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Highlights of the BIS international statistics

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 second quarter of 2011. The discussion of international debt securities and exchange-traded derivatives draws on data for the third quarter of 2011. OTC derivatives market statistics are available up to mid-2011. There are two boxes in this chapter. The first provides measures of the vulnerability of emerging market economies to sudden capital withdrawals through the banking system, and the second examines how deleveraging by euro area banks could potentially affect emerging market economies.

The international banking market in the second quarter of 2011[1]

The aggregate cross-border claims of internationally active banks declined during the *second quarter of 2011*, mainly as a result of a decrease in lending to developed economies. By contrast, cross-border claims on residents of emerging markets rose for the ninth quarter in a row.

High shares of cross-border claims and short-term international claims could make Asia-Pacific the emerging market region most vulnerable to sudden capital withdrawals through the banking system (Box 1). Meanwhile, the risk of a credit crunch triggered by a potential deleveraging by euro area banks is highest in emerging Europe (Box 2).

Aggregate cross-border claims record a slight decline[2]

The aggregate cross-border claims of BIS reporting banks contracted slightly during the second quarter of 2011 (Graph 1, left-hand panel). The $192 billion (0.6%) fall was caused by a decrease in interbank claims ($293 billion or 1.5%). By contrast, lending to non-banks rose by $101 billion (0.9%).

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1 Queries concerning the banking statistics should be addressed to Stefan Avdjiev.

2 The analysis in this and the following subsections is based on the BIS locational banking statistics by residence. In this dataset, creditors and debtors are classified according to their residence (as in the balance of payments statistics), not according to their nationality. All reported flows in cross-border claims have been adjusted for exchange rate fluctuation and breaks in series.

Box 1: Measuring the vulnerability of emerging market economies to sudden capital withdrawals through the banking system

Stefan Avdjiev

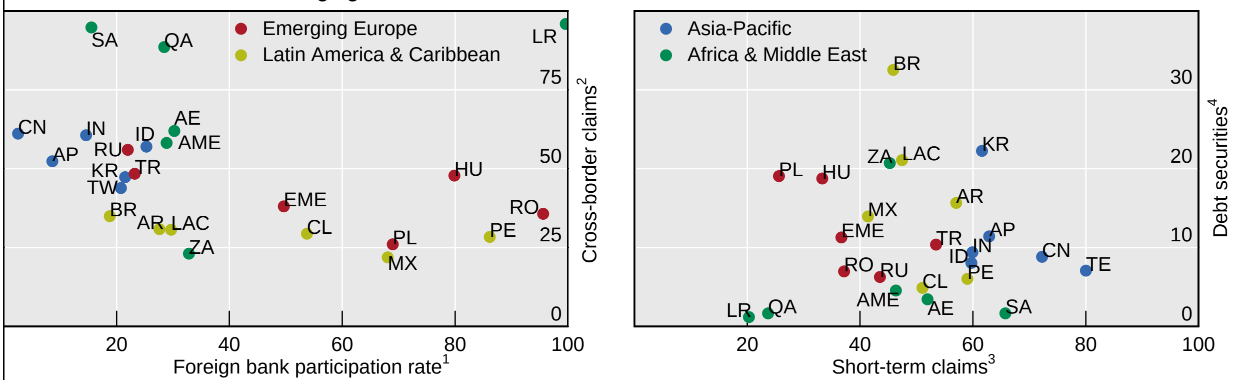
The steady growth of foreign credit to emerging market economies has been one of the most significant regularities in international banking over the past couple of years. Nevertheless, some commentators have expressed concerns that the flow of capital to these economies may be adversely affected by the sharp rise in global financial volatility which began in the third quarter of 2011. How vulnerable were emerging markets on the eve of the turmoil?

The BIS international banking statistics can be used to construct four measures of the degree to which a country is vulnerable to sudden capital withdrawals through the banking system. First, the fraction of short-term international claims relative to total international lending measures the degree to which an economy is exposed to a non-renewal of short-term foreign bank credit to its residents. Second, the share of cross-border lending in total foreign lending sends a signal about the stability of funding from foreign banks since cross-border claims tend to be much more volatile than their locally booked counterparts.[1] Third, the proportion of cross-border claims held in the form of tradable debt securities (as opposed to non-tradable loans) quantifies the ease with which foreign creditors could dispose of the claims they have on the residents of a given country. Finally, the foreign bank participation rate gives an indication of the fraction of total credit to non-banks in a given economy that is provided by foreign-owned banks.[2] While none of these four indicators is perfect on its own, taken as a group they can paint a fairly informative picture of the vulnerability of various emerging market economies to sudden capital withdrawals.

Based on the first two indicators, Asia-Pacific appears to be the region most exposed to sudden capital withdrawals. As of the end of June 2011, close to two thirds (63%) of all international claims on residents of that region had a remaining maturity of less than one year (Graph A, right-hand panel). In addition, cross-border claims represented more than half (52%) of all foreign lending to the area (Graph A, left-hand panel). Nevertheless, the signals sent by the other two indicators for Asia-Pacific were less worrying. First, foreign bank participation rates in the area were relatively low compared to those in the other three emerging market regions. In addition, debt securities represented only about a tenth of all cross-border claims on the region.

Measures of vulnerability to sudden capital withdrawals through the banking system

End-Q2 2011, selected emerging market economies



AE = United Arab Emirates; AME = emerging Africa & Middle East; AP = emerging Asia-Pacific; AR = Argentina; BR = Brazil; CL = Chile; CN = China; EME = emerging Europe; HU = Hungary; ID = Indonesia; IN = India; KR = Korea; LAC = emerging Latin America & Caribbean; LR = Liberia; MX = Mexico; PE = Peru; PL = Poland; QA = Qatar; RO = Romania; RU = Russia; SA = Saudi Arabia; TR = Turkey; TW = Chinese Taipei; ZA = South Africa.

[1] BIS reporting banks' foreign claims on non-banks as a percentage of total credit to non-banks. [2] BIS reporting banks' cross-border claims as a percentage of their total foreign claims. [3] BIS reporting banks' international claims with remaining maturity of up to one year as a percentage of their total international claims. [4] BIS reporting banks' debt securities as a percentage of their total cross-border claims.

Sources: IMF; BIS consolidated banking statistics (immediate borrower basis and ultimate risk basis); BIS locational banking statistics by residence.

Graph A

Emerging Europe and Latin America and the Caribbean were mirror images of Asia-Pacific along three of the four dimensions of vulnerability examined in this box. Namely, they had substantially lower shares of cross-border claims (38% and 31%, respectively) and short-term claims (37% and 47%, respectively) than Asia-Pacific. By contrast, foreign bank participation rates were significantly higher across emerging Europe and Latin America and the Caribbean than in Asia-Pacific (Graph A, left-hand panel). The only dimension along which the three regions looked similar was the share of debt securities, which was relatively small in all of them. It was slightly over a fifth (21%) in Latin America and the Caribbean and barely over a tenth in emerging Europe (11%).

The picture in Africa and the Middle East was mixed. On the one hand, it was the only emerging market region other than Asia-Pacific for which the share of cross-border claims exceeded one half. On the other hand, the share of debt securities in the region was very small (5%). Furthermore, foreign bank participation rates were much lower than in emerging Europe, and the share of short-term claims in international claims (46%) was substantially smaller than in Asia-Pacific.

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① See R McCauley, P McGuire and G von Peter, "The architecture of global banking: from international to multinational?", *BIS Quarterly Review*, March 2010, pp 25–37. ② This variable is constructed by combining BIS data on cross-border credit and foreign credit with IMF data on domestic credit. See P McGuire and N Tarashev, "Bank health and lending to emerging markets", *BIS Quarterly Review*, December 2008, pp 67–80, for a more detailed description of the construction of the measure.

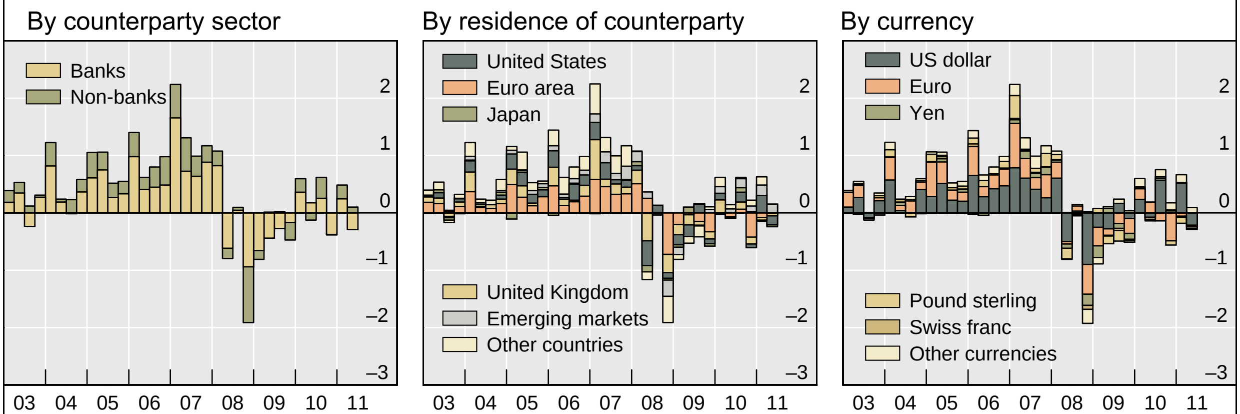
Cross-border claims on developed economies fall …

Internationally active banks reduced their cross-border lending to developed economies (Graph 1, centre panel). In absolute terms, lending to residents of the United States decreased the most (by $155 billion or 2.8%). Claims on the United Kingdom and Japan also fell (by $52 billion or 1.1% and by $32 billion or 4.1%, respectively), whereas claims on residents of the euro area inched up by $7.5 billion (0.1%).

Cross-border claims denominated in most major currencies fell during the quarter (Graph 1, right-hand panel). US dollar-denominated claims recorded the largest absolute decline ($212 billion or 1.6%). Internationally active banks also reported decreases in claims denominated in yen ($26 billion or 2.2%), Swiss francs ($19 billion or 3.8%) and euros ($28 billion or 0.3%). By contrast, claims in sterling rose slightly (by $7.4 billion or 0.5%).

Changes in gross cross-border claims[1]

In trillions of US dollars



[1] BIS reporting banks' cross-border claims include inter-office claims.

Source: BIS locational banking statistics by residence. Graph 1

Cross-border claims on emerging market economies continue to grow

… while those on emerging markets continue to expand

Between the start of April and the end of June 2011, BIS reporting banks increased their cross-border claims on residents of emerging market economies for the ninth consecutive quarter. The $145 billion (4.7%) expansion was led by a $92 billion (5.6%) rise in interbank claims. Claims on non-banks also grew (by $53 billion or 3.7%). Note that these developments preceded the sharp capital outflows from emerging markets that took place in the subsequent months (see pages 11–14 for further discussion of this issue).

Lending to China keeps surging

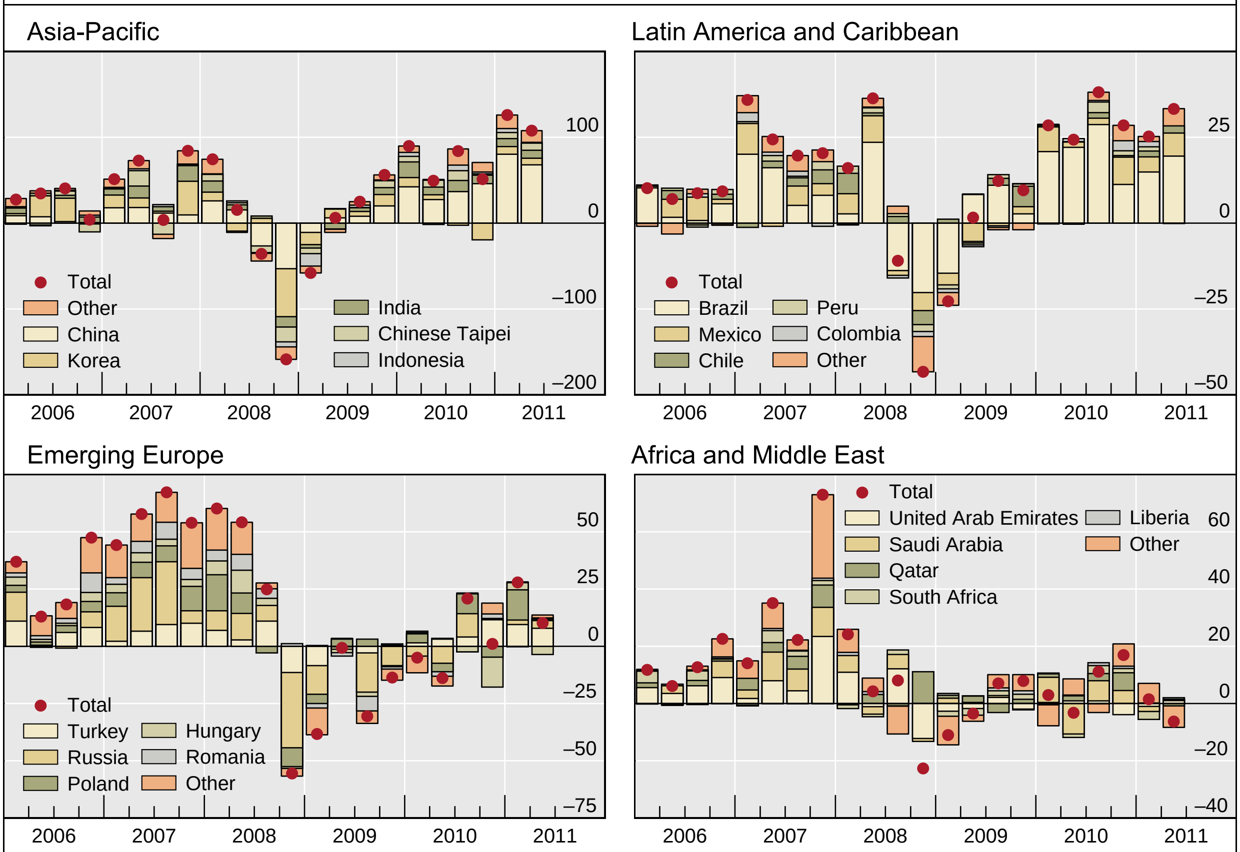
Cross-border claims on Asia-Pacific continued to expand at a fast pace (Graph 2, top left-hand panel). Almost two thirds of the $108 billion (9.0%) increase in lending to the region was due to a surge in claims on China ($68 billion or 16%). Internationally active banks also reported significant increases in their claims on India ($9.3 billion or 4.7%), Chinese Taipei ($8.1 billion or 9.0%) and Korea ($7.7 billion or 3.7%).

Cross-border claims on Brazil rise further

Cross-border claims on residents of Latin America and the Caribbean also grew rapidly (Graph 2, top right-hand panel). More than half of the $33 billion (5.9%) rise in lending to the region was explained by the ninth consecutive increase in claims on Brazil ($20 billion or 7.4%). Claims on Mexico and Chile also rose significantly (by $6.7 billion or 5.6% and by $2.0 billion or 4.0%, respectively).

Changes in cross-border claims on residents of emerging markets[1]

By residence of counterparty, in billions of US dollars



¹ BIS reporting banks' cross-border claims (including inter-office claims) in all currencies.

Source: BIS locational banking statistics by residence. Graph 2

Lending to emerging Europe expanded for a fourth consecutive quarter (Graph 2, bottom left-hand panel). The $10.2 billion (1.3%) quarterly increase brought the aggregate stock of cross-border claims on the region to $822 billion, approximately 10% below the peak of $916 billion reached at the end of June 2008. The overall growth during the second quarter of 2011 reflected a $6.8 billion (1.9%) rise in lending to non-banks and a $3.4 billion (0.8%) advance in interbank claims. Claims on residents of Turkey continued to surge, increasing by $7.9 billion (4.7%). By contrast, lending to Hungary and the Czech Republic contracted (by $3.5 billion or 4.4% and by $1.1 billion or 2.2%, respectively).

The only emerging market region that saw a decrease in cross-border claims on its residents in the second quarter of 2011 was Africa and the Middle East (Graph 2, bottom right-hand panel). The $6.3 billion (1.2%) decline was caused by a $7.6 billion (3.6%) fall in interbank claims. By contrast, claims on non-banks rose by $1.3 billion (0.4%). Lending to residents of Kuwait and Iran shrank by $3.9 billion (17%) and $2.5 billion (15%), respectively. Internationally active banks reported modest declines in their claims on Egypt ($0.2 billion or 1.0%) and Tunisia ($0.2 billion or 4.8%) in the aftermath of the sociopolitical turmoil that rocked the two countries in the first quarter of 2011. Meanwhile, claims on Libya, which was still mired in a civil war, remained virtually unchanged.

International debt securities issuance in the third quarter of 2011[3]

Drop in issuance of international debt securities …

Issuance of international debt securities dropped in the *third quarter of 2011* (Graph 3, left-hand panel). Deteriorating market conditions compounded the usual summer slowdown in the northern hemisphere. This resulted in a 16% decline in completed global gross issuance. At $1,663 billion, this was the lowest since the end of 2005. Net issuance of international debt securities slid to $142 billion, the second lowest since the end of 1998.[4]

… mainly due to lower issuance by European borrowers

The main driver of these developments was a drop in net issuance by European borrowers, who (on net) repaid funds worth $25 billion (Graph 3, centre panel). Borrowers from this region found it difficult to tap the market at favourable terms, even before the recent worsening of the European sovereign debt crisis (see pages 1–14). At $18 billion of net issuance, emerging market borrowing also weakened compared to recent quarters. This was to some extent compensated for by record issuance by international institutions. Borrowers from this sector, which includes institutions such as the International Bank for Reconstruction and Development (IBRD) and the European Investment Bank (EIB), issued an all-time record $71 billion of international debt securities net of repayments. After a weak second quarter, net issuance by US borrowers picked up to $68 billion in the third quarter of 2011.

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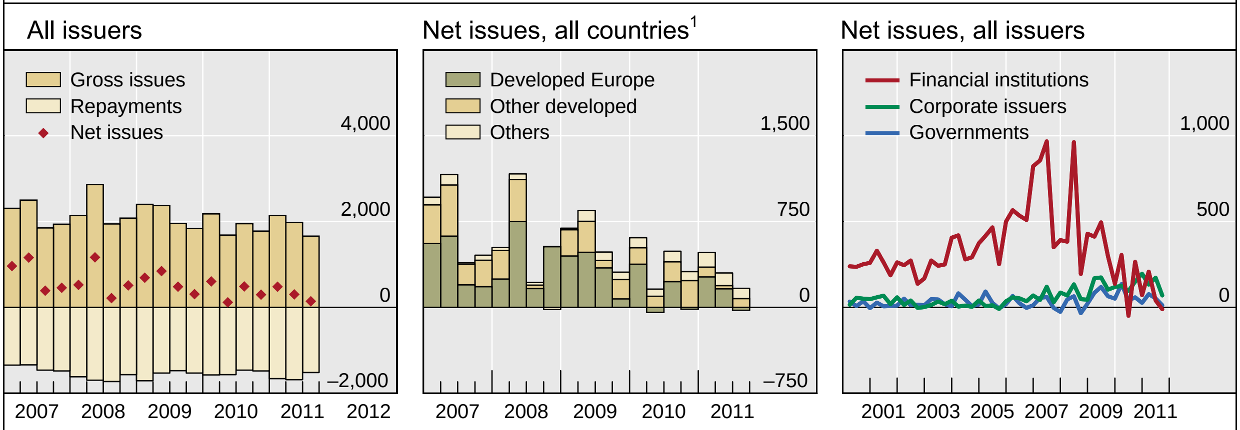
[3] Queries concerning international debt securities should be directed to Andreas Schrimpf.

[4] Net issuance is defined as completed gross issuance of debt securities minus repayments.

International debt securities issuance

In billions of US dollars



[1] By nationality of issuer.

Sources: Dealogