429 trillion between January and March 2006 (Graph 4.1).[1] The year-on-year rate of growth rose to 28%, after 23% in the previous quarter, which indicates that the expansion in activity went considerably beyond the seasonal acceleration usually recorded in the first quarter.[2]

The increase in turnover was particularly strong in interest rate products (26%), as changing perceptions about the future course of monetary policy in the United States and Japan lifted activity in money market contracts in the dollar and yen. Turnover in derivatives on stock indices reached a record $43 trillion during January–March, up 11% from the previous three months.

Turnover of exchange-traded futures and options

Quarterly data, in trillions of US dollars



Sources: FOW TRADEdata; Futures Industry Association; BIS calculations. Graph 4.1

[1] All growth rates refer to quarter-on-quarter changes, unless otherwise stated.

[2] For data on the volume of over-the-counter derivatives outstanding at end-2005, see the BIS semiannual central bank survey (http://www.bis.org/press/p060519a.htm).

However, the increase was entirely due to valuation effects stemming from higher equity prices. Volumes increased sharply in derivatives on energy and non-precious metals, and were stable at high levels in contracts on precious metals. Growth in the market for credit default swaps (CDSs) remained strong in the second half of 2005, although it was lower than in the preceding six months.

Surge in interest rate contracts

Turnover in interest rate contracts rises ...

Changes in the outlook for monetary policy in the United States and Japan propelled trading in derivatives on short-term interest rates (Graph 4.2). This far outpaced the seasonal recovery usually recorded in the first quarter (see *BIS Quarterly Review*, March 2006, pp 45–6). At the long end of the yield curve, activity in derivatives on government bonds increased by approximately one quarter against the backdrop of rising yields in the major economies.

... as uncertainty about further Fed rate hikes increases

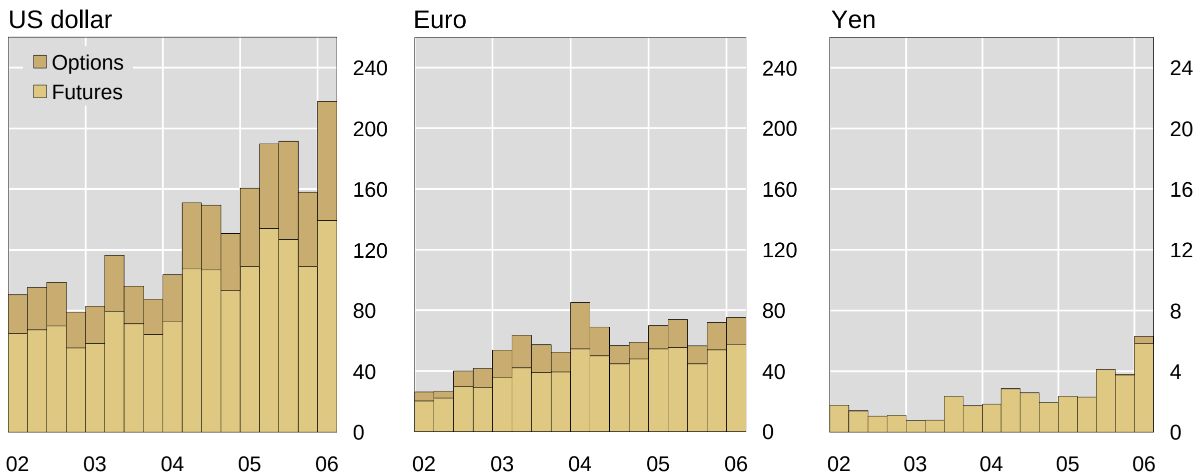
Uncertainty about Federal Reserve rate setting contributed to a 38% surge in trading in derivatives on short-term US interest rates. Turnover in futures and options on 30-day federal funds, which permit a more precise positioning on the timing of Fed decisions than the more heavily traded three-month eurodollar contracts, doubled to $36 trillion in the first quarter. Open interest in these contracts rose from $7 trillion at the end of 2005 to almost $12 trillion three months later. By contrast, trading volumes and open interest in derivatives on three-month eurodollar deposits went up by only one third to $166 trillion and $35 trillion respectively.

Prospect of rate increase boosts trading in yen contracts

The end of the policy of quantitative easing by the Bank of Japan and the prospect of the first rise in interest rates since 2001 led to a sharp increase in activity in money market contracts denominated in yen in February and March. Over the quarter as a whole, turnover in futures on three-month euroyen deposits rose by 55%, outpacing the growth in open interest (25%). This suggests that the increase in activity was at least in part related to more trading

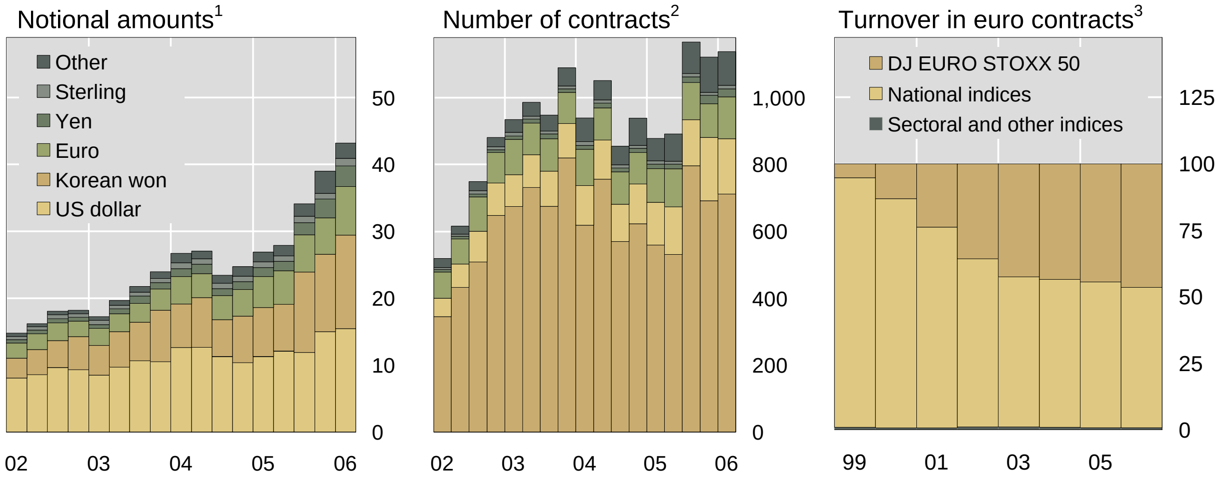
Turnover of short-term interest rate contracts

Quarterly contract turnover, in trillions of US dollars



Sources: FOW TRADEdata; Futures Industry Association; BIS calculations. Graph 4.2

Turnover of equity index contracts



[1] Quarterly turnover, in trillions of US dollars. [2] In millions. [3] In per cent; up to the first quarter of 2006.

Sources: FOW TRADEdata; Futures Industry Association; BIS calculations. Graph 4.3

on short-term price movements rather than long-term positioning or hedging. Trading in options on euroyen futures soared, expanding twelvefold, albeit from a low level.

The rise in trading in derivatives on short-term yen interest rates has to be viewed against the past evolution of that market. Turnover in three-month euroyen derivatives had peaked at $15 trillion in the first quarter of 1995 before declining to less than $1 trillion per quarter in the first half of 2003. This coincided with little trading in the cash market, as banks were able to obtain virtually any amount of liquidity directly from the Bank of Japan. Turnover recovered to $6 trillion in the first quarter of 2006, but remained well below the levels recorded a decade before.

Stable activity in derivatives on euro rates

The rapid increases in turnover of derivatives on short-term dollar and yen interest rates contrasted with more muted growth in euro-denominated contracts. Trading volumes in futures and options on three-month Euribor rose by 4% to $75 trillion in the first three months of 2006, roughly in line with the usual seasonal pattern. This came after busy trading in the previous quarter, which had seen the first rate hike by the ECB in two years.

Valuation effects drive turnover in equity index contracts

Rising stock prices drive up notional amounts of stock index derivatives

Turnover of stock index derivatives increased by 11% in terms of notional amounts to $43 trillion in the first three months of 2006, the highest level on record (Graph 4.3, left-hand panel). This was entirely due to valuation effects caused by rising stock prices; turnover measured by the number of contracts traded was almost unchanged from the previous quarter (Graph 4.3, centre panel).

The stagnation in worldwide activity hides substantial regional variations. Trading in futures and options on stock indices denominated in euros and sterling increased by approximately one third in dollar terms and by one quarter in terms of the number of contracts traded, reflecting the extent to which these markets outperformed those of other developed economies.

Trading in other major markets was more subdued. Turnover in the dollar market stagnated at $15 trillion (down 12% in terms of the number of contracts). In Korea, turnover increased by almost one quarter in dollar terms but was nearly flat as regards the number of contracts traded. Trading in derivatives on Japanese indices rose by 6% in dollar and fell by 2% in physical terms.

Country indices remain dominant in euro area

Contracts on country-level indices continued to dominate trading in equity index derivatives in the euro area, although their share fell to just over one half in the first quarter of 2006 as contracts on area-wide indices, mainly the EURO STOXX 50, gained ground (Graph 4.3, right-hand panel). Derivatives on sectoral indices, by contrast, continued to play only a marginal role, accounting for less than 1 % of total turnover in stock index products in the euro area.

The discrepancy between country and sectoral indices is particularly noteworthy if one considers that sectoral effects had dominated country effects in the prices of euro area equities in the initial years of the euro (see *BIS Quarterly Review*, March 2001, pp 13–14). While the share of sector products is in line with that in the United States, the ongoing relevance of derivatives on stock indices of member countries suggests that country factors continue to play a significant role in asset allocation in the euro area.

Surge in energy derivatives on geopolitical concerns

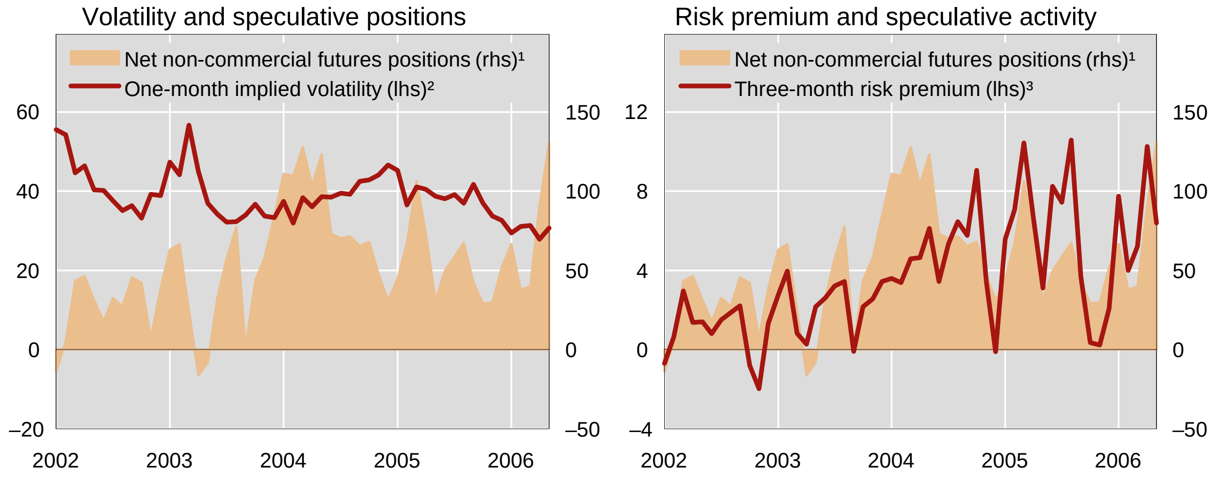
Soaring turnover in energy derivatives

Turnover in energy derivatives (measured by the number of contracts traded, since notional amounts are not available) expanded by almost 40% in the first quarter. The surge was mainly related to concerns about the impact of Iran's nuclear programme on oil markets as well as possible future bottlenecks in oil supply.

The increase in trading volumes was unevenly distributed across geographical regions. Trading was more active in North America and Europe, where volumes went up by 51% and 44% respectively, whereas turnover growth in other regions remained subdued. The rise in turnover coincided with an increase in open interest in energy futures and options by approximately 150% and 60% respectively. In the United States, data published by the US Commodity Futures Trading Commission (CFTC) showed that net long positions in futures and options on West Texas Intermediate crude oil by non-commercial users rose to 54,000 contracts at the end of March, from 24,000 in February. Buying pressure in oil futures was reflected in a substantial rise in risk premia in March (Graph 4.4, right-hand panel).[3] Such premia are calculated as the difference between futures prices and the consensus forecasts for spot prices at expiry of the respective contracts, and compensate the marginal investor for the risk of adverse price movements. The rise in these

3 For the estimation of the risk premia, see *BIS Quarterly Review*, December 2005, pp 50–51.

Risk premium and net non-commercial futures positions in oil derivatives



[1] In thousands of contracts of 1,000 barrels. [2] In per cent. [3] Three-month crude oil futures price less the consensus forecast for the price of West Texas Intermediate, in US dollars.

Sources: Bloomberg; Commodity Futures Trading Commission; © Consensus Economics; BIS calculations. Graph 4.4

premia to about $5 and $10 per barrel for three-month and 12-month contracts, respectively, could indicate that non-commercial users were willing to pay increasing amounts in order to obtain exposure to further rises in oil prices. It should be noted that high risk premia are not necessarily associated with high volatility. Indeed, implied volatility actually declined during the first quarter (Graph 4.4, left-hand panel), although it picked up more recently (see the Overview).

Buoyancy in derivatives on base metals …

… in contrast to stagnation in precious metals

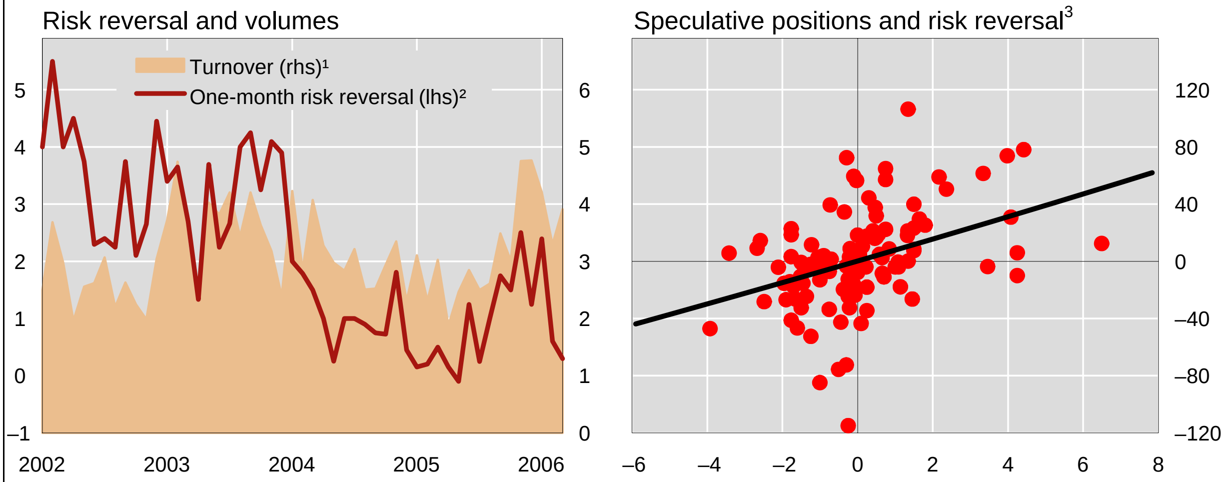
Activity in non-precious metals continued the upward trend recorded in 2005. Trading volumes were remarkably robust in Asia, where turnover expanded by more than 30%. Trading volumes of futures contracts on precious metals, by contrast, decreased slightly during the first quarter, after a substantial expansion in previous periods, while options turnover increased by 30%. In the case of futures on gold, the slowing in activity may be explained by changes in the outlook for gold prices, which appeared to become more uncertain during the first three months of the year. In addition, the declining price of risk reversals suggests that traders now perceive the risks of large price movements in either direction to be more balanced than previously, when they viewed the balance of risks to be positive. Both uncertainty and the price of risk reversals tend to be associated with weaker turnover in futures but not in options (see box on the next page).

Market sentiment and trading in gold derivatives

Turnover in futures and options on gold traded on the international derivatives exchanges declined by 9% in the first quarter of 2006. This fall coincided with rising volatility, which goes against the conventional wisdom that high volatilities are associated with more trading. At the same time, the distribution of future gold prices appears to have become less skewed, suggesting that market participants no longer perceive the upward potential for gold prices to be larger than the downward risks (see left-hand panel of graph). This box relates turnover and open interest in gold derivatives to implied volatility and to the price of risk reversals. Both indicators are often used to measure market sentiment, although strictly speaking they reflect investors' attitudes to risk as well as their outlook for prices. A risk reversal consists of a simultaneous purchase of an out-of-the-money call option and sale of an equally out-of-the-money put option, and its price indicates whether traders consider risks to be concentrated on the upside or on the downside. The results of the analysis suggest that both implied volatility and the price of risk reversals tend to influence turnover in gold futures but have little explanatory power for options activity.

There is little agreement on the link between the outlook for gold prices and trading. On the one hand, high volatility may increase the demand for protection, thus resulting in more trading. On the other hand, high volatility may reduce turnover because it increases the risks from taking positions. A highly skewed distribution of future spot prices may raise demand from both hedgers and speculative traders, as it affects the balance between the compensation received for taking risks and potential losses if prices move against them (see also left-hand panel of graph). Alternatively, a high skewness may indicate that market participants are concentrated on one side of the market. In that case, positions that are at odds with the prevailing market sentiment may be handed from one trader to another ("hot potato trading"), which may result in high trading volumes.

Trading and market sentiment



[1] In millions of contracts. [2] Difference between the 25% delta call and put option prices for contracts with a time to expiry of one month. [3] Changes in net positions of non-commercial investors against changes in the one-month risk reversal.

Sources: Commodity Futures Trading Commission; FOW TRADEdata; JPMorgan Chase; BIS calculations.

We test for the impact of market sentiment on activity in gold derivatives by regressing monthly changes in aggregate turnover and open interest on a constant, one lag of the activity measure, lagged uncertainty and a lagged measure for the skewness implied by option prices. Turnover is measured by the total number of contracts traded in each month on the New York Mercantile Exchange and the Tokyo Commodity Exchange, while open interest refers to the number of contracts outstanding at the end of each month. Uncertainty is proxied by implied volatility from at-the-money options, and skewness by the absolute price of risk reversals. Implied volatility and risk reversals were entered in the equation with the first lag in order to account for possible endogeneity between activity and the market sentiment indicators. The sample spans from January 2002 to March 2006, and the estimates are shown in the table.

Volatility, skewness and activity in gold derivatives

	Implied volatility[1]	Risk reversal[2, 3]	Adjusted R-squared
Turnover			
Futures	–4.53 (0.9)***	9.47 (2.9)**	0.36
Options	–1.61 (1.5)	2.67 (4.4)	0.04
Open interest			
Futures	–0.85 (0.4)**	1.49 (1.2)	0.04
Options	1.47 (0.9)	2.72 (3.3)	0.24

Note: Standard errors corrected for heteroskedasticity and serial correlation using the Newey-West method are shown in parentheses. *, ** and *** denote a coefficient statistically different from zero at the 10%, 5% and 1% confidence levels respectively. The estimation period is January 2002–March 2006.

[1] Calculated from the prices of at-the-money options with a time to expiry of one month. [2] The difference between out-of-the-money call and put option prices for contracts with a 25% delta. [3] In absolute values.

Sources: FOW TRADEdata; JPMorgan Chase; BIS calculations.

There appears to be a negative and statistically significant relationship between activity in gold futures and uncertainty, which is consistent with the result in Jeanneau and Micu (2003) for equity contracts.[①] By contrast, neither implied volatility nor risk reversals seem to affect option turnover in any significant way. This may be explained by the fact that the market for gold options is much less liquid than that for futures, which is also reflected in a more erratic behaviour of turnover. Open positions in futures are negatively related to uncertainty, while the relationship is not statistically significant in the case of options.

Turning to risk reversals, asymmetry of the future distribution of the gold price is associated with a significantly higher turnover in futures but not in options. This may be caused by high hedging demand or by "hot potato trading", although the fact that the price of risk reversals does not affect open interest in any statistically significant manner may suggest that the latter explanation may be more relevant.

[①] S Jeanneau and M Micu, "Volatility and derivatives turnover: a tenuous relationship", *BIS Quarterly Review*, March 2003, pp 57–65.

Slowing growth in credit default swap market

Buoyant activity in the CDS market

Growth in the market for credit default swaps (CDSs) remained vigorous in the second half of 2005, although it was lower than in the preceding six months. The notional amount of CDSs increased by one third to $14 trillion at the end of 2005, after a 60% rise in the previous period.[4] With credit spreads little changed, gross market values of CDSs increased by 31%, roughly in line with the rise in notional amounts.

Growth in single-name CDSs (40%) outpaced activity in multi-name contracts (21%), thus reversing the pattern recorded in the first half of 2005, when outstanding amounts of multi-name contracts had more than doubled. At the end of the year, notional amounts of single-name and multi-name CDSs stood at $10.2 trillion and $3.5 trillion respectively.

[4] The total notional amount outstanding is calculated as the sum of contracts bought and sold minus half of the sum of contracts bought and sold between reporting dealers.

Delphi bankruptcy revealed flaws in settlement process

Although the period between July and December 2005 saw a number of high-profile defaults, this did not have a notable *direct* effect on the volume of CDSs outstanding. Single-name CDSs expire after a credit event, but the volume of CDSs on any defaulting firm was too small to reduce the notional amounts of outstanding contracts significantly. None of the firms that defaulted during the second half of 2005 had featured among the top 25 reference entities during the previous year listed in the 2004 survey of credit derivatives by FitchRatings. The notional amount of *all* credit derivatives (not just CDSs) on Delphi, for example, was estimated to be just under $30 billion, less than one third of a percentage point of the notional amount of all CDSs, even though Delphi's bankruptcy was considered to be the most significant credit event of the period.

While the direct effects of the bankruptcies of Delphi and other firms were negligible, it is possible that fears of shortages of the debt available for delivery may have deterred some trading. Under certain circumstances, a shortage of deliverable debt can drive up the price of such paper beyond the level that might otherwise be justified by the expected size of repayment. In the case of Delphi, the settlement price of 63.5% (and an average CDS recovery price of 53.5%) was considerably higher than the settlement prices of other firms from the same sector or than rating agencies' estimates of the ultimate recovery rates on Delphi's debt.

Derivatives on recovery risk

The Delphi auction underlined the importance of recovery risk for pricing CDSs. Several products have emerged that permit investors to trade this risk separately from default risk (see box). The prices of such products could provide a benchmark against which deliverables could be priced following a credit event, perhaps leading to a more efficient settlement process.

Increased role of cash settlement

The fact that CDSs are usually settled by delivering debt of the reference entity rather than by cash can be explained by the historical evolution of this market. It started as a type of "insurance" against default but later evolved into a trading market, which is used to take trading positions as well as to hedge existing exposures. Following major credit events, it has become the norm to shift from physical delivery to cash settlement of multi-name contracts on an ad hoc basis, where the settlement price is determined in an auction of the reference entity's debt. While an industry initiative stipulating cash settlement for *index* contracts is under way, it is not yet clear how potential shortages of deliverables will be resolved for *single-name* CDSs, to which ad hoc protocols generally do not apply. Any solution to this problem may be hampered by conflicts of interest between traders, who probably prefer cash settlement, and investors with cash exposures to the reference entity, who prefer physical delivery.

Reduced confirmation backlogs

A shortcoming of the market concerns the large backlog in trade confirmations.[5] While there are signs that this problem is being addressed, it has not yet been fully solved. According to market sources, all major

[5] See *BIS Quarterly Review*, December 2005, pp 52–3.

Recovery rate products

Fixed recovery CDSs

In a standard CDS contract, the protection seller is exposed to recovery rate risk upon default of the reference entity in the contract. A fixed recovery CDS eliminates the uncertainty on the recovery rate by fixing a specific recovery value for the CDS contract. In the event of the reference entity's default, the protection seller makes a cash settlement equal to 100 minus the contract's fixed recovery rate. If the fixed recovery rate is set to zero, the instrument is referred to as a zero recovery CDS.

Recovery locks

A recovery lock is a forward contract that fixes the recovery rate irrespective of what the secondary market price for the bond is. A recovery lock is documented as a single trade.

Recovery swaps or digital default swaps

In practice, a recovery lock can be structured using two separate trades: a fixed recovery CDS and a plain vanilla CDS. For example, the purchase of a recovery lock at 44% can be seen as two separate transactions, the first one selling protection on a standard CDS, and the second one buying protection through a fixed recovery CDS on the same reference entity at 44%. If the CDS spreads for both transactions happen to be identical, then the premium payments on the transactions will net to zero. If the reference entity defaults, the recovery buyer will take delivery of the defaulted debt and pay 44% of the face value of the bond to the counterparty in the transaction. If the premium payments are not identical for the two transactions, the notional amount for which the recovery is purchased can be adjusted to ensure that there are no interim cash flows in the absence of the reference entity's default. The paired transaction described here is referred to as a recovery swap or digital default swap. A recovery swap, unlike a recovery lock, is documented as two separate trades.

institutions trading CDSs now adhere to the 2005 ISDA Novation Protocol, which stipulates that trades cannot be transferred without the prior consent of all parties. This has eliminated one major cause of the confirmation backlogs, namely the assignment (transfer) of trades without notification. Dealers have also dedicated more resources to back office operations. According to a letter from 14 major dealers to the Federal Reserve Bank of New York and other supervisory authorities, the number of trades without confirmation after 30 days had fallen by more than half by the end of January 2006. In addition, dealers confirmed their commitment to a total reduction of 70% by the end of September. A decline in confirmation times is also recorded by the 2006 Operations Benchmarking Survey of the International Swaps and Derivatives Association (ISDA). Progress seems to have also been made in moving to electronic confirmation. Going forward, it is important that these efforts continue in order to reduce the uncertainty about the extent of risk transfer that is associated with unconfirmed trades.

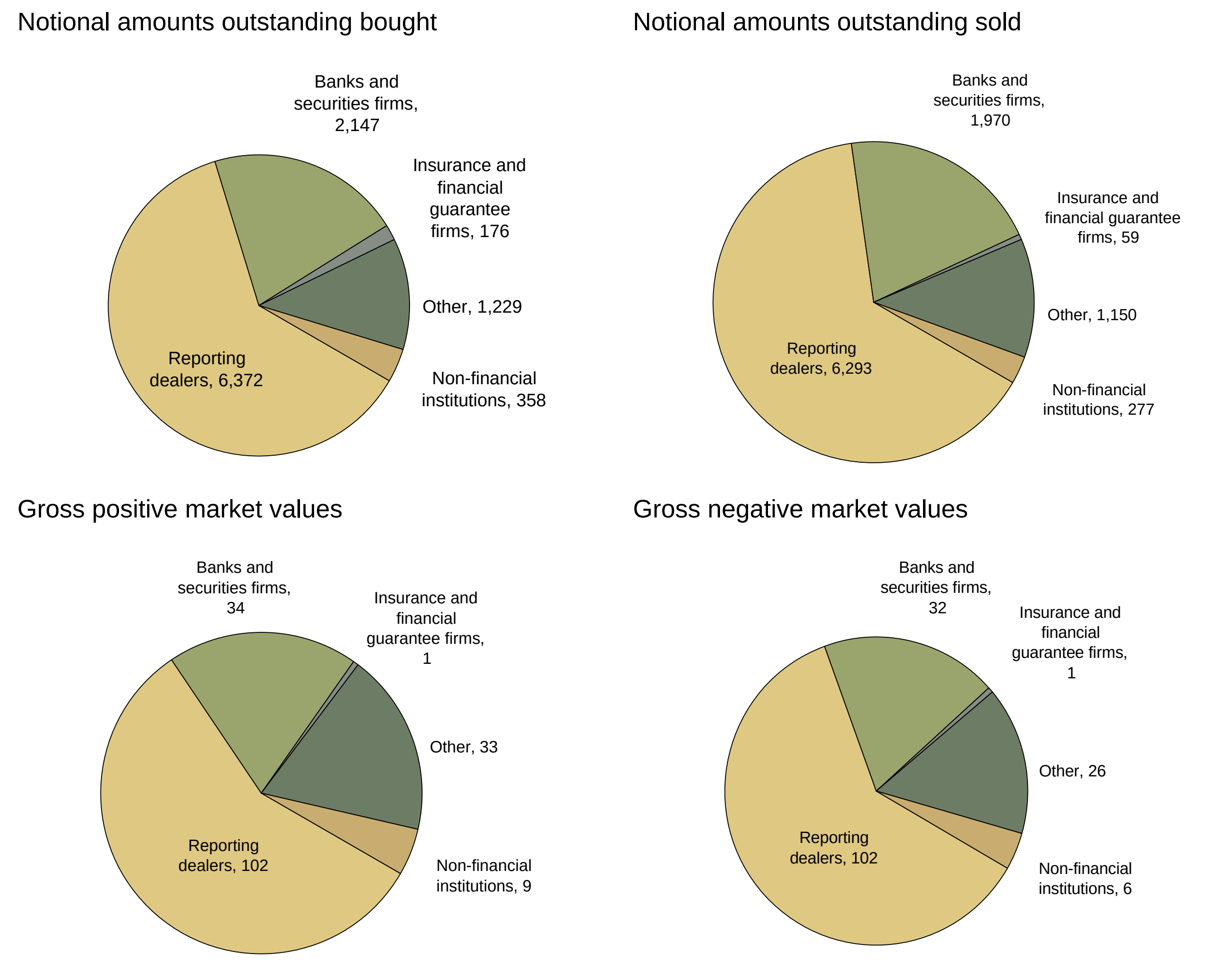
CDS data show limited risk transfer outside the banking system

Improved counterparty breakdown of CDS statistics ...

The most recent release of the BIS CDS statistics provides a finer breakdown of the counterparties of the reporting dealers than previously available. All countries now report exposures to insurance companies as well as banks and securities dealers, previously subsumed under the "other financial institutions" category.

Participants in the CDS market

At end-December 2005, in billions of US dollars



Source: BIS. Graph 4.5

... shows that CDSs are still largely an interbank market

The data confirm the impression that the CDS market, like most other over-the-counter markets, is largely an interbank market. At end-2005, two thirds of all outstanding positions were between reporting dealers, and a further quarter were between reporting dealers and other banks or securities firms. By contrast, only 3% of the transactions were with non-financial institutions. Insurance and financial guarantee firms accounted for $180 billion (roughly 2%) of protection bought, and $60 billion (less than 1%) of protection sold by reporting dealers. Finally, 11% of all trades were with “other residual financial institutions”, a category that includes mutual funds, hedge funds, special purpose vehicles and other players. The figures do not vary substantially whether one looks at single-name or multi-name contracts. The sole exception is insurance firms, which tend to hold basket contracts rather than single-name CDSs.

Notional amounts can be used to relate the size of derivatives markets to the underlying, but they do not provide a good measure of actual risk exposures. However, looking at gross market values, which capture the cost of replacing contracts at a given point in time, leaves the picture broadly unchanged. Again, the main exception is insurance companies, whose share in the CDS market drops by a factor of four to 0.5% of the total gross market value. A possible explanation would be that insurance corporations tend to invest mainly in the more senior tranches of index contracts whose spreads are less volatile over time. As CDSs by construction have a zero cost at inception, less volatile tranches will tend to have replacement costs closer to zero than lower-rated tranches.

While it is possible that the aggregate figures supplied to the BIS mask some sizeable individual exposures, they do not support a picture in which insurance companies purchase CDSs to take on credit risk on a large scale. Nonetheless, a transfer of credit risk from the banking to the insurance sector may still be taking place through other instruments. According to a survey by FitchRatings, the use of credit derivatives by North American, albeit not European or Asian, insurers in 2004 was geared towards collateralised debt obligations, which offer a high spread relative to the rating category. Insurance companies may also use credit-linked notes, loan sales, asset-backed securities or more traditional credit insurance in order to take over risk from the banking sector.[6]

[6] For a review of the different instruments for transferring risk, see D Rule, "Risk transfer between banks, insurance companies and capital markets: an overview", Bank of England, *Financial Stability Review,* December 2001.

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Domestic bond markets in Latin America: achievements and challenges[1]

Domestic bond markets in Latin America have expanded significantly over the past few years. This development should help reduce the region's historical dependence on external financing. Although much progress has been made, vulnerabilities associated with refinancing risk remain and secondary markets still suffer from low liquidity.

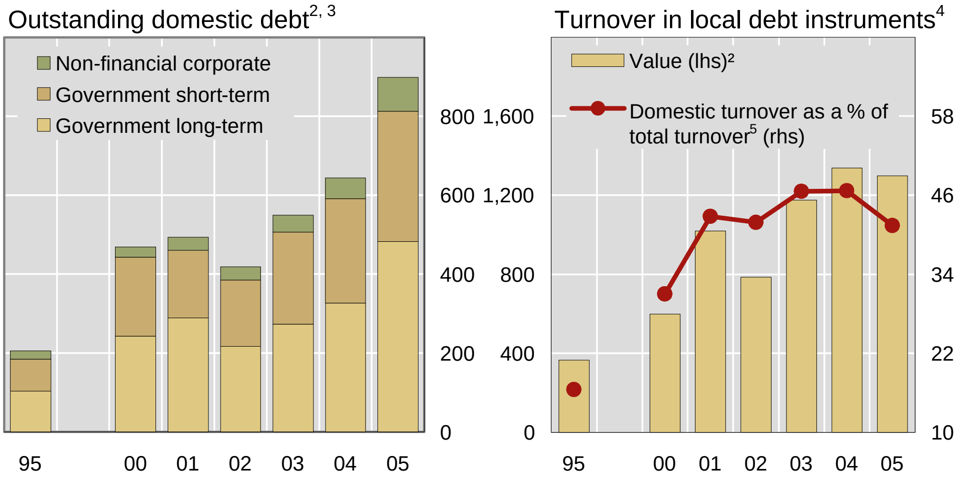
JEL classification: E440, F340, G150, G180, H630, O160.

Domestic bond markets have remained underdeveloped for much of Latin America's modern history owing to a number of policy and structural impediments. These included a poor record of macroeconomic management; the absence of a deep and diversified investor base; regulatory restrictions that hampered the development of primary and secondary market activity; and the lack of an adequate infrastructure for the issuance of private sector debt securities. The resulting structure of domestic government and private sector debt, which was heavily biased towards short-term and/or dollar-indexed liabilities, contributed to a worsening of the financial crises in the region during the 1990s and early 2000s.

In recent years, however, domestic bond markets have constituted a growing source of financing for Latin American economies and of portfolio allocation for global investors (Graph 1). This has called into question the view that countries in the region cannot borrow in local currency at longer maturities, sometimes referred to as the "original sin" hypothesis. The expansion of these markets has reflected a conscious effort by the authorities of most countries to reduce their vulnerability to adverse external shocks. In this context, a key objective has been the strengthening of demand conditions for domestic debt. This has been accomplished inter alia through a transition to more stable macroeconomic policies; a move to privately funded and managed pension systems; and the removal of restrictions on foreign investment. Policy initiatives have also been taken on the supply side, including a gradual shift of

[1] The views expressed in this article are those of the authors and do not necessarily reflect those of the BIS. We thank Claudio Borio, Andrew Filardo, Már Gudmundsson, Gregor Heinrich, Frank Packer and Agustín Villar for their comments, and Thomas Jans, Denis Pêtre, Gert Schnabel and Jhuvesh Sobrun for research assistance. Finally, we are grateful to José Oriol Bosch of JPMorgan Chase Mexico for providing us with market-related data.

Domestic debt in Latin America[1]



[1] Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela. [2] In billions of US dollars. [3] End of period. [4] Annual total. [5] Domestic and international transactions.

Sources: EMTA; national authorities. Graph 1

government liabilities to the domestic market; a move to greater predictability and transparency in debt issuance; and attempts to create liquid benchmark securities. Such initiatives have been supported by a particularly favourable external environment, including high commodity prices and their beneficial effects on internal and external accounts, together with a search for yield on the part of international investors.

Drawing on statistics collected primarily from national sources, this special feature argues that considerable progress has been made by countries in the region in developing their domestic bond markets but that a number of vulnerabilities persist. The shift from external to domestic debt has helped in reducing the risk resulting from currency mismatches but it may also have amplified that arising from maturity mismatches. Investors are still reluctant to commit their funds at fixed rates for long periods of time, which could expose borrowers in the region to a significant degree of refinancing risk should domestic or global financial conditions deteriorate. Moreover, the investor base remains narrow, hampering the development of secondary market liquidity.

Main features of domestic fixed income markets

The issuance of domestic securities has expanded rapidly in Latin America over the past decade (Graph 1).[2] The amount of such securities issued by central governments and non-financial corporate entities from the seven largest countries in the region rose by 337% between the end of 1995 and the end of 2005, to $895 billion, equivalent to about 40% of those countries' combined

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[2] Fully consistent cross-country data sets covering Latin American domestic debt markets are not available. In this special feature, an attempt has been made to assemble comparable data for the central government and non-financial corporate sectors of Argentina, Brazil, Chile, Colombia, Mexico, Peru and Venezuela. Domestic issuance comprises the securities issued on local markets in local or foreign currency. Issuance by financial entities is excluded from the analysis owing to the limited coverage of available data.

GDP. By comparison, the total stock of securities issued by such borrowers in international debt markets expanded by 65% over the same period, to $264 billion. As a result of this growth, local fixed income markets have become the dominant source of funding for the public and private sectors (see Mathieson et al (2004)).

The current configuration of domestic debt markets in Latin America is characterised by six main features:

Domestic debt markets vary in size …

First, domestic debt markets vary widely in size (Table 1). Brazil has by far the largest, with an outstanding stock of securities of $583 billion at the end of 2005 (market equivalent to 74% of its GDP). Mexico's is the second largest in absolute terms, with $159 billion in outstanding securities, but it is substantially smaller than Brazil's in terms of GDP (21%). The debt markets of other countries are much smaller in absolute terms, although some of those markets are reasonably large relative to GDP.

… and are dominated by the public sector

Second, public sector issuers dominate domestic securities markets (Graph 1). The central governments of the seven largest countries had issued marketable liabilities amounting to $808 billion at the end of 2005. By comparison, corporate bond markets are much less developed. Although corporate markets may reach up to 40–50% of the respective government bond markets in some countries (eg Chile and Peru), they only total $87 billion in the region as a whole. Moreover, even in countries where corporate markets are more developed, activity is restricted to top-tier companies. There has nevertheless been some progress in developing non-government bond markets, as illustrated by the expansion of securitisation in the region (see the box on page 55).

Size of local fixed income markets in Latin America

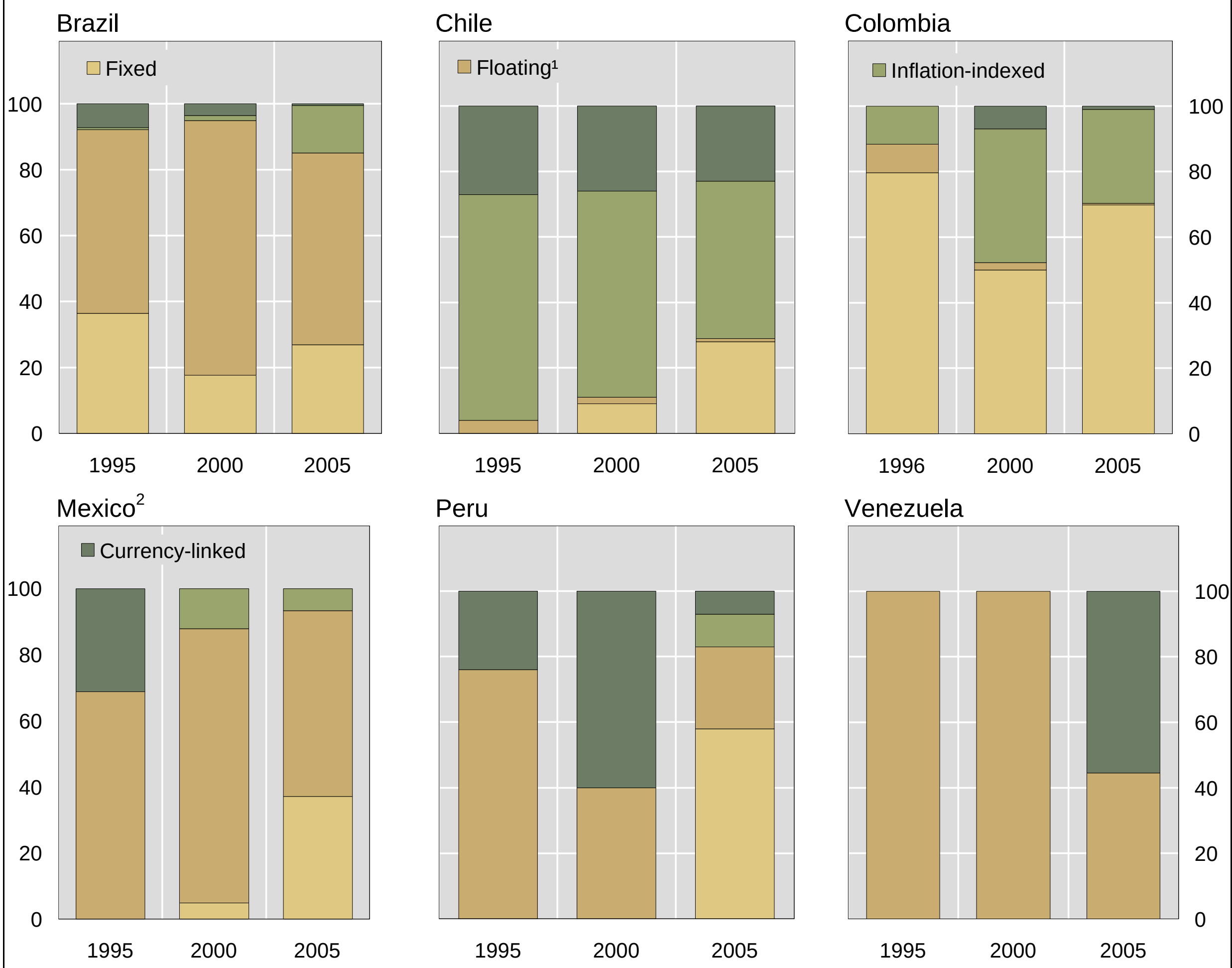
	Stock of fixed income securities		Of which: Government short-term	Of which: Government long-term	Of which: Non-financial corporate long-term
	USD billions	% of GDP	USD billions	USD billions	USD billions
Argentina	59.7	33	5.1	43.8	10.8
Brazil	583.4	74	226.7	318.2	38.5
Chile	39.8	35	9.2	17.3	13.3
Colombia	38.7	32	0.9	33.2	4.6
Mexico	158.5	21	52.0	89.1	17.4
Peru	7.9	10	1.4	4.3	2.2
Venezuela	7.2	5	3.4	3.7	0.1
Total	895.2	41	298.7	509.6	86.9
Memo:					
United States	*9,043.5*	*72*	*1,474.5*	*4,873.3*	*2,695.7*

Note: Securities issued by financial institutions are not included in non-financial corporate fixed income securities.

Sources: Fedesarrollo; national authorities; BIS. Table 1

Composition of central government debt in Latin America

In per cent



[1] The floating rate grouping includes instruments with mixed characteristics. [2] Brems and Cetes are included as floating rate instruments.

Source: National data. Graph 2

Third, short-term, floating rate and inflation-indexed securities continue to account for a large share of the outstanding stock of domestic government securities but there has been a significant change in the composition of government debt. As shown in Graph 2, currency-linked debt has been phased out in a number of countries, including Brazil and Mexico, as part of debt management programmes aimed at reducing vulnerabilities to external shocks. The main exceptions to this trend are Argentina and Venezuela.[3] In addition, the relative share of fixed rate debt has increased in most countries. Progress has been particularly notable in Mexico, where the share of fixed rate securities amounted to close to 40% at the end of 2005, versus less than 5% in 2000. Brazil has also made significant advances, with fixed rate bonds now accounting for close to 30% of marketable liabilities versus 15% in 2000.

Debt is biased towards floating rate and inflation-indexed securities …

[3] In Argentina, which is not shown in Graph 2, currency-linked debt has been used to regain market access since the country's default.

Securitisation in Latin America

Securitisation is a relatively recent phenomenon in Latin America given the extent to which commercial banks have traditionally dominated the intermediation process. Nevertheless, several forces have created opportunities for the expansion of structured finance, including the existence of pressures to improve banks' return on assets, the introduction of better adapted legal frameworks and bankruptcy procedures, a resumption of demand for residential housing and commercial office space, and institutional investors' need for higher-quality assets.

The exact amount of structured transactions is not easy to calculate owing to the lack of standardised definitions and centralised reporting. The major international rating agencies are the main source of data on this market segment. According to Moody's, domestic securitised issuance in Latin America exceeded cross-border business for the second year in a row in 2005: domestic and cross-border transactions in the region amounted to $12.2 billion and $2.3 billion respectively. Mexico, Brazil and Argentina accounted for 40%, 32% and 15% of the total volume of domestic business. Credit-linked obligations, personal and consumer loans, and mortgage-backed securities (MBSs) represented 33%, 17% and 14% of domestic activity.

Issuance of domestic asset-backed securities in Latin America

In millions of US dollars

	2000	2001	2002	2003	2004	2005
Argentina	1,590	701	130	226	525	1,790
Brazil	184	88	106	1,031	1,652	3,911
Chile	173	220	430	380	293	873
Colombia	55	63	597	510	799	323
Mexico	65	427	414	604	5,444	4,846
Peru	37	94	7	60	163	295
Venezuela	…	…	…	…	…	…
Total	2,104	1,593	1,684	2,811	8,876	12,038

Source: Moody's.

The Mexican domestic market for securitised assets only emerged in 2000, but it is already the most active in Latin America. Issuance in Mexico amounted to $5.4 billion in 2004 and $4.8 billion in 2005. Much of the activity over the past two years has been due to very large transactions backed by loans held by the Instituto para la Protección al Ahorro Bancario (IPAB), the agency set up in 1999 to manage the debt resulting from the rescue of the banking sector.[1] So far, aside from the deals enacted by IPAB, most transactions launched in the Mexican market have securitised bridge loans for construction and residential mortgages. Sociedad Hipotecaria Federal, a state-owned development bank that began its operations in late 2001, has worked to develop a cohesive market for MBSs. As such, it has encouraged issuers to introduce bonds with homogeneous characteristics and has played an active role as intermediary and liquidity provider in the nascent secondary market for MBSs.

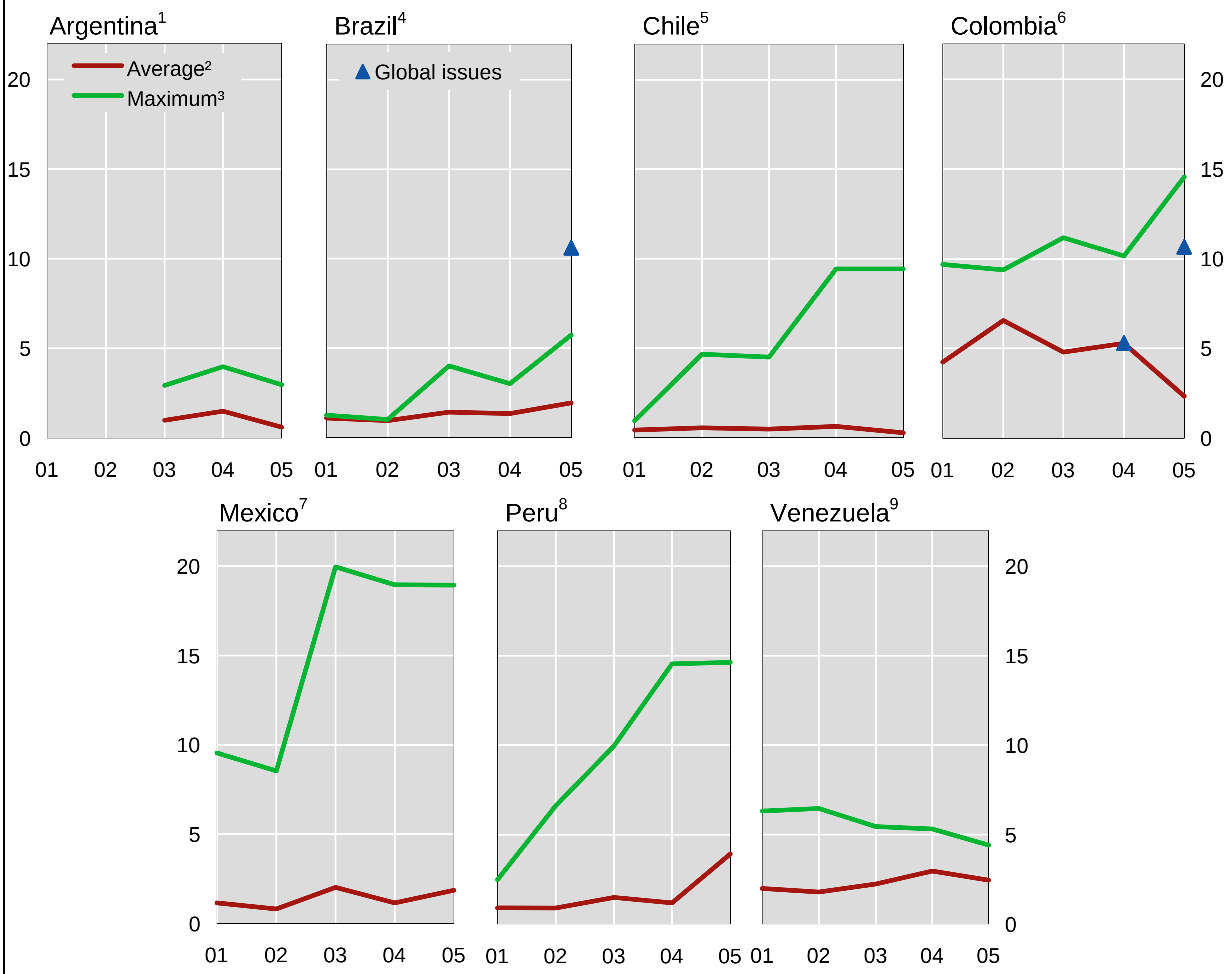
Brazil's was the second most active domestic market in 2005. Issuance reached $3.9 billion, compared with $1.7 billion in 2004. The popularity of investment vehicles known as Fundos de Investimentos em Direitos Creditórios was largely responsible for this growing issuance. Such funds provide companies with an alternative to traditional bank credit by enabling them to securitise their receivables. Prior to 2003, there was practically no activity in the Brazilian domestic market. Potential issuers were deterred by the high cost of establishing special purpose vehicles and investors' initial indifference to such securities given the ready availability of high-quality government paper.

Argentina's market for securitised assets largely dried up in 2001 and 2002 but began to recover in 2003. Indeed, the Argentine market's expansion was noteworthy in 2005, with issuance jumping to $1.8 billion from $525 million in 2004.

[1] Transactions for IPAB amounted to $4.1 billion in 2004 and $2.8 billion in 2005.

Maturities of domestic fixed rate local currency government bonds

In years



[1] Treasury bills, Lebac and Nobac; excluding the treasury bill issued on 14 February 2002. [2] Weighted average of new issues; weighted by the amounts issued (excluding global issues). [3] Remaining time to expiration at the end of the year of the issue with the longest outstanding maturity (excluding global issues); only bonds issued in 2001 or later. [4] LTN, NTN-F and global issues. [5] Central bank issues. [6] TES and global issues; only national government issues are included. [7] Cetes and government bonds. [8] Certificates of deposit, treasury bills and government bonds; excluding government bonds issued on 13 October 2004 and 31 January 2005. [9] Treasury bills and government bonds.

Sources: Bloomberg; national data. Graph 3

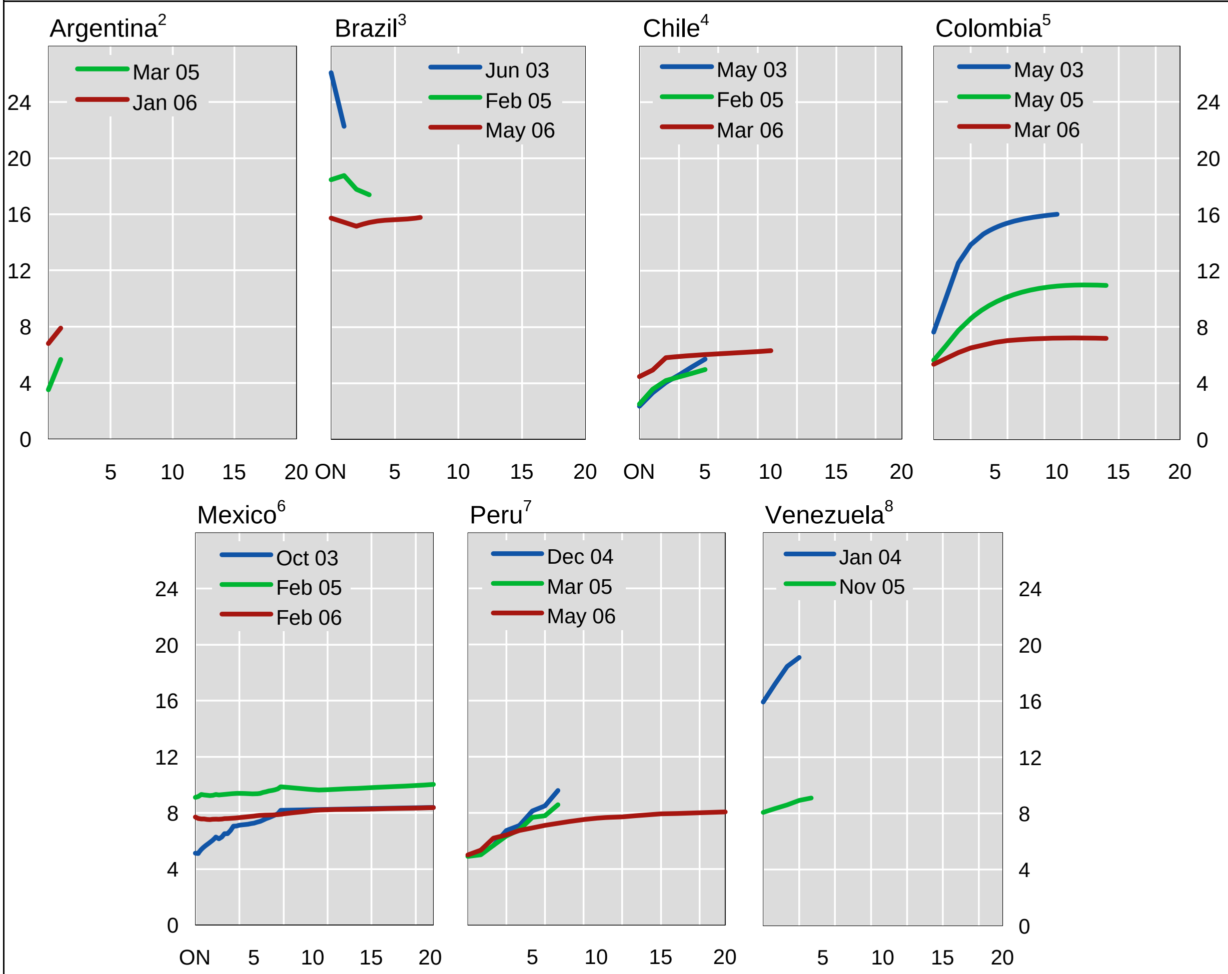
Fourth, there has been a gradual extension of the maturity structure of government debt in local currency. This has been achieved in part through a shift from short-term to fixed rate bonds and through a lengthening of the maturity of fixed rate bonds.[4] The progress made by governments in lengthening the maturity of their fixed rate debt in local currency is illustrated in Graph 3, which shows that most countries have been able to increase the maximum maturity of such debt. Since 2003, Mexico has been able to issue 20-year bonds and is currently considering issuing 30-year bonds. Recently, Peru issued 20-year bonds in local currency, a particularly significant development given the country's high degree of dollarisation. Colombia, which has been

… but its maturity is lengthening

[4] A lengthening of the maturity of the part of debt that is indexed to short-term rates or inflation has also played a role in some countries.

Yield curves of domestic fixed rate local currency government bonds[1]

In per cent



[1] Remaining maturities in years (ON = overnight). [2] Lebac. [3] Swap rates; long-term; government bonds (NTN-F). [4] Central bank issues. [5] Zero coupon yield curve. [6] Cetes and government bonds. [7] Government bonds, secondary market. [8] Government bonds (Vebonos), auctions.

Source: National data. Graph 4

issuing 10-year debt for several years, has introduced 15-year bonds. Chile has issued securities out to 10 years as part of a process of reducing the degree of indexation of its government debt market. Brazil has also made some advances over the last year, in part owing to its 10-year global bond in local currency.[5] Notwithstanding this progress in the region, the amount of fixed rate securities issued at longer tenors remains in most cases limited, as reflected by the relative stability of the weighted average maturity of new issues.

The wider availability of longer-dated bonds is beginning to provide a useful representation of the term structure of interest rates. Graph 4 plots available short- and long-term interest rates for countries in the region. The availability of such rates is helping to make financial markets more complete. However, as discussed below, the accuracy of information extracted from such curves remains an issue.

[5] See Tovar (2005) for an analysis of recent Latin American global issues in local currencies.

Secondary market trading is low …

Fifth, secondary market trading in domestic bonds, a common measure of liquidity, has expanded in recent years (Graph 1, right-hand panel) but it remains low relative to mature markets (Table 2). According to the Emerging Markets Trade Association (EMTA), yearly trading by its member banks in the domestic instruments of the region's seven largest countries amounted to $1.3 trillion in 2005, or 1.6 times the outstanding stock of securities. This is a lower volume of activity than in the more mature markets. Although the data are not entirely comparable, trading in US Treasury securities amounted to about $139 trillion in the same year, or 22 times the relevant stock of securities. Within Latin America, moreover, there is considerable variation in secondary market activity. While annual turnover in Mexican securities is five times the outstanding stock, that in Peruvian and Venezuelan is less than the outstanding stock.

Market liquidity has other important dimensions, such as the tightness of the market, ie the efficiency with which market participants can trade. As shown in Table 2, markets for fixed rate government securities do not appear to be very tight relative to the US market. Indeed, bid-ask spreads, which provide an idea of the costs incurred by market participants in executing transactions, are significantly higher in Latin America than in the United States.[6] Again there are major differences within the region. While in Colombia and Mexico bid-ask spreads are narrow, they remain quite wide in Argentina, Peru and Venezuela.

… but trading in derivatives is expanding

Finally, there are currently no actively traded derivatives contracts on government bond benchmarks in the region but trading in short-term interest rate or swap contracts is developing rapidly in the major countries. In Brazil, position-taking in fixed income markets is conducted largely through overnight futures and swaps rather than cash market assets. This accounts for the sharp expansion in exchange-traded turnover observed in recent years, with activity reaching $6.9 trillion in 2005 against $2.6 trillion in 2000.[7] In Mexico, where exchange-traded activity on fixed income assets does not extend beyond interbank rates, business amounted to $1 trillion relative to almost nothing in 2000. However, over-the-counter (OTC) currency forwards and swaps are reported to be increasingly popular in that country. Such instruments are helping foreign investors and issuers hedge their currency and interest rate exposures to local currency bonds, thus facilitating their entry into the market for such securities.[8]

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6 As a reference, bid-ask spreads in government bond markets in Asia range from 1–2 basis points in India, Korea and Singapore to 7 basis points in Indonesia. See Jiang and McCauley (2004).

7 By comparison, turnover on US exchanges reached about $750 trillion in 2005.

8 Local currency debt markets have stimulated derivatives markets in Mexico. Taking advantage of the demand for highly rated peso paper, foreign financial institutions have issued a number of international peso-denominated bonds. Since such issuers tend to swap the proceeds of their issues into other currencies, they have provided a natural counterpart to foreign investors wishing to hedge peso paper. The Mexican peso is now one of the few emerging market currencies in which there is active OTC derivatives trading (BIS (2005)).

Indicators of secondary market liquidity in local government securities markets in 2005				
	Annual turnover		Bid-ask spread	Average size of transaction related to bid-ask spread
	In billions of US dollars	As a percentage of outstanding securities		
Argentina	91.5	187	10–50 bp on fixed rate and inflation-indexed bonds	ARS 2–10m
Brazil	433.0	79	5 bp on fixed rate bonds	BRL 10–50m
Chile	26.0	98	5 bp on fixed rate bonds	CLP 100m
			5–10 bp on inflation-indexed bonds	UF 100,000
Colombia	45.0	132	3–5 bp on fixed rate bonds	COP 2bn
Mexico	696.7	494	3–5 bp on fixed rate bonds	MXN 50–100m
			5–15 bp on inflation-indexed bonds	MXN 5–10m
Peru	2.6	46	10–20 bp on fixed rate bonds	USD 1m
Venezuela	2.8	39	50–100 bp on floating rate bonds	VEB 2.4bn
Total	1,297.6	160	...	...
Memo:				
United States	*138,756.0*	*2,186*	*0.8–1.6 bp on fixed rate bonds*	*USD 25m*

Note: Annual turnover data for Latin American countries correspond to secondary market transactions reported by major dealers and money management firms to EMTA. Annual turnover for the United States is based on daily inter-dealer transactions in US Treasury securities as reported in the Statistical Supplement to the Federal Reserve Bulletin.

Sources: Sack and Elsasser (2004); Federal Reserve; Central Bank of Venezuela; IMF; Citigroup; EMTA;JPMorgan Chase; BIS.

Table 2

Diversification and the sustainability of bond market expansion

Supporting factors appear permanent

The expansion of local bond markets depends in part on the sustainability of the global process of portfolio diversification. There are good reasons to believe that the factors supporting the development of bond markets in Latin America are largely of a permanent nature.

For one, there has been a secular process of integration between mature and emerging market economies. This includes the growing availability of low-cost and real-time information about the performance of countries and firms. The development of electronic trading technologies has also greatly reduced transaction costs and processing times, further broadening market participation (Wooldridge et al (2003)).

At the same time, the desirability of local currency debt as an asset class for international investors has been enhanced by an improvement in policies and performance in much of the region. Most countries have moved to an environment of low inflation, high primary fiscal surpluses and favourable current account positions. Partly as a result of this better environment, domestic interest rates are increasingly determined by local economic developments rather than by external factors. In fact, in some countries, such as Mexico, the local yield curve has largely "decoupled" from the US yield curve in recent periods.

Domestic bond market correlations and returns

January 2003–April 2006

Correlations		GBI-EM[1]							EMBI[2]	10-yr US Treasury bond
		Brazil[3]	Chile	Colombia	Mexico	Lat Am	Asia	Europe		
GBI-EM[1]	Brazil[3]	1.00								
	Chile	0.34	1.00							
	Colombia	0.52	0.29	1.00						
	Mexico	0.50	0.56	0.48	1.00					
	Lat Am	0.78	0.53	0.72	0.89	1.00				
	Asia	0.33	0.07	0.31	0.31	0.35	1.00			
	Europe	0.10	0.21	0.21	0.28	0.25	0.42	1.00		
EMBI[2]		0.52	0.24	0.49	0.50	0.56	0.49	0.49	1.00	
Ten-year US Treasury bond		0.23	0.00	0.22	0.25	0.24	0.37	0.37	0.71	1.00
Returns										
2003		23.7	27.7	19.4	7.1	16.7	7.9	14.0	22.3	2.1
2004		24.1	16.3	33.6	5.6	13.8	3.0	28.9	11.7	5.7
2005		36.9	16.2	26.1	21.2	22.8	5.2	3.9	10.3	2.4
2006 (YTD)		14.7	–1.6	3.2	–0.7	6.1	3.5	1.5	1.5	–3.1
Cumulative		142.2	65.8	117.5	34.9	73.2	21.1	55.4	53.1	7.2

[1] GBI-EM Broad Diversified. [2] EMBI Global Diversified. [3] Sample starting in May 2003 and ending in April 2006.

Source: Authors' calculations based on JPMorgan Chase data. Table 3

Local markets have offered diversification benefits

Table 3 presents more general evidence concerning the diversification benefits offered by Latin American domestic bond markets relative to other asset classes in global portfolios, at least from the point of view of US dollar-based investors. Such benefits have been evident given the relatively low return correlations since January 2003 of Latin American local currency bonds with: (a) Asian and European emerging market local currency bonds (0.35 and 0.25 respectively); (b) the foreign currency EMBI index (0.56); and (c) 10-year US Treasury notes (0.24). This last set of correlations has been lower for Latin American local currency bonds than the corresponding sets for Asian and European local currency instruments (0.37 in both cases), or the EMBI Global Diversified index (0.71).[9] The final row of Table 3 indicates that these diversification benefits did not come at the cost of lower returns over the sample period: from 2003, Latin American cumulative returns exceeded those of other emerging markets as local nominal yields declined and currencies appreciated.

However, such benefits depend in part on whether yield correlations with other fixed income instruments remain low during periods of stress. There is some supportive empirical evidence that this may be the case (Bayliss (2004)). But there are not enough data to test the stability of correlations over more than a limited time span. An extended episode of significantly less

[9] Similar results are reported in Giacomelli and Pianetti (2005).

favourable market conditions would be required to arrive at more definite conclusions.

Currency mismatches and refinancing risks

A key issue regarding the development of local currency bond markets in Latin America is the extent to which it has helped to reduce the vulnerability associated with currency and maturity mismatches.

Domestic bond markets have helped reduce currency mismatches …

Available evidence suggests that progress made so far in developing these markets may have helped to reduce currency mismatches in the region. This is clearly the case if one takes into account the above-mentioned shift away from dollar-indexed liabilities in the public sector. In addition, currency mismatches have declined across the region at the aggregate level. One frequently used measure of currency mismatch is the share of foreign currency debt in total debt divided by the ratio of exports to GDP.[10] As shown in Graph 5, in 1997 this ratio was well over 1 in all of the largest countries except Chile (ie all were above the 45 degree line). By 2005, the ratio had been significantly reduced across the region. Dollarisation ratios, as measured by the percentage share of dollar deposits in total deposits in the banking system, have also declined. This has been particularly evident in Peru, where the ratio fell from 77% in 1999 to 62% in 2005. Firm-level studies also indicate that there has been a reduction in currency mismatches in the region at the corporate level. For instance, Bleakey and Cowan (2005) find that firms now tend to match the currency composition of their debts with their income flows.

… but they may have amplified maturity mismatches

Despite these positive developments, the shift from external to domestic debt may have replaced the risk resulting from currency mismatches with that arising from maturity mismatches. The economic environment has improved but investors in some countries remain reluctant to commit their funds to local currency obligations at fixed rates for long periods of time. The resulting predominance of short-term, floating rate and inflation-indexed securities, as shown in Graphs 1 and 2, could expose the region's governments to a significant degree of refinancing risk should domestic or global financial conditions deteriorate. This is also true of the corporate sector, where little progress has been made in reducing maturity mismatches. For instance, firm-level data compiled by Kamil (2004) show that the share of long-term liabilities in total liabilities has fallen in the region since the mid-1990s.

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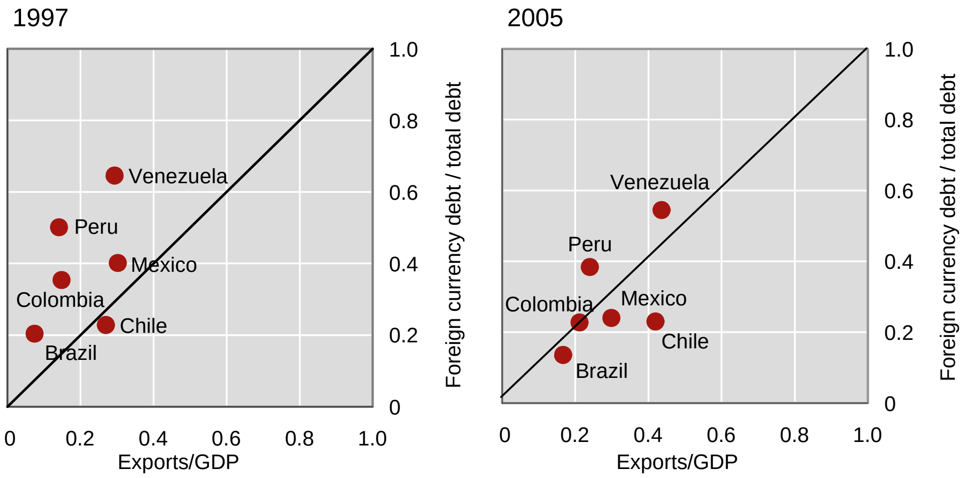
[10] This indicator takes into account not only the impact of exchange rates on the value of assets and liabilities but also the currency denomination of income flows; see Goldstein and Turner (2004).

Currency mismatches



Source: BIS calculations.

Graph 5

Secondary market liquidity

The low level of secondary market trading is a concern since active markets are an essential prerequisite for the cost-effective taking or unwinding of positions. Poor liquidity or a liquidity breakdown under stress can induce large changes in market prices and volatility.[11] Furthermore, liquid financial markets are necessary for the functioning of modern risk management systems, which rely on the derivation of accurate benchmark rates for the pricing of portfolios and the smooth functioning of markets for the frequent rebalancing of positions. Limited depth and liquidity at the longer end of local yield curves can also lower the accuracy of the price information derived from those yield curves. For instance, movements in the yield curve may be difficult to interpret because, in addition to macroeconomic factors, the pricing of longer-term bonds can be influenced by liquidity and other premia.[12]

The size of markets has a bearing on liquidity ...

Market liquidity can be related to a number of factors. The size of a bond market and its individual issues is usually seen as a determinant of its depth and liquidity. McCauley and Remolona (2000) estimate the rough size threshold for a deep and liquid bond market to be $100 billion. In the region, only Brazil and Mexico exceed that threshold. However, as shown in Table 2, Colombia has managed to develop a relatively liquid market despite the small size of its government bond market.

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[11] In fact, several countries in the region have already shown some vulnerability during periods of stress. Good examples are Brazil in 2001 and 2002, and Colombia in 2002, where financial turmoil led to a drying-up of market liquidity in government paper. In Colombia, the government was unable to issue bonds in the second half of 2002 in what is referred to by locals as the “TES mini-crisis”.

[12] In economies with a history of high inflation and/or persistent fiscal imbalances, the variation in the risk premium can be so large and difficult to disentangle as to blur price signals about real economic activity and macroeconomic policy. The possibility of large but low-probability adverse events can also add to the risk premium.

What is more, the type of securities traded in a market can have a bearing on market liquidity. In general, indexed securities tend to be held until maturity and are therefore less actively traded and liquid than money market instruments or straight fixed rate bonds. This is illustrated by the wider bid-ask spread for inflation-linked securities. The availability of a wide array of instruments can also prevent the build-up of a sufficiently large stock of homogeneous securities for active trading. In Brazil, for example, there are various types of inflation-indexed securities, while in Mexico fixed rate securities are issued by a number of public sector borrowers. A consolidation in the offering of government securities, in terms of either the instruments themselves or their issuing entities, would probably do much to improve liquidity.

… as do the array of existing instruments …

… and the size of the investor base

Equally important is the breadth of the investor base. The shift to privately funded pension systems in the region has boosted institutional demand for local securities but the investor base remains narrow.[13] For instance, the mutual fund industry is underdeveloped (the main exception being in Brazil), insurance companies tend to be small, and the local hedge fund industry is practically non-existent. In some countries, such as Chile, pension funds have created a virtual monopsony in securities markets. Furthermore, foreign investors still have a limited presence in most domestic markets owing to the prevalence of capital controls, which remain in place in Argentina, Brazil, Colombia and Venezuela. Trading is also limited by various regulatory restrictions or taxes on interest rate payments, capital gains or transactions.[14] The strong international demand for the global issues in local currencies launched by Brazil and Colombia clearly captured the preference of investors for securities that are not affected by such impediments (Tovar (2005)). In Mexico, the recent vibrancy of domestic markets has been partly related to the unfettered access by foreign investors to the domestic bond market.

Concluding remarks

Latin American economies have made significant progress in developing their domestic bond markets. However, there are still a number of challenges. The most pressing are the need to reduce the vulnerability of debt structures to refinancing risk and to increase secondary market liquidity. Moreover, the extent to which such markets constitute a dependable source of funding for these economies remains to be tested. Although the region appears at this time

[13] Institutional investment has played a limited role in most countries. In Chile, assets held by pension funds rose gradually from the early 1970s to reach about 70% of GDP in 2004. However, similar holdings in other countries are much lower, ranging from 6% of GDP in Mexico to 14% of GDP in Argentina (Crabbe (2005)).

[14] In Brazil, foreign investors must register their purchases of securities with the Brazilian securities regulator and the central bank and nominate a legal representative that is required to monitor the fiscal status of their transactions. They are also subject to at least two transaction taxes (an additional 15% withholding tax on capital gains was removed in February 2006). In Colombia, foreign investors can only purchase domestic securities through an investment trust and a withholding tax varying with the maturity of the securities is levied.

to be less vulnerable to financial shocks, less auspicious market conditions could expose incipient domestic bond markets to additional, unforeseen pressures. In this respect, policymakers should encourage the further development of such markets.

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Securitisation in Asia and the Pacific: implications for liquidity and credit risks[1]

A surge in structured finance in Asia and the Pacific has been driven by the securitisation of consumer loans and mortgages, a largely liquidity transforming activity. The securitisation of corporate debt in the region has so far seen relatively few deals but has a largely untapped potential to enhance the allocation of credit risks.

JEL classification: G150, G180, G210 and O160.

In recent years, financial markets in Asia and the Pacific have seen significant growth in the securitisation of domestic assets.[2] This growth has been based largely on the repackaging of residential mortgages and consumer finance assets rather than of corporate debt. In the countries hit by the 1997 Asian crisis, the new laws and regulations that allowed securitisation were in some cases spurred by a need to deal with the flood of non-performing loans that flowed from the crisis. While a few transactions based on corporate debt were undertaken for this purpose, the recovery from the crisis was accompanied by a rise of households as the dominant class of borrowers. Hence, the great bulk of securitisation deals in the region have been based on household debt.

In general, there are two main advantages to securitisation. First, it can turn ordinarily illiquid assets into reasonably liquid instruments. Second, it can create instruments of high credit quality out of debt of low credit quality. Since securitisation in the Asia-Pacific region has been based largely on residential mortgages and consumer loans, in relative terms it has tended to enhance liquidity rather than reallocate credit risk.

In the next section we explain the basic securitisation techniques. Following this, we provide a brief overview of the growth and composition of securitisation in the Asia-Pacific region. In the third section we consider the

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[2] For the purpose of our discussion we define domestic market securitisation as the creation of local currency denominated securities collateralised by pools of loans that have been originated locally. In most cases this issuance is targeted primarily at investors in the same country where the deal is originated.

implications of securitisation for liquidity and credit risks of mortgages and consumer loans. The fourth section considers the same issues for corporate loans. The final section concludes.

Securitisation techniques

Securitisation involves pooling similar assets together in a separate legal entity or special purpose vehicle (SPV) and redirecting the cash flows from the asset pool to the new securities issued by the SPV. The SPV is a device to ensure that the underlying assets are insulated from the risks of default by the originator of the assets – ie the structure is "bankruptcy remote" and the transfer of assets is a "true sale".[3] In the case of mortgage-backed securities (MBSs), for example, this structure ensures that even if the original lender of the underlying mortgages defaults on its own debt, its creditors will not have recourse to the assets in the SPV. The securities that are issued by the SPV typically differ in a number of respects from the underlying pool of assets, most importantly in terms of liquidity and credit risk. In a given securitisation, they will largely either be more liquid or have less credit risk than the original assets, or in some cases both.

Securitisation transforms assets …

One class of securitisations is primarily directed towards transforming ordinarily illiquid claims into a more easily tradable liquid "asset-backed security" (ABS). The assets that tend to be securitised in this way are chiefly borrowings by households such as residential mortgages, credit card debt or auto loans. By their nature, these obligations tend to be rather small and highly heterogeneous. Nonetheless, the diversification delivered by the pool means that credit losses will be more predictable. An investor does not need to understand the risks of the individual loans in the pool, only the parameters by which the loans were chosen and their average performance based on historical experience. This economy of required information combined with larger denominations helps make the resulting ABS more liquid. In the case of a "residential mortgage-backed security" (RMBS), a third party may provide credit enhancements to increase credit quality, but in most cases household debt ABSs are about enhancing liquidity rather than transforming credit risk.

… in terms of either liquidity …

A second class of securitisations is primarily directed towards transforming low or medium credit quality assets into high credit quality financial assets. This risk transformation is achieved by means of a subordination structure in which certain tranches of securities are created to absorb losses from default. Moreover, the specific structure of tranches may be designed to match investor demands for different levels of credit risk. The resulting security is generically called a "collateralised debt obligation" (CDO). One class of assets that is securitised in this way is corporate bonds which already trade in a secondary market. Thus, when securitised the resulting "collateralised bond obligation" (CBO) may well be less liquid than the assets in the pool. Another type of collateral is bank loans to companies, which are

… or credit risk

[3] See Gorton and Souleles (2005) for a discussion of the use of SPVs as a way to lower bankruptcy costs.

typically highly illiquid. When securitised the resulting "collateralised loan obligation" (CLO) is likely to be more liquid than the underlying assets. Nevertheless, both CLOs and CBOs result in senior tranches of securities that are of higher credit quality than those in the pool. This implies that CDOs tend to be about transforming credit risk rather than enhancing liquidity.

Growth of securitisation in Asia and the Pacific

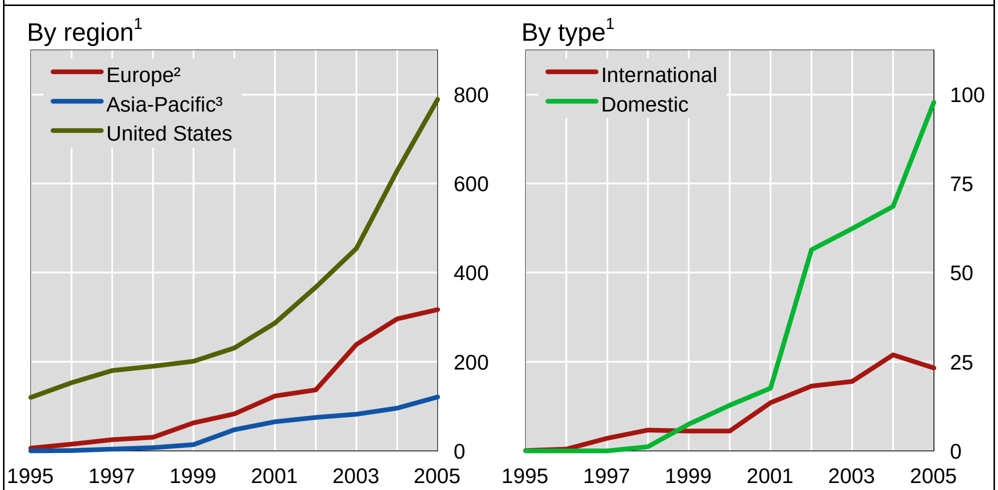
High growth in Asian markets

Recent years have seen remarkable growth in securitisation around the world. While ABS issuance in Asia and the Pacific has not been as strong as in Europe or the United States, the region has contributed significantly to global growth (Graph 1, left-hand panel). At first, Asian assets were securitised largely to be sold abroad. Since 1999, however, securitisation in the region has been predominantly domestic rather than international, with assets increasingly being securitised to be sold in the country of origination (Graph 1, right-hand panel).

Issuance of ABSs in the region has been dominated by Japan, Australia and Korea, which account for around two thirds of overall issuance (Graph 2 and Graph 3, left-hand panel).[4] In addition, Hong Kong, Malaysia, the Philippines, Singapore, Taiwan (China)[5] and Thailand also provide a steady flow of assets for securitisation. By contrast, the ABS markets of China and Indonesia are still in the early stages of development.

ABS issuance by region

In billions of US dollars



[1] Data for 2005 are for first three quarters only. [2] EU members. [3] Australia, China, Hong Kong SAR, India, Japan, Korea, Malaysia, the Philippines, Singapore, Taiwan (China) and Thailand.

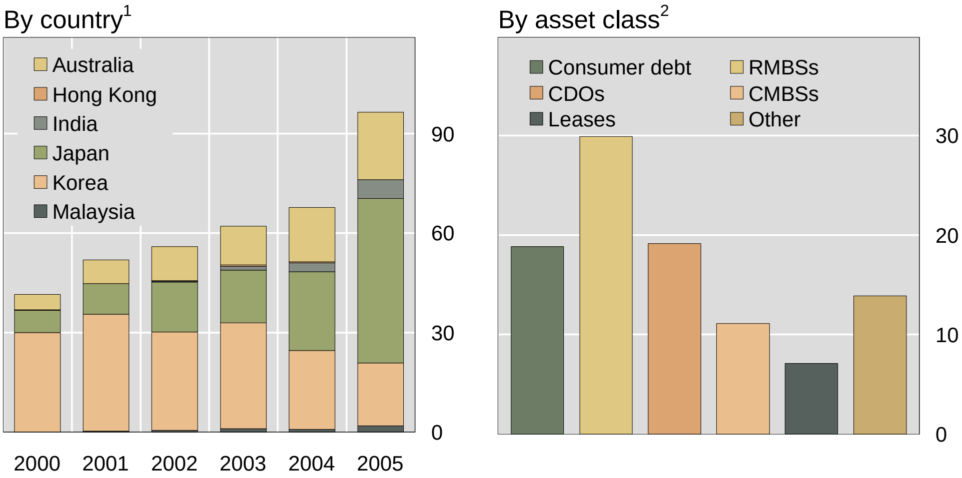
Sources: Dealogic; Fitch; HSBC; Moody's; Standard & Poor's; Thomson Financial Securities Data; national rating agencies.

Graph 1

[4] Overall issuance includes both domestic and international issues. International issuance is defined as securitisation of local assets into securities denominated in foreign currencies, in most cases targeting foreign investors.

[5] Hereinafter Taiwan.

Domestic issuance of ABSs in Asia-Pacific



[1] In billions of US dollars. [2] Annual average 2000–05, in per cent.

Sources: Dealogic; Fitch; JPMorgan Chase; Moody's; Standard & Poor's; Thomson Financial Securities Data; national rating agencies.

Graph 2

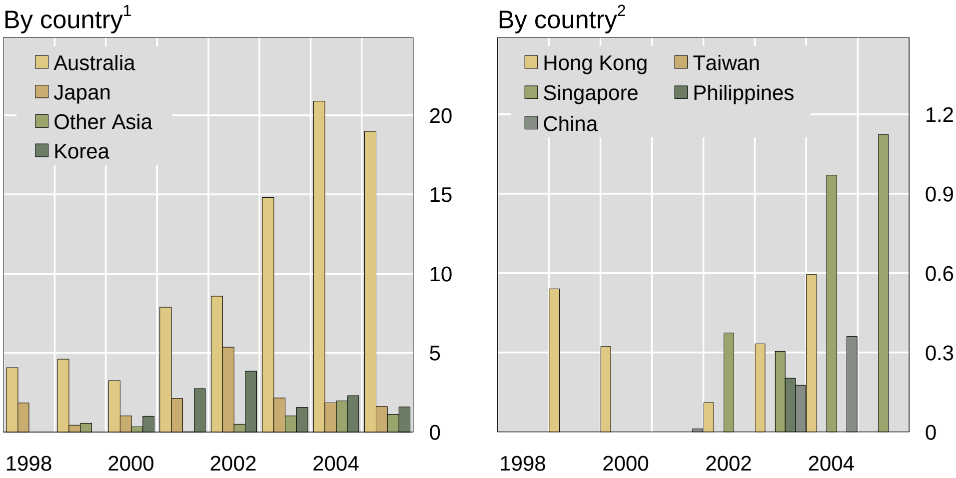
It began with NPLs after the Asian crisis …

An important impetus behind the growth of domestic securitisation in the region was the 1997 Asian crisis. Such securitisation required new laws and regulations that would allow the creation of the appropriate SPVs.[6] The crisis gave rise to large amounts of non-performing loans (NPLs), and authorities saw securitisation as a way to dispose of these loans. By this time, Australia, Hong Kong, Japan and New Zealand already had the necessary regulatory and legal frameworks in place, but the countries hit by the crisis did not. Hence, Korea, Malaysia, the Philippines and Thailand introduced some new elements of their securitisation frameworks in the wake of the crisis (Deacon (2004)). Other countries did so later, including Taiwan in 2001 and India in 2002. Similar to the pattern seen in other Asian economies, the Chinese authorities published regulations in late 2005 to enable asset securitisation companies to take over non-performing assets from banks and public financial institutions (Zhang (2005); see box).

Reflecting the way some of the markets began, it is not surprising that the pattern of growth in Asia has been somewhat different from that seen in the United States and Europe. In the latter two cases, securitisation started with residential mortgages and consumer debt. By contrast, in some Asian markets residential mortgages and credit card receivables were deployed for ABSs only in a second stage. To be sure, the growth of the underlying markets for residential mortgages and other household debt in the region over time led to a dominance of ABSs based on such debt (Graph 2, right-hand panel). Nonetheless, the initial securitisation of NPLs seems to have lent some impetus to the development of significant markets for CDOs, commercial mortgage-backed securities (CMBSs) and securitised leases.

[6] Although new legislation may not be necessary to allow SPVs in common law countries, new regulations often are.

International issuance of ABSs in Asia-Pacific



[1] In billions of US dollars. [2] In millions of US dollars.

Sources: Dealogic; Fitch; HSBC; Moody's; Standard & Poor's; Thomson Financial Securities Data; national rating agencies. Graph 3

Securitising mortgages and consumer debt

Growth mainly in MBSs ...

The relative strength of MBSs and securitised consumer debt in Asia and the Pacific has varied across markets and over time. MBSs have played a prominent role in the Australian market as well as in Hong Kong, Japan, Korea and Malaysia, where new laws and government-sponsored agencies have been established to promote the development of the corresponding segments.[7] The RMBS segment is quite prominent in Australia, where it currently represents 70% of all securitisation.[8] As for consumer debt, credit card securitisation led the way in Korea until late 2003 and more recently in Thailand, while broader pools of retail consumer loans have been a visible part of the emerging Indian ABS market. In India, rapid securitisation growth has been based on consumer loans reflecting investors' familiarity with the underlying assets and the relatively short tenor of securitised issues.[9] Up to now, MBS issuance in India has been hampered by the relatively long maturities and poor secondary market liquidity, as well as investors' low appetite for and poor understanding of prepayment risks.

... and consumer debt

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[7] More generally, there has been growth in property-related and mortgage-related securities across the region. Additional examples include large real estate investment trusts (REITs) and CMBS deals in Hong Kong and Singapore.

[8] See RBA (2004) and Battelino and Chambers (2006) for discussions of factors that have contributed to the growth of the RMBS sector in Australia.

[9] See ICRA (2005) and Sharma and Sinha (2006). The consumer loans used for securitisation include auto loans, student loans, credit cards and unsecured personal loans.

Securitisation in China: promising first steps[1]

Guonan Ma

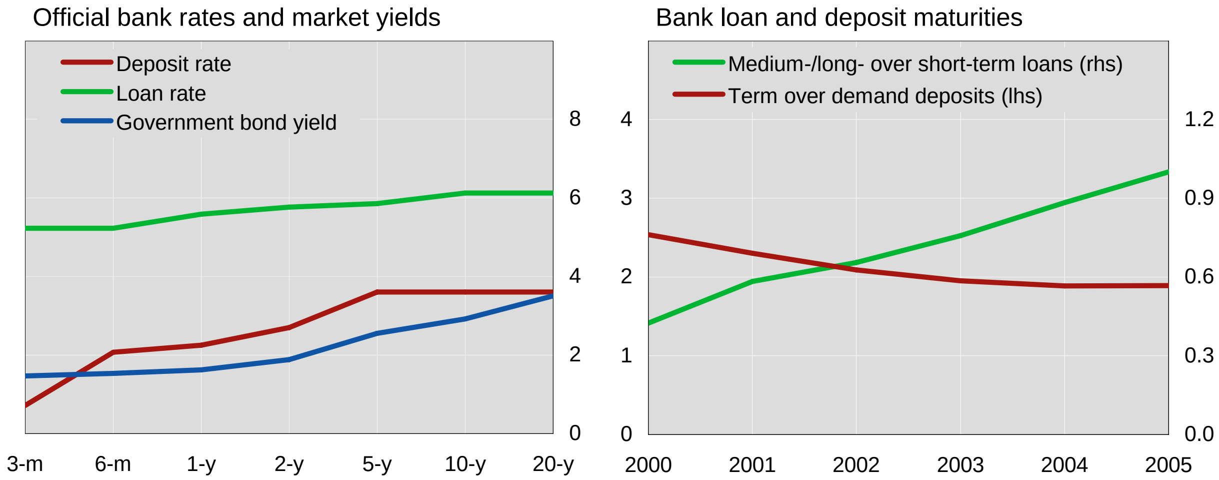
After a decade of debates, experiments and half measures, genuine securitisation transactions finally made their debut in China last year, paving the way for a potentially big expansion in the years ahead. In 2005, the Chinese government accelerated policy initiatives to set up the regulatory framework for securitisation, and domestic ABS issuance went from practically zero to more than \$2 billion (CNY 17 billion). Going forward, the pace of Chinese ABS market development will depend on the interaction of a number of major factors influencing Chinese financial markets.

From the mid-1990s to the early 2000s, there had been only a few China-related ABS deals, most of which were either cross-border or offshore issues. It was only in 2003–04 that two landmark domestic NPL securitisation deals established the precedent of an onshore bankruptcy-remote SPV and the first ever domestic true sale in China without guarantee of the originator.

Since early 2005, government policies and market forces have worked together to accelerate the development of the domestic ABS market. First, the Chinese leadership has intervened to coordinate the efforts of 10 regulators and government agencies, in a push to improve the fragmented regulatory framework governing credit markets. The most important effort has been the joint administrative decree in April 2005 by the People's Bank of China and the China Banking Regulatory Commission on pilot schemes of credit asset securitisation originated by financial institutions. In the absence of other matching laws, this decree sets out a relatively complete framework for the securitisation process. Second, for most of 2005, secondary market bond yields fell below official bank lending and deposit rates in China (see graph), prompting more non-financial borrowers to directly tap the credit securities market, in some cases through securitisation.

As a result, the scale of ABS issuance in only a few months of 2005 exceeded that of the previous 10 years. Combined, two pilot bank issues, one MBS and one CLO, raised nearly \$1 billion. Such securities are now trading in China's interbank bond market. Two other issues by non-bank corporate originators raised more than \$1 billion, though a bank guarantee was used for credit enhancement. These two non-bank deals took place entirely outside the PBC/CBRC framework mentioned above, with the securities traded on the country's two stock exchanges.

Interest rates and bank asset/liability maturities in China



Sources: People's Bank of China; Bloomberg.

[1] This box draws on Zhang (2005).

While some questions remain about the structures of the above-mentioned deals, they seem to broadly qualify as securitisation transactions and may indeed serve as possible templates for future domestic transactions, paving the way for growth in the nascent Chinese ABS market. They may also contribute to the emergence of a more coherent legal framework needed for ABSs.

Looking forward, the prospects for China's ABS market depend, in part, on the interaction of a number of important forces. One is competitive deregulation among regulators. This can be healthy but can also risk hampering the establishment of a unified regulatory framework for the overall Chinese credit markets. Another factor is the ability of non-financial borrowers to raise funds via various credit instruments. Currently, bank loans still dominate corporate financing in China. But as more prime-rated non-financial corporations can directly tap the credit securities markets, commercial banks will wish to gain more exposure to structured securities. A third factor is differing incentives for securitisation deals across Chinese banks. While the top-tier big four banks enjoy abundant liquidity and fresh capital injections and thus are more willing ABS investors, policy banks and some second-tier banks could face more binding capital constraints and greater duration gaps (see graph) and hence be keener to securitise their credit assets. Fourth, changes in regulation might broaden the size of the investor base. Until very recently, Chinese mutual funds and insurers have not been permitted to invest in ABS products, so that investors have been largely confined to commercial banks and non-financial corporate players. Finally, although mortgage business in China is set to expand in the coming years, legal uncertainties over eviction and foreclosure could hinder the development of MBSs as an asset class.

A number of stylised facts suggest that securitisation of mortgages and consumer debt in the Asia-Pacific region has tended more towards enhancing liquidity than towards credit risk transformation. First, the most striking feature of mortgage securitisation is large-scale diversification, eg selected Korean and Malaysian mortgage securitisations have relied on pools of more than 100,000 loans and 60,000 individual loans, respectively (Table 1). Second, in most cases securitised bonds based on consumer debt in the region do not have significant subordination, ie there is virtually no use of tranches with different credit risk profiles. Third, even though governments in the region are trying to promote MBS markets by providing credit enhancements, in many countries credit enhancement agencies are only expected to hold capital in the 2–3% range against these guarantees. This implies that the role of these enhancements in upgrading the credit quality of the structured securities has been limited.

Structure of selected Asian MBS deals

	Korea[1]	Malaysia[2]	Hong Kong[3]
Total	KRW 500 billion	MYR 1.55 billion	HKD 2 billion
Number of loans	103,819	61,743[4]	2,316
Average loan size	KRW 4.8 million	MYR 25,361	HKD 480,072
Senior tranches (%)	95.8	100	100
Issuer	Korean Housing Finance Corporation	Cagamas MBS Berhad	The Hong Kong Mortgage Corporation Limited
Government-sponsored	Yes	Yes	Yes
Underlying assets	Residential mortgages	Gov staff housing loans	Residential mortgages
Rating agencies	Domestic	Domestic	International

[1] MBS 2000–2 Trust. [2] Cagamas MBS 2004–1. [3] Bauhinia MBS Limited Series 2004–2. [4] As of 31 May 2005.

Source: Issuers cited. Table 1

Securitising corporate debt

Quality gap

Securitisation provides an alternative way of addressing a fundamental limitation of the corporate bond market in Asia, namely the gap between the credit quality of the bonds that investors in the region would like to hold and the actual credit quality of potential borrowers. In the recent past, Asian authorities have tried to bridge this gap by promoting credit enhancement facilities. The experience with these facilities, however, has not been entirely successful.

The problems of credit enhancement facilities in Asia

Credit enhancement facilities in Asia

In Asia, local and regional credit guarantee facilities have provided various forms of credit enhancements. The creation of these facilities was motivated by a desire to compete with foreign monoline insurers in the provision of guarantees on Asian credits. In 1995, the Asian Development Bank (ADB) along with a number of other institutions established the first multilateral guarantee agency in the region, the Asian Securitisation and Infrastructure Assurance (ASIA). The 1997 Asian financial crisis, however, led to heavy losses on ASIA's Indonesian and Korean exposures, and in January 1998 a downgrade of the agency to below investment grade effectively led to its closure (Oh and Park (2003)).

Another example of credit enhancement facilities that ran into trouble comes from Korea. Before 1997, it was mandatory for Korean bond issuers to obtain bond guarantees. The crisis in 1997, however, led to the failure of two major guarantee providers, the Korea Guarantee Insurance Company and Hankook Fidelity and Surety Company. Since then, the Korean market has been moving slowly towards a structure in which guaranteed bonds no longer dominate issuance, the government focuses more on prudential oversight and private sector investors actively trade credit risk.

Structured finance as a way to bridge the quality gap

Governments in the region are beginning to consider the securitisation of corporate debt as an alternative means of matching investor demand for high-grade securities with the lower credit quality of most borrowers. Securitisation that uses lower-rated corporate paper as collateral can be structured to provide largely AAA-rated note tranches for investors. Clearly, such structures only work if there are also investors who are willing to hold the subordinated tranches, including the equity tranche which absorbs the first losses. In Asia, first-loss tranches tend either to receive government support or be held by the sponsoring bank or by a foreign bond insurance company.[10]

An SME securitisation

An interesting illustration is a recent Singaporean securitisation called SME CreditAssist, a pilot transaction initiated by a Singaporean government agency with the express goal of giving small and medium-sized enterprises (SMEs) better access to funds. While bond markets have remained relatively

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[10] This structure is consistent with all issuers facing a moral hazard problem. That is, issuers will tend to hold some or all of the first-loss risk (equity tranche) or pay for credit enhancements to overcome a moral hazard barrier. See DeMarzo and Duffie (1999).

inaccessible to younger and smaller SMEs, loans to these enterprises are often perceived as too risky for banks. The conceptual breakthrough of the Singaporean scheme was to originate new loans according to a set of predetermined guidelines with eventual securitisation in mind. More than 400 such SME loans totalling SGD 102 million were pooled, and in April 2006 a set of structured floating rate notes backed by this pool were rated by international rating agencies and sold publicly. More than 80% of the structure was investment grade debt; the remaining equity tranche was in the form of subordinated notes.[11] Parts of the equity tranche were held by the Singaporean government, which implies that the deal did rely on a degree of government sponsorship. Thus, it remains to be seen how viable securitisations of SME loans will be without such government involvement going forward.

The degree of credit risk transformation

Securitisations transfer credit risk

Discussions with rating agencies and market participants suggest that a higher degree of credit risk transformation – which can be achieved through over-collateralisation, tranche subordination and credit enhancements – may be required in many instances in Asia. Due to a limited availability of corporate debt collateral, Asian CDOs often need to be backed by lower-quality and less diversified collateral pools than those in the US and European markets.[12] An additional element for some Asian countries, particularly in NPL securitisations, is that there is more uncertainty about what happens in the event of default. Therefore, for such securitisations an even higher degree of credit risk transformation is frequently needed given the low quality of the underlying assets.

SME and NPL securitisations

The extent of credit risk transformation for securitisations of corporate debt in Asia can be gauged in part by looking at the subordination structure of individual deals. For the SME CreditAssist deal, the equity tranche was 17%, suggesting a rather low degree of diversification in the underlying assets compared to RMBSs (Graph 4). For the NPL securitisation deals of Kamco, the leading Korean asset management company, the equity tranches have ranged from around 10% to almost 30% (Fung et al (2004)). Despite significant participation by the government-sponsored Korea Development Bank, Kamco holds all or most of the equity tranche for most of these NPL securitisations, suggesting a high degree of residual risk in this first-loss tranche (Schmidt (2004)).

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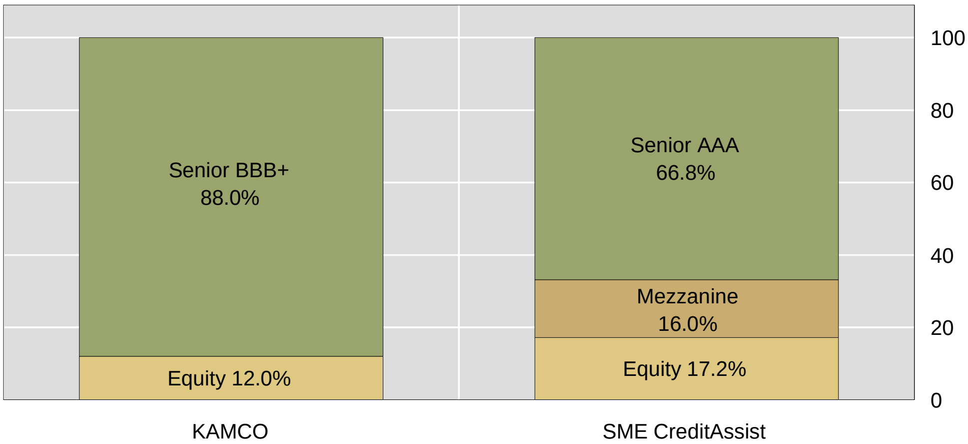
11 The structure included 67% AAA-rated, 7% AA-rated, 6% A-rated and 3% BBB-rated notes, and an equity tranche of 17% subordinated notes. The notes were priced in the range of 50 (AAA) to 190 (BBB) basis points over the Singaporean swap offer rate. Based on conversations with DBS Bank of Singapore as well as Lu and Redimerio (2006) and Chang and Hardee (2006).

12 As discussed in Amato and Remolona (2003), the difficulty in diversifying credit risk may also be an important factor for the pricing and structuring of credit risk in more mature markets.

Subordination structure for Kamco[1] and SME CreditAssist



[1] Korean Asset Management 2000-1 Limited.

Sources: Deutsche Bank; Fitch; Standard & Poor's. Graph 4

Concluding thoughts

Completing markets

The increased use of securitisation is helping complete Asia's financial markets through the creation of entirely new securities desired by investors. We have argued in particular that securitisation allows markets to enhance assets in two ways. First, it allows the transformation of otherwise illiquid assets, such as mortgages and consumer loans, into more liquid instruments. Second, it allows markets to overcome a mismatch between assets with high credit risk that are available and investors' preferences for assets with low credit risk. Going forward, more mature and therefore more active and transparent markets for ABSs are likely to encourage price consistency in credit markets by linking the pricing of diversified portfolios to the pricing of the underlying credits. The use of securitisation may also provide possibilities for risk sharing and transfers between loan originators, such as banks.

Policy issues

At the same time, there are policy questions linked to the growing use of securitisation techniques in the region. One such issue is the longer-term implications of relying on direct or indirect government guarantees in developing domestic MBS markets. The presence of government guarantees may distort competition and result in undesirable concentrations of risk held by government housing agencies. A similar possible policy issue concerns the potential implications of a reliance on assessments by domestic credit rating agencies in the structured finance markets that obviates the perceived need to develop better accounting standards and disclosure rules. A further challenge in some markets is the limited access to good historical data for household finance products. While several countries have successfully focused on setting up or enhancing existing credit information depositories, in the case of mortgages there is still only limited availability of data on non-payment and prepayment. Finally, as more complex financial instruments are introduced into the region, the demands on the institutions responsible for market oversight and prudential regulation are bound to increase.

Undue reliance on ratings

Data availability a challenge

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Recent initiatives by Basel-based committees and the Financial Stability Forum

The various Basel-based committees and the Financial Stability Forum (FSF) took a number of initiatives during the first quarter of 2006. The FSF organised a roundtable on financial reporting and auditing, and held two other meetings. The Basel Committee on Banking Supervision (BCBS) released guidance on enhancing corporate governance for banking organisations and issued consultative documents on the Core Principles for Effective Banking Supervision and the related methodology. The Committee on Payment and Settlement Systems (CPSS) announced the preparation of a survey of foreign exchange settlement risk, agreed to set up a working group on clearing and settlement arrangements for OTC derivatives, and issued a consultative report on general principles for international remittance services. Table 1 provides a selective overview of these and other recent initiatives.

Financial Stability Forum[1]

In the first quarter of 2006, the FSF organised – jointly with two accounting bodies – a roundtable on financial reporting and auditing. It also held a regional and a regular plenary meeting, both in Sydney, Australia.

FSF organises roundtable on financial reporting and auditing

The roundtable, co-organised with the International Accounting Standards Board (IASB) and the International Federation of Accountants (IFAC), addressed experiences with the first year of implementation of the International Financial Reporting Standards (IFRS); the convergence process between the IASB and other national accounting standard setters; fair value accounting issues; and risks in the financial reporting chain. Taking part were 78 senior participants from national authorities with responsibility for financial reporting; accounting and auditing professional organisations; accounting and auditing standard setters; market participants, including representatives from capital market firms, corporations and investors; international regulatory bodies; and international financial institutions. While investor confidence in the financial reporting process has improved in recent years, roundtable participants agreed

[1] On 21 April 2006, it was announced that Mario Draghi, Governor of the Bank of Italy, would succeed Roger Ferguson as Chairman of the FSF. Mr Ferguson was to step down at the end of April.

that confidence needed to be further enhanced. Complexity in business structures, in the character of transactions and in accounting standards remains a source of ongoing risk for capital markets. There were also concerns about audit firm concentration risk and the quality and consistency of audits across global audit firm networks. The roundtable recognised the potential benefits that many see in a long-term movement by the IASB towards fair value accounting, but also the continued concerns of many others about the reliability, verifiability and relevance of fair value estimates for non-traded items.

On 16 March, the FSF held its *fourth Asia-Pacific regional meeting* in Sydney, Australia. Participants discussed the outlook for the global and regional economies, the role of foreign-owned financial institutions in strengthening financial stability, the potential impact of an avian flu pandemic on economies and financial systems, and progress towards convergence and harmonisation in international accounting standards. They also shared experiences with the promotion of domestic bond markets and discussed the role of assessments against international standards in aiding the prioritisation of financial sector reforms.

At its fourth Asia-Pacific regional meeting, FSF notes reduced external vulnerabilities …

The outlook for the global and regional economies was seen to be favourable, with external demand and accommodative financial conditions in recent years supporting growth and financial markets in the Asia-Pacific region. These conditions, together with a build-up of foreign exchange reserves, the adoption of more flexible exchange rate arrangements and strengthened financial systems, had enabled countries in the region to reduce external vulnerabilities. They had supported efforts to strengthen local financial and corporate sector balance sheets, although the pace of progress varied from country to country. Regulatory and supervisory frameworks had been enhanced. Nevertheless, participants highlighted several challenges, relating inter alia to high oil and other commodity prices and to investors' appetite for risk. While currently low credit spreads in large part reflected improved fundamentals, a sudden reversal in risk appetites, especially if accompanied by unexpected increases in global bond yields or a sharp rise in asset price volatility, could alter the positive outlook for financial stability.

… although challenges remain

Efforts to increase domestic absorption in Asia

In the context of concerns about persistent global imbalances, participants noted efforts by authorities in the region to increase domestic absorption, through stronger domestic consumption and investment, and intentions elsewhere to increase national savings. While household consumption was being supported in several regional economies by bank lending, it was also viewed as important for institutions to assess carefully the risks arising from such lending to ensure it did not jeopardise stability. With regard to investment, including for needed infrastructure, it was pointed out that, despite a number of national and regional initiatives under way to foster the development of domestic corporate bond markets, further progress could be made. This would be desirable in order to diversify funding sources and complement bank lending.

Main initiatives by Basel-based committees and other bodies

Press releases and publications over the period under review

Body	Initiative	Thematic focus	Release date
FSF	Roundtable on financial reporting and auditing	• Initial experiences, successes, challenges and implications for the global financial system witnessed in the first year of implementation of IFRS. Increased use of fair values for financial reporting purposes; convergence, harmonisation and reconciliations; possible risks and vulnerabilities.	February 2006
	Fourth Asia-Pacific regional meeting	• Outlook for the global and regional economies. • Efforts to increase domestic absorption in Asia. • Role of foreign-owned financial institutions in strengthening financial stability. • Potential impact of an avian flu pandemic. • Progress towards convergence and harmonisation in international accounting standards. • Experiences with strengthening financial systems.	March 2006
	Fifteenth FSF meeting in Sydney	• Global risks and vulnerabilities. • Counterparty risk management, settlement and valuation practices for complex financial instruments. • Avian flu. • International standard-setting processes. • Concerns about regulatory overload. • Ongoing work to mitigate sources of vulnerability.	
BCBS[1]	*Enhancing corporate governance for banking organisations*	• Update of 1999 guidelines, incorporates comments received on consultative version of July 2005.	February 2006
	Use of vendor products in the Basel II IRB framework	• Supervisory expectations on how banks might satisfy IRB validation requirements when using vendor products; focus on identification, documentation, understanding, suitability and reviewing.	March 2006
	Consultative document on *Core Principles for Effective Banking Supervision*	• Revised version of Core Principles published in 1997.	April 2006
	Consultative document on *Core Principles Methodology*	• Revised version of Methodology issued in 1999.	
CPSS	*Survey of foreign exchange settlement risk*	• Part of a comprehensive strategy to reduce systemic risks inherent in foreign exchange transaction settlement arrangements. • Updates surveys of 1996 and 1997.	February 2006
	CPSS working group on clearing and settlement arrangements for OTC derivatives	• Existing arrangements and risk management practices in the broader OTC derivatives market, risk mitigation role of market infrastructure.	
	Consultative report on *general principles for international remittance services*	• Payment system aspects of international remittance services, general principles for improving this market.	March 2006

[1] Mr Nout Wellink, President of the Netherlands Bank, was appointed the new Chairman of the BCBS, effective 1 July 2006.

Source: Relevant bodies' websites (www.bis.org and www.fsforum.org). Table 1

Participants also discussed the role played by foreign-owned financial institutions in strengthening domestic financial systems, and the associated need for effective coordination and information exchange between home and host supervisors.

The role of foreign-owned financial institutions

Meeting attendees shared their assessments of the potential impact of an avian flu pandemic on their economies and financial systems. They agreed on the need for business continuity planning – in particular with a view to maintaining the operation of payment systems – and stressed the importance of effective communication in the event of a pandemic. They also discussed where there was scope for risk-mitigating actions by financial authorities.

Business continuity planning in the event of avian flu pandemic

Progress towards convergence and harmonisation in international accounting standards was recognised, along with growing participation from countries in the region. Efforts by the IASB to produce a set of standards for small and medium-sized enterprises, and by regulators and audit oversight authorities to promote more effective cooperation and enhancements to audit quality, were welcomed.

Progress on international accounting standards

Participants also shared experiences with strengthening national financial systems, drawing on lessons learned from the Financial Sector Stability Assessments conducted by the IMF and the World Bank. Assessments against international standards provided useful reference points for reform goals. Prioritisation of reforms was recognised as a particular challenge when countries were faced with multiple reform goals and resource limitations.

The Forum held its *15th regular meeting* on 17 March in Sydney. Members discussed global risks and vulnerabilities, international standard-setting arrangements, concerns about regulatory burden and ongoing work to mitigate sources of vulnerability.

At its 15th regular meeting, FSF takes stock of benign global economic conditions …

Building on the discussion at the regional meeting on the previous day, participants noted that global economic conditions remained benign and that financial systems had weathered a variety of shocks. Balance sheets and capital levels of financial institutions remained strong, while continued structural improvements in markets appeared to have strengthened systemic resilience. However, members pointed to several developments with the potential to cause strains in financial systems, such as further growth in external imbalances, high levels of household sector indebtedness in some countries and low risk premia reflecting a high degree of liquidity and the continuing search for yield in markets. Some areas of ongoing concern were reviewed, including issues related to counterparty risk management, hedge funds, operational risks and valuation practices for complex financial instruments. While progress had been made in addressing confirmation backlogs and issues related to the assignment of credit derivative contracts, the FSF noted that further work was needed to implement the recommendations of the Counterparty Risk Management Policy Group II, notably with respect to operational risks and issues of transparency with regard to credit derivatives. The FSF urged firms to further strengthen their risk management practices, including the comprehensiveness of their stress testing and scenario analysis.

… while pointing to potential strains in financial systems

The FSF reviewed the practices of the key international standard-setting bodies with regard to the transparency, governance and risk focus of their activities. It also considered the challenges, and potential implications for financial stability, of a recent series of international, regional and national regulatory initiatives. Members noted the desirability of continued dialogue with the private sector on regulatory initiatives. The discussion of ongoing work to mitigate sources of vulnerability focused on cross-border information exchange in financial disruptions and business continuity incidents, offshore financial centres, IFRS and auditing issues, reinsurance and funding liquidity risk management practices.

Basel Committee on Banking Supervision

In February 2006, the BCBS released guidance on enhancing corporate governance for banking organisations. In March, it provided clarification on the use of vendor products in the Basel II IRB framework, and in April it issued consultative documents on *Core Principles for Effective Banking Supervision* and on the *Core Principles Methodology*.

BCBS releases guidance for enhancing corporate governance for banking organisations …

Corporate governance has continued to attract considerable national and international attention in the light of a number of high-profile breakdowns in governance processes. *Enhancing corporate governance for banking organisations* incorporates comments received on a consultative paper issued in July 2005.[2] After the OECD published revised corporate governance principles in 2004, the BCBS recognised that revised guidance could also assist banking organisations and their supervisors in the implementation and enforcement of sound corporate governance. Accordingly, it published this revision to its 1999 text in order to offer practical guidance relevant to the unique characteristics of banking organisations. Particular focus is placed on activities of banking organisations conducted through structures which may lack transparency, or in jurisdictions that pose impediments to information flows.

… and provides clarification on the use of vendor products in the Basel II IRB framework

In a newsletter published in March 2006, the Committee provided clarification on the *use of vendor products*[3] *in the Basel II IRB framework.* This newsletter sets forth the views of the Basel Committee Accord Implementation Group's Validation Subgroup (AIGV) relating to the use of vendor products within internal ratings-based (IRB) approaches of the Basel II framework. The AIGV developed the newsletter in response to industry questions about supervisory expectations for incorporating vendor products into banks' IRB processes. The purpose was to further elaborate on supervisory expectations regarding how banks might satisfy IRB validation requirements when vendor products, which frequently introduce information transparency issues, are used within banks' IRB processes. The AIGV benefited from recent meetings with

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[2] See "Recent initiatives by Basel-based committees and the Financial Stability Forum", *BIS Quarterly Review*, September 2005.

[3] Models and datasets developed by vendors and used within the context of banks' IRB processes to assign exposures to certain rating grades, or segments, or to estimate IRB risk parameters.

various vendors in drafting the document, which focuses on four main points: (i) the need to document and explain the role of vendor products within banks; (ii) the need for banks to have a thorough understanding of such products; (iii) ensuring the suitability of the products for the banks' exposures and risk rating methodologies, and for use within the IRB framework; and (iv) the importance of strategies for reviewing the performance of the products on a regular basis.

Consultative documents on the Core Principles and the associated methodology

In April 2006, the BCBS issued for comment by 23 June 2006 consultative documents on the *Core Principles for Effective Banking Supervision* and the associated *Core Principles Methodology*. The Principles were originally published by the Committee in September 1997. Along with the methodology, first issued in 1999, the Core Principles have been used by countries as a benchmark for assessing the quality of their supervisory systems and for identifying future work needed to achieve a baseline level of sound supervisory practices. Since 1997, however, significant changes have occurred in banking regulation, and much experience has been gained with implementing the Core Principles in individual countries. Moreover, new regulatory issues, insights and gaps in regulation have become apparent, often resulting in new Committee publications. These developments have made it necessary to update the Core Principles and the associated methodology, the latter being a tool designed to improve objectivity and comparability in the assessment of different countries' compliance with the Core Principles. The exercise has been carried out in close cooperation with many non-member supervisors, and there has already been extensive consultation with the regional groups of bank supervisors.

Committee on Payment and Settlement Systems

During the period under review, the CPSS undertook three major initiatives.[4] It announced the preparation of a survey of foreign exchange settlement risk, agreed to set up a working group on clearing and settlement arrangements for OTC derivatives and issued a consultative report on general principles for international remittance services.

CPSS announces preparation of a survey of foreign exchange settlement risk …

On 1 February 2006, the Committee announced that it would carry out a *survey of foreign exchange settlement risk,* focusing on how banks and other selected institutions manage the risks they can incur when settling foreign exchange transactions. The survey will take place during the second quarter of the year and will invite participation from more than 100 institutions active in the foreign exchange market. Part of a comprehensive strategy[5] endorsed in

[4] In addition, in March 2006, an update was issued for the *Statistics on payment and settlement systems in selected countries – Figures for 2004*. The preliminary version, published in January 2006, did not include some provisional data for 2004, as they were not yet available.

[5] The strategy involved three tracks: (i) action by individual banks to control their settlement exposures, (ii) action by industry groups to provide risk-reducing multicurrency services, and (iii) action by central banks to induce private sector progress. The G10 central banks reaffirmed this strategy in 2000, emphasising the prime responsibility of the private sector for risk reduction. Since 1996, the CPSS has been monitoring progress in implementing the strategy, including the launch in 2002 of CLS Bank.

1996 by G10 central banks to reduce the systemic risks inherent in foreign exchange transaction settlement arrangements, the current survey is based on those carried out in 1996 and 1997 and has been updated to reflect the significant developments in settlement practices that have since taken place.

… and sets up a working group on clearing and settlement arrangements for OTC derivatives

On 13 February 2006, the CPSS announced that it had agreed to set up a *working group on clearing and settlement arrangements for OTC derivatives*. The working group – comprising representatives of prudential supervisors of major derivatives dealers, as well as CPSS member central banks[6] – will follow up on a report published by the BIS in 1998 on settlement procedures and counterparty risk management for OTC derivatives. Since 1998, OTC derivatives markets have continued to grow rapidly, with notional amounts outstanding roughly tripling between 1998 and 2004. Furthermore, during that period, market practices have evolved and various enhancements to market infrastructure have been introduced. In this context, the working group will assess the effectiveness of current risk management practices with respect to the post-trade processing infrastructure in OTC derivatives markets, complementing recent supervisory initiatives in some countries relating to assignment practices and confirmation backlogs in credit derivatives markets. The survey will take a comprehensive view of existing arrangements and risk management practices in the broader OTC derivatives market and evaluate the potential for risks to be mitigated by greater use of, and enhancements to, market infrastructure. The working group aims to complete a final report in the first half of 2007.

Consultative report on general principles for international remittance services

In March 2006, the CPSS published a consultative report on *general principles for international remittance services,* aiming to close a gap in the coverage of payment system aspects in other reports on this issue. The report was prepared for the CPSS and the World Bank by a task force consisting of representatives from international financial institutions involved in remittances and from central banks in both remittance-sending and remittance-receiving countries. It analyses the payment system aspects of remittance services and, on the basis of the analysis, sets out general principles designed to assist countries that want to improve this market. The report is open for comments until 18 August 2006.

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[6] Both the Basel Committee on Banking Supervision and the Committee on the Global Financial System will be consulted as the work moves forward.