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Highlights of international banking and financial market activity[1]

The BIS, in cooperation with central banks and monetary authorities worldwide, compiles and disseminates several datasets on activity in international banking and financial markets. The latest available data on the international banking market refer to the fourth quarter of 2006. The discussion of the international debt securities market and exchange-traded derivatives markets draws on data for the first quarter of 2007.

The international banking market

Locational banking statistics

Expansion of credit to non-banks …

Total cross-border claims of BIS reporting banks expanded by $1 trillion in the last quarter of 2006. After more modest growth in mid-2006, a pickup in interbank claims accounted for 54% of this expansion. A surge in credit to non-bank entities contributed $473 billion, pushing the stock of cross-border claims to $26 trillion, 18% higher than in late 2005. The non-bank sectors in the United States and in the euro area borrowed over $100 billion each in the course of the quarter, followed by non-banks in offshore centres and in emerging markets with $92 billion and $60 billion, respectively.

… and to offshore centres

Credit to offshore financial centres[2] continued to grow at a brisk pace overall. BIS reporting banks' claims on offshore centres stood 23% higher at end-2006, at $3.3 trillion, than a year before. Some 60% of this stock represents claims on banks, with the remainder thought to be financing primarily other financial entities domiciled in offshore centres. In the latest quarter, the Cayman Islands alone accounted for over 80% of the $189 billion increase in banks' claims on offshore centres, as a result of claims of banks in the United States, Switzerland and the United Kingdom.

[1] Queries concerning the locational banking statistics should be addressed to Goetz von Peter, those regarding the consolidated banking statistics and international debt securities statistics to Ryan Stever, and those relating to the derivatives statistics to Christian Upper.

[2] This group includes the BIS reporting offshore centres (those listed in Graph 1 plus Bahrain) as well as eight smaller offshore centres (Aruba, Barbados, Gibraltar, Lebanon, Mauritius, Samoa, Vanuatu and the West Indies (UK)).

Banks located in offshore centres tend to distribute funds mostly within the continent in which they are located (Graph 1). During the last two quarters of 2006, banks in the Caribbean offshore centres raised the share of credit to the Americas to over 80%. Similarly, banks in the Channel Islands increased the share vis-à-vis Europe by 4 percentage points to 79%. By contrast, after the Asian crisis and the gradual retreat of Japanese banks' international lending out of Hong Kong in the late 1990s, banks in Asian offshore centres continued to reduce the share directed to borrowers in the Asia-Pacific region.

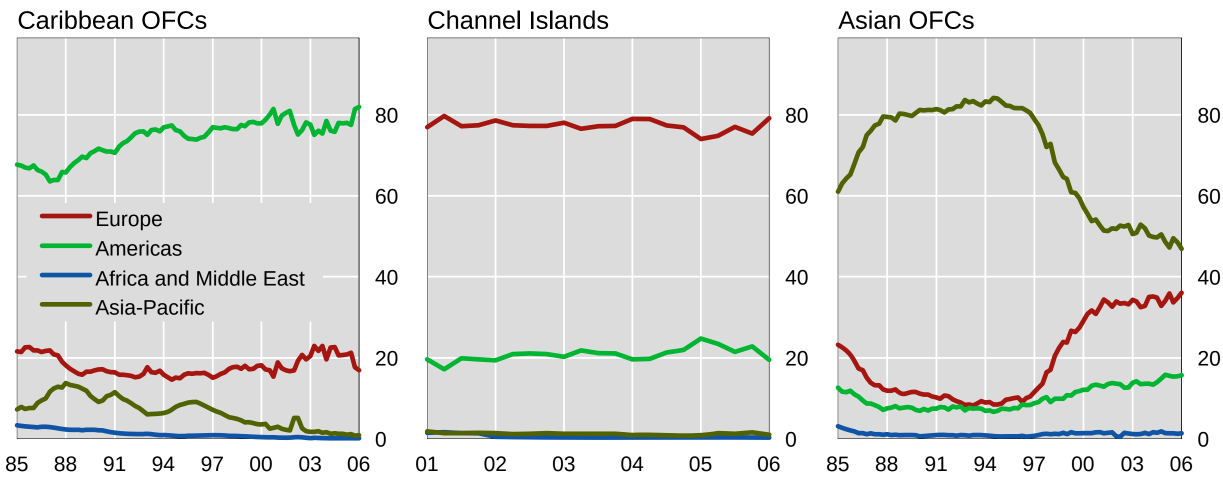
Credit to emerging markets soars throughout 2006

The flow of credit to emerging markets reached new heights through the year 2006. Claims on emerging markets grew by $96 billion in the final quarter of 2006, bringing the volume of new credit throughout the year to $341 billion. This amount exceeded previous peaks ($232 billion in 2005 and $134 billion in 1996), both in nominal value and in terms of growth. The current annual growth rate has risen to 24%, having surpassed for the sixth consecutive quarter the previous peak of 17% recorded in early 1997.

Emerging Europe overtook emerging Asia as the region to which BIS reporting banks extend the greatest share of credit. Since 2002, growth in claims on the region has consistently outpaced that vis-à-vis other regions. With a record quarterly inflow, emerging Europe received over 60% of new credit to emerging markets, bringing its share in the stock of emerging market claims to 34%. Less of the new credit went to the major borrowers (Russia, Turkey, Poland and Hungary) than to a number of smaller markets, notably Romania and Malta, as well as Ukraine, Cyprus, Bulgaria and the Baltic states. Of the remaining $38 billion in new credit to emerging markets, borrowers in Africa and the Middle East accounted for 24% and those in Latin America for 12%, while borrowing by emerging Asia as a whole remained flat.

Claims of banks in offshore financial centres (OFCs)[1]

Share of total claims channelled to the regions identified by the legend, in per cent



[1] The Channel Islands comprise Jersey and Guernsey, with the Isle of Man also included. Caribbean OFCs include the Bahamas, Bermuda, the Cayman Islands, the Netherlands Antilles and Panama. Asian OFCs include Hong Kong SAR, Macao SAR and Singapore. Of the $4.2 trillion in bank claims of BIS reporting offshore centres, Caribbean OFCs account for 49%, Asian OFCs for 30% and the Channel Islands for 17%. The vis-à-vis regions are defined as continents: Europe includes the advanced European countries, emerging Europe and European OFCs; Americas includes Canada, the United States, Latin America and the Caribbean OFCs; Asia-Pacific and Africa and Middle East are defined accordingly. Graph 1

Emerging Europe borrows more in euros

The currency denomination of cross-border claims on emerging Europe tilted further towards the euro. In the stock of claims outstanding, the euro and dollar shares were 44% and 31%, respectively, but the gap in the latest flow data was more pronounced (61% and 5%). While the sterling share has remained close to 1%, the yen has lost ground to the Swiss franc, thus continuing a trend seen over the last six years. Yet there is little evidence in the cross-border data of unusual borrowing in Swiss francs that might correspond to Swiss franc-denominated retail lending in several countries. Borrowing in the Swiss currency remains on average below 4% of cross-border claims, and exceeds 10% only in Croatia and Hungary. By contrast, the role of local currencies appears to have become more important: the share of local currencies has been rising to stand at 18%, and exceeds 35% in Poland and the Czech Republic.[3]

The imposition of capital controls in Korea and Thailand in December slowed cross-border banking flows. The stock of claims on borrowers in Korea remained constant, following large inflows in the two previous quarters. In Thailand, an 8% decline in lending, compounded by outflows from the country in the form of deposit placements with BIS reporting banks (+4%), resulted in an overall net outflow of $3.8 billion. Consequently, BIS reporting banks' net claims on Thailand, which had turned negative in September 2004, expanded by 68% to –$9.2 billion.

Deposits placed by emerging markets outpace their borrowing

The quarterly expansion of cross-border liabilities of BIS reporting banks was only two thirds that of claims. That banks' cross-border claims have been growing faster than their liabilities in recent years was not due to emerging markets. They have been placing cross-border deposits in excess of new borrowing, extending their position as net creditors to the international banking system such that BIS reporting banks' net liabilities to emerging markets reached $349 billion. This figure has grown consistently since turning positive in early 2000. In the latest quarter, the most active depositors were residents of Asia-Pacific, as well as those of Africa and the Middle East.

OPEC deposits remain in dollars but go to Europe

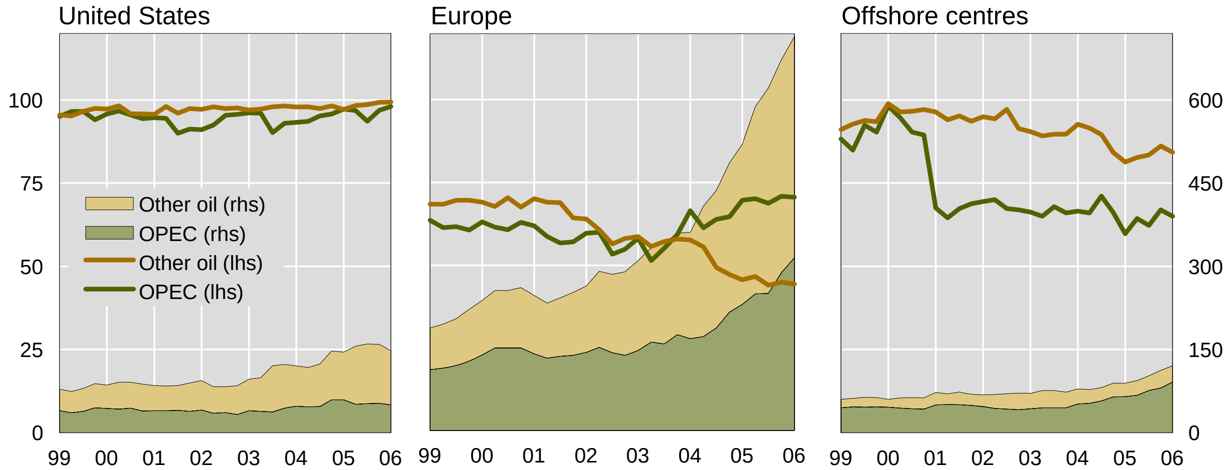
Oil-producing countries continued placing deposits predominantly with banks in Europe (Graph 2). In the course of the latest quarter, OPEC and other oil-producing countries withdrew deposits from banks in the United States and placed deposits in Europe. Of the $1 trillion stock of deposits by oil-producing countries, 71% are placed in banks in Europe, 15% in banks in the United States and 12% in banks in offshore centres.[4] OPEC member states make more extensive use of offshore centres (20% of deposits) – especially Bahrain – than do other oil producers (6%). As a result, OPEC members place only an estimated 11% of their reported deposits with banks located in the United States. This choice may reflect geographical preferences rather than considerations of currency composition, since OPEC member states in fact

3 The local currency share is estimated as a residual; it includes claims that are neither in the main currencies, nor in the domestic currencies of reporting banks.

4 This holds for deposits booked by banks located in the 40 BIS reporting countries vis-à-vis the oil-producing countries listed in Graph 2.

Deposit placements by oil-producing countries[1]

Amounts in billions of US dollars; US dollar shares in per cent



[1] Total deposit liabilities of BIS reporting banks vis-à-vis entities resident in OPEC member countries and other oil-producing countries, and the share of deposits denominated in US dollars. The US dollar shares are calculated at constant 2006 Q4 exchange rates. For offshore centres, this calculation excludes deposits in those offshore centres not reporting a currency breakdown (Bahrain, Hong Kong SAR, Macao SAR, the Netherlands Antilles and Singapore, which jointly accounts for 85% and 27% of the total deposits of OPEC and "Other oil" in banks and offshore centres, respectively). OPEC member states are Algeria, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates and Venezuela (as of December 2006). Other major oil-producing countries included here are Angola, Colombia, Ecuador, Egypt, Kazakhstan, Mexico, Norway, Oman, Russia, Syria and Yemen. Europe comprises advanced European countries, including Switzerland and the United Kingdom, and excluding central and eastern European countries and European offshore centres. Graph 2

hold a greater share of their European deposits in dollar accounts than do other oil-producing countries.

Consolidated banking statistics on an immediate borrower basis

The expansion in international banking activity in the fourth quarter of 2006 was primarily driven by growth in the foreign claims of French, German, Swiss and Japanese banks. Lending within the euro area tends to boost European banks' total international claims. However, even excluding their claims on euro area residents, French and Swiss banks' international claims increased markedly. This stemmed primarily from a rise in claims on residents of the United States.[5] Japanese banks' claims on US residents also expanded, as did their claims on euro area residents.

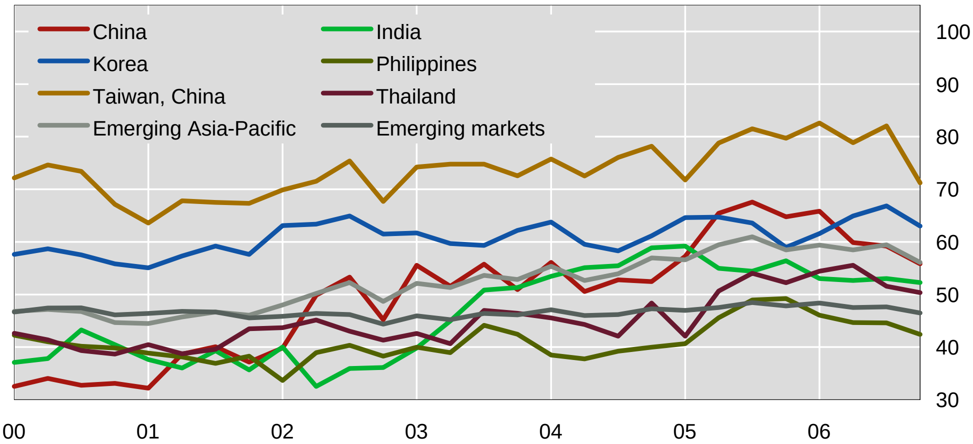
Claims on US residents expand significantly

Among banks headquartered in emerging markets, Indian, Taiwanese and Turkish banks' claims expanded, while those of Brazilian and Mexican banks decreased. The growth in claims of banks from India, Taiwan (China – hereafter Taiwan) and Turkey was entirely from international activity, rather than from increases in local currency claims of offices abroad. Nearly all of these new claims are short-term, having remaining maturities of less than one year, and most are to the non-bank private sector. Banks from Taiwan channelled funds to euro area residents, whereas Turkish banks did so to US residents. Indian banks extended most of their new funds to residents in

[5] In the consolidated banking statistics (immediate borrower basis), foreign claims are composed of international claims and local claims in local currency. International claims include cross-border claims and local lending in foreign currency.

Short-term international claims vis-à-vis emerging economies[1]

As a percentage of total claims



[1] Share of reporting banks' international claims (immediate borrower basis) with remaining maturity of less than one year vis-à-vis individual emerging markets. Graph 3

advanced European countries, the United States, emerging Europe and offshore centres.

Nearly 20% of reporting banks' foreign claims were in the form of funds channelled to emerging market borrowers. Claims on residents of emerging Europe continued to account for the largest share of these funds. Reporting banks' claims on residents of Romania doubled in the fourth quarter of 2006, in large part because of the opening of local offices by euro area banks. The continued growth in claims on Latin American residents was primarily due to an expansion in reporting banks' local claims in local currency. This was especially true for Brazil, Mexico and Venezuela, which receive the bulk of these funds from local offices of banks headquartered in the euro area. Growth in claims on residents of Asia-Pacific was more subdued than for other emerging markets. For the first time in three quarters, there was no substantial increase in claims on residents of Korea.

Claims on Romania double in fourth quarter

The most recent data reveal a shift in the maturity of BIS reporting banks' international claims on emerging Asia. As from 2001, there had been a tendency for the share of short-term claims on emerging Asia to rise, but this trend came to a tentative halt in the fourth quarter of 2006 (Graph 3). The 3 percentage point drop in this share was the result of a near 4 point decline in the short-term share of claims on residents of China and Korea and a more than 10 point decrease in this share for claims on Taiwan. By contrast, the share of short-term claims on all emerging economies has been stable at just below 50% since 2000.

Short-term share of claims on emerging Asia declines

Consolidated banking statistics on an ultimate risk basis

Expressed on an ultimate risk (UR) basis, total foreign claims of BIS reporting banks reached $22 trillion in the fourth quarter of 2006. Cross-border claims reached $13 trillion, nudging the share of local claims in total foreign

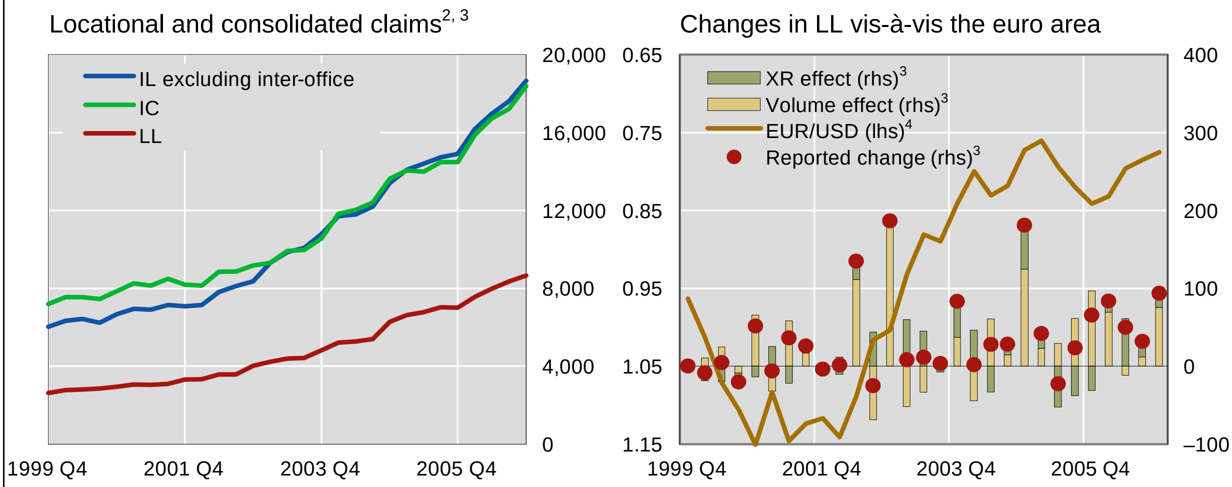
Currency effects in consolidated bank claims

Blaise Gadanecz and Karsten von Kleist

The BIS consolidated banking statistics track reporting banks' foreign claims on unaffiliated counterparties in countries worldwide. They are based on the nationality of the reporting bank and net out intragroup positions. The claims are denominated in many currencies, but are converted to USD amounts at end-of-quarter exchange rates for reporting to the BIS. In some quarters, exchange rate movements generate substantial USD value changes in reported stocks, which can make it difficult to distinguish banks' strategically motivated claim allocations (active volume changes) from passive exchange rate related movements. In this box, we set out to obtain estimates of the breakdown of the reported changes in consolidated claims into these volume and exchange rate effects, using as input the currency breakdown of the locational banking statistics.[1]

The consolidated banking statistics track reporting banks' *foreign* claims, which are the sum of *international* consolidated claims (IC, the green line in the left-hand panel of Graph A) and *local claims in local currency* (LL, the red line, which have contributed about one third to foreign claims since 1999).[2] International claims in turn consist of *cross-border* claims and *local claims in foreign currency* (LF), although these two components are reported jointly. LF and LL correspond to claims booked through the offices of the reporting banking systems located in the borrowing countries.

Comparison of IL[1] and IC; decomposition of euro area LL



[1] International locational claims. [2] Vis-à-vis the whole world. [3] In billions of US dollars. [4] Inverted scale. Graph A

Decomposing LL into volume and exchange rate effects is straightforward, since, by definition, the currency of denomination is that of the vis-à-vis country. The right-hand panel of Graph A shows such a decomposition for lending to euro area borrowers, where the currency valuation effect for LL is largest. The decomposition is done in the following way. The change in the asset volume denominated in a specific currency is calculated by first converting the reported dollar amounts back to the original currency and then taking the difference in stocks. This change in stocks is then reconverted to USD. The difference between this volume effect and the raw change in the reported stock of LL is defined as the exchange rate effect – caused in outstanding asset stocks by the movement of the foreign currency against the USD during the quarter. We note that exchange rate effects have accounted for up to one third of total reported changes in stocks of LL since 1999. We have plotted the EUR/USD exchange rate in the right-hand panel of Graph A to illustrate the consistency of the calculated exchange rate effects with the evolution of the exchange rate.[3]

For IC, separating volume and exchange rate effects is more difficult, but the locational banking statistics can be helpful in providing an estimate. Indeed, at the *global* level, the (stock) coverage of both the locational and the consolidated datasets is similar, since they cover all major banks worldwide, and since both identify borrowers by their country of residence. Therefore, currency- and volume-related changes in both datasets should be highly correlated.

However, there are three conceptually important differences. First, banks' inter-office transactions are included in the locational but excluded from the consolidated data to focus the latter on credit claims on unaffiliated borrowers. Second, LF are indistinguishably included in IC, and separately identifiable only in the locational statistics.[4] Third, foreign-located banks' claims on residents of their own country (ie German banks' lending from outside Germany to residents of Germany) need to be added to the consolidated data.

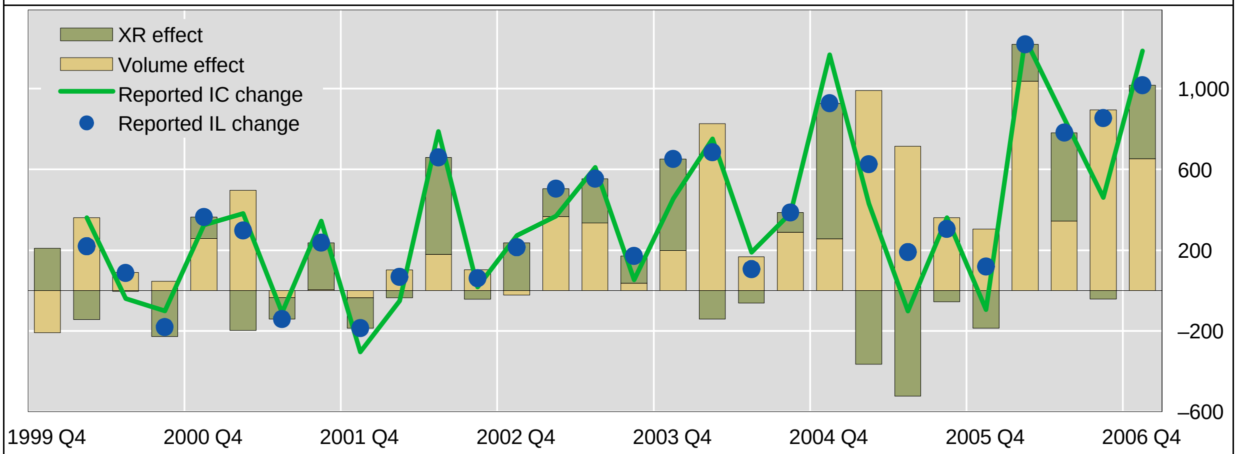
We adjust claims for these factors at the global level and observe that they are then closely related (the blue and green lines in the left-hand panel of Graph A). This has been especially true since 2003, when the British Crown Dependencies (Guernsey, Isle of Man, Jersey) became separate reporting countries, and additional offshore centres and emerging economies (Bahamas, Brazil, Chile, Panama) started to report in the locational system.

The close agreement between the two datasets allows us to apply, pro rata *at a global level*, to the quarterly changes in IC (the green line in Graph B) the currency valuation and volume decomposition of the quarterly reported changes in international locational claims (IL, the blue dots).[5] For each reported currency, we distinguish between volume and exchange rate effects, as above. Thus, for instance, in the fourth quarter of 2006, about 40% of the $1 trillion increase in IC can be attributed to exchange rate valuation effects.

The exchange rate effect was substantial in several quarters. In the second quarter of 2006, for example, the appreciation of all the major currencies against the USD resulted in a calculated exchange rate valuation effect accounting for 56% of the reported change in international claims. The exchange rate effect can obviously both over- and understate the underlying changes in lending. In the first and second quarters of 2005, for example, the decline in the euro exchange rate dragged down reported lending, with the actual volume of lending substantially higher than reported. Exchange rate effects may even reverse the sign of the change in lending, as for instance in 2000 Q3.

Changes in international claims: calculated volume and exchange rate effects

In billions of US dollars



Graph B

While the decomposition of the changes in IL into exchange rate and volume effects can be applied to the changes in IC at the *global* level, the exercise cannot be repeated for individual borrowing *regions*. Indeed, the currency composition of IL is not the same globally as for the various regions. In particular, eastern Europe as well as developed countries do roughly half of their borrowing in euros, while the USD tends to dominate in Asia and Latin America. In addition, IL cannot be made consistent with IC at a regional level, as inter-office claims and LF cannot be broken out from the locational data vis-à-vis individual borrowing regions.

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[1] The BIS locational banking statistics, based on the residency of the reporting banks, include positions vis-à-vis banks' own foreign offices. [2] See P McGuire and N Tarashev, "The presence of foreign banks in national credit markets", *BIS Quarterly Review*, June 2005. [3] The 15 EMEs for which lending in local currency has been most significant in absolute terms are BR, CL, CN, CZ, HK, HU, IN, KR, MX, MY, PL, SG, SK, TH and TW. The exchange rate valuation effect for LL has averaged 20% of volume changes in recent years. [4] The locational banking statistics provide a distinction between cross-border and local lending in foreign currency, but only for reporting countries. [5] In quarters where the absolute change in outstanding stocks is very small, the relative error in this pro rata application is comparatively large, but in such cases we would not expect to put too much emphasis on decomposing a small absolute change into volume and exchange rate effects.

claims lower.[6] The shares of total claims on banks, the public sector and the non-bank private sector did not change substantially.

US banks increase their share of claims on emerging markets

Reporting banks headquartered in advanced economies modestly raised their share of foreign claims (UR basis) on emerging market borrowers. US banks were the largest contributor to this increase, as the portion of their claims on the emerging markets rose from 28% to 30%. This primarily came from an expansion in the share of claims on residents of Latin America, especially those in Mexico and Brazil. Swiss banks also increased their fraction of claims on Latin America, while euro area banks, for the most part, raised their share of total claims on residents of emerging Europe.

Although the rate of cross-border flows into Korea and Thailand did appear to slow, there was not a significant change in the growth of consolidated foreign claims on these countries. Banks from most countries in the developed world reported typical growth in their exposures to Korea and Thailand. UK banks were the exception, as they reported a slight reduction in claims with an ultimate liability on the residents of these countries, although this might be attributable to exchange rate effects (see box).

Share of claims on Venezuela hits two-year high

Political turmoil in selected emerging markets did not seem to affect the allocation of reporting banks' foreign claims. Claims on residents of Venezuela as a share of claims on Latin America climbed to a two-year high of 4%, while the same share for Ecuador has remained relatively constant over the last two years. Claims on Hungary as a proportion of claims on emerging Europe fell for the eighth quarter in a row, dipping to just below 10% in the latest quarter.

The international debt securities market

International bond and note issuance, on a net basis, was subdued in the first quarter of 2007. While total gross issuance rose to \$1.7 trillion, following \$1.4 trillion the previous quarter, repayments of \$682 billion pushed net issuance down by 2% to \$866 billion. This was the first time since 2002 that net issuance in the first quarter actually declined from the previous quarter. The increase in repayments primarily reflected a rise in the early retirement of bonds and notes. Year-on-year growth in early repayments reached 12% in the latest quarter, well above the 7% growth of scheduled redemptions.

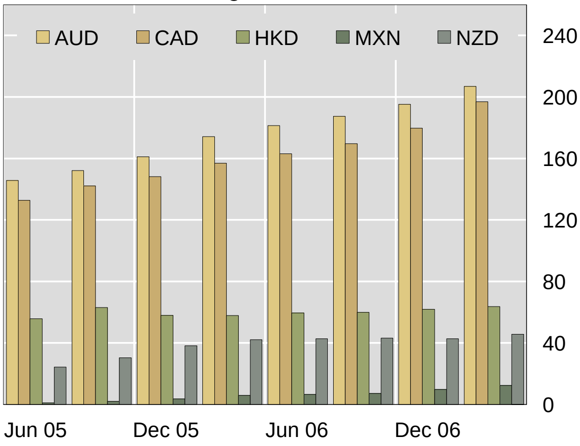
US dollar- and yen-denominated issuance decreases …

Net issuance of bonds and notes denominated in dollars and yen fell by \$39 billion and \$7 billion, respectively, while issuance in other major currencies saw modest, but positive, growth. Net issuance in euros and sterling edged up by \$2 billion and \$1 billion, respectively. Meanwhile, growth in the amount outstanding in a number of other currencies was significant (Graph 4, left-hand panel). Growth of net issuance denominated in Hong Kong dollars accelerated to 43% on a year-on-year basis. Canadian dollar- and Mexican peso-denominated net issuance volumes were at all-time highs for the second consecutive quarter.

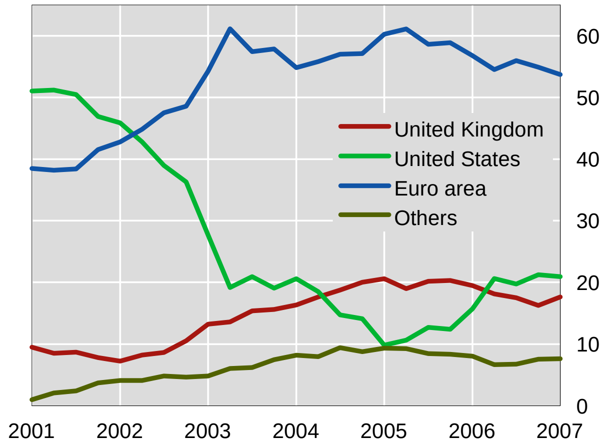
[6] Claims (UR basis) are composed of cross-border and local claims in all currencies. Claims expressed on a UR basis take into account risk transfers, and thus reallocate positions to the country of residence of the ultimate obligor.

International bond and note issuance

Amounts outstanding[1]



Share of net issuance[2]



[1] In billions of US dollars, recalculated using constant 2007 Q1 exchange rates. [2] Share (in per cent) of four-quarter moving averages, by residence of issuer in developed countries.

Sources: Dealogic; Euroclear; ICMA; Thomson Financial; BIS. Graph 4

... while in the United Kingdom net issuance is robust

In the advanced economies, resident issuance slowed slightly in the euro area and the United States from the previous quarter and continued to expand in the United Kingdom. Net issuance in the United Kingdom increased 15% year on year, following strong growth of 11% the previous quarter. In the United States and the euro area, net issuance actually declined. As a result, the United Kingdom's share of the advanced world's net issuance rose to 18% in the latest quarter (Graph 4, right-hand panel).

A primary reason net issuance in the United Kingdom remained strong was the activity of issuers located there but whose parent company is domiciled abroad. Typically, over a third of the United Kingdom's issuance is by firms headquartered overseas, much higher than the analogous share in the United States. In the first quarter, such issuance in the United Kingdom expanded at the fastest rate in six quarters. As is usually the case, the non-resident UK issuance came largely from financial firms.

Public banks in emerging markets fuel bond and note issuance

In emerging markets, banks were the most active issuers in the international bond and note markets. Fuelled in particular by issuance from public sector banks, net issuance by banks in emerging markets was over 20% greater than the previous high. By contrast, net issuance of corporate bonds in emerging markets decreased by nearly $7 billion, despite its seasonal tendency to increase in the first quarter. The $6 billion of net issuance by emerging market borrowers in the government sector was slightly above the $5 billion the previous quarter, but year-on-year growth remained well below zero.

Issuance from India picks up

A few countries in emerging Asia and Europe were much more active in the international debt market than in the past. Net issuance of $5 billion in India in the first quarter nearly doubled its previous quarterly high, while net issuance of $4 billion from Russia contributed to year-on-year growth in issuance of 60%. Growth in debt outstanding in Turkey was also strong for the second consecutive quarter at $4 billion. About half of this amount was government-sponsored debt denominated in dollars.

Derivatives markets

Exchange-traded derivatives

Trading on the international derivatives exchanges accelerated in the *first quarter of 2007*. Combined turnover of interest rate, currency and stock index derivatives increased by 24% to $533 trillion between January and March, after declining by 7% in the previous quarter.[7] Activity was strong across risk categories with the exception of commodities. There turnover stagnated as higher activity in energy products (23%) and precious metals (32%) was offset by weaker trading in agricultural commodities (–20%).

Sell-off lifts turnover in stock index and FX contracts

Rapid trading during the turbulence in international financial markets in late February and March boosted growth in equity and foreign exchange contracts. Turnover in futures and options on stock indices increased by 33% to $60 trillion in the first quarter, the highest level on record. Trading volumes of listed FX derivatives rose by 26% to $6 trillion. The largest increases took place in currencies typically associated with carry trades (see below for a discussion of OTC derivatives in this context). For example, turnover in contracts on the New Zealand dollar more than doubled in March, while volumes in derivatives on the Australian dollar increased by 85% in that month. Rapid growth was also recorded in contracts denominated in the funding currencies, yen and Swiss franc, where turnover in March rose by 62% and 42%, respectively. Across all currencies, turnover in March was 37% higher than in February.

More modest growth in interest rate derivatives

Turnover in exchange-traded interest rate derivatives increased by 22%, slightly more than the estimated seasonal increase.[8] Activity was buoyant across the curve and across currencies, although particularly rapid growth was recorded in derivatives denominated in Swedish kronor (100%) and sterling (58%). In Sweden, the Riksbank's forecast of the path of future policy rates published in February took the market by surprise, as traders had anticipated rates to increase more rapidly than predicted by the monetary authority. This led to a spike in the turnover on short-term krona rates in that month. Similarly, trading in derivatives on short-term sterling rates soared after the hike by the Bank of England in early January, which had also not been widely anticipated.

OTC derivatives

Growth in the over-the-counter (OTC) derivatives market reverted to a pace in line with the long-term average in the second half of 2006. Notional amounts increased by 12% to $415 trillion at the end of December, after rising 24% in

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[7] All growth rates in the section on exchange-traded derivatives refer to quarter-on-quarter increases, unless otherwise noted.

[8] See *BIS Quarterly Review*, March 2006, pp 45–6.

the first half of the year.[9] Growth remained very strong in the credit segment, but fell to rates in the range of 5–11% in other risk categories. Gross market values, which measure the cost of replacing all existing contracts and thus represent a better measure of the size of the exposures at a given point in time than notional amounts, remained roughly stable at $10 trillion at the end of December 2006. This reduces to $2 trillion if netting agreements are taken into account.

Rapid increase in CDS positions

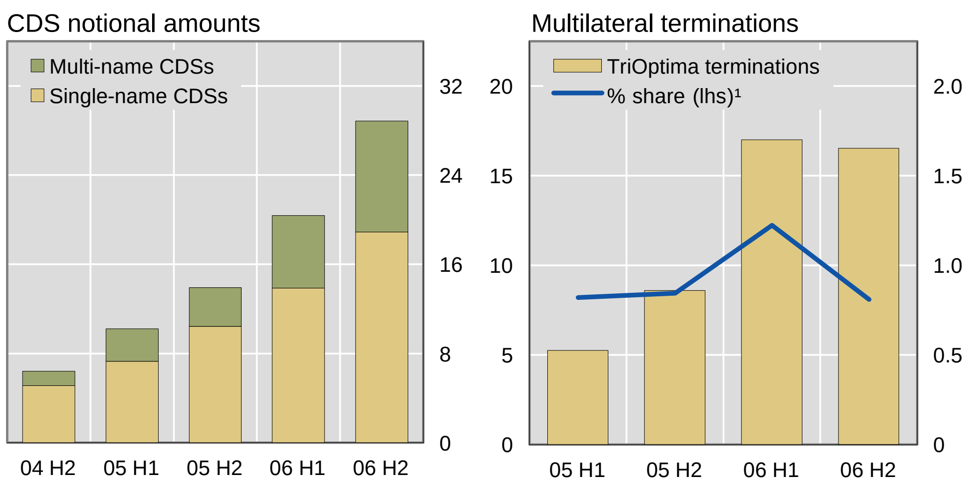
The market for credit default swaps (CDSs) continued to expand at a fast pace in the second half of 2006. At 42%, the rate of growth was only marginally below the 46% recorded in the first half of the year (Graph 5). With a cumulative volume of $1.7 trillion[10] between July and December, multilateral terminations of CDS contracts were of a similar volume as in the first half of the year and shaved approximately 8% off the rate of growth in this market.

Only mixed evidence for increase in carry trade activity

The currency breakdown of OTC foreign exchange derivatives provides only very mixed support for an expansion of carry trades during the period under review.[11] The notional amounts of contracts on the yen changed little over the period, suggesting that carry trades were not an important driver of activity in that market segment. By contrast, positions in the Swiss franc, widely considered to be the second funding currency behind the yen, increased by 10%, thus outpacing the growth of the market as a whole. Turning to potential target currencies, the volumes outstanding of contracts on sterling expanded by 17%, which may partly reflect carry trade activity. However, important

Credit default swaps

Amounts outstanding, in trillions of US dollars



[1] Multilateral terminations during each half-year as a share of notional amounts outstanding of CDSs at the beginning of the period.

Sources: TriOptima; BIS. Graph 5

[9] Growth rates for OTC derivatives refer to changes over six months.

[10] Figures supplied by TriOptima. The volumes of terminations of contracts between BIS reporting dealers have been divided by two to adjust for double-counting.

[11] See *BIS Quarterly Review*, March 2007, pp 8–9.

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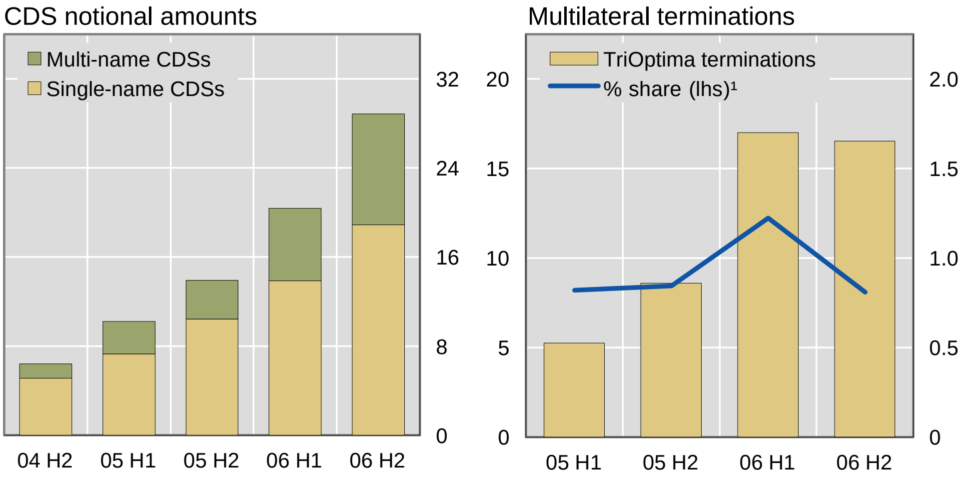

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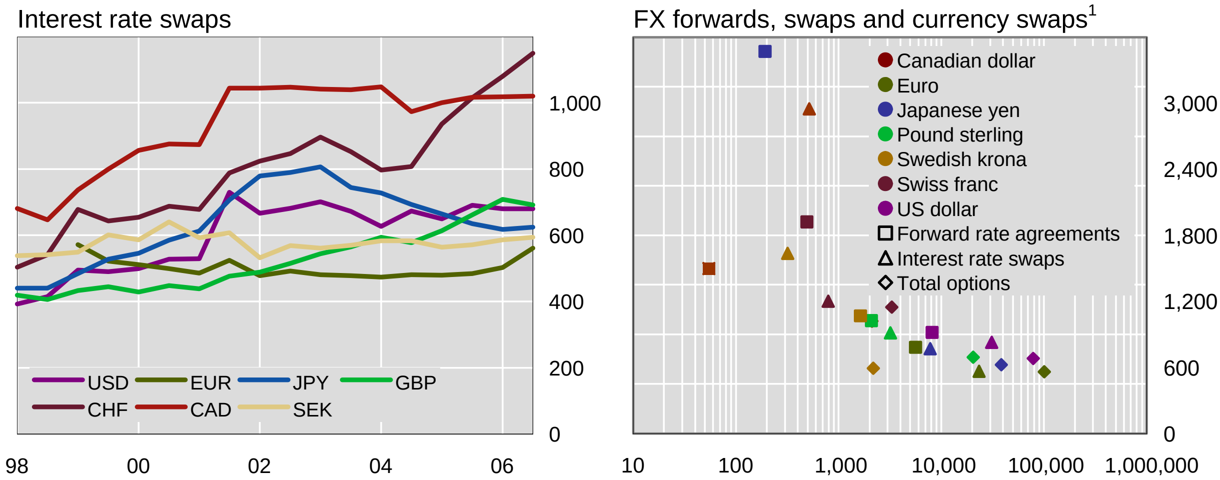
[11] See *BIS Quarterly Review*, March 2007, pp 8–9.

Herfindahl indices



[1] Horizontal axis: notional amounts, logarithmic scale.

Source: BIS. Graph 6

caveats have to be borne in mind when using the BIS semiannual survey to track carry trade activity. First, the low frequency of the data and the coarse instrument breakdown make it difficult to separate carry trades from trades based on different motives. Second, the data are less than comprehensive for non-G10 currencies such as the Australian dollar, because local banks do not form part of the reporting population. In addition, some activity in non-G10 currencies might be captured under "other currencies" since reporting dealers do not have to identify positions in these currencies.

Concentration low but increasing

Concentration in the OTC derivatives market appears to have increased since the survey was established in 1998, although it remains low on average (Graph 6). The Herfindahl indices (HIs) for FX and interest rate derivatives in the major currencies are in the range of 400 to 700, below the level that most economists would consider as indicating an oligopolistic market. For example, an HI of 500 would correspond to 13 dominant firms, assuming that the remaining reporting dealers shared equally the other 20% of the market. A market with nine dominant firms of equal size and a joint market share of 80% would have an HI of just over 700. However, while concentration tends to be low on average, it is quite high in some smaller markets. For example, the HI of forward rate agreements in yen increased from under 2,000 in the first half of the decade to almost 3,500, which would correspond to the case of three firms with equal market share accounting for 100% of the market. Nevertheless, not all small markets display such a high degree of concentration. For example, the HIs for interest rate swaps in Swedish kronor are the second lowest in the swaps segment behind the euro, and are much lower than those for swaps in Canadian dollars or Swiss francs, whose markets are of comparable size.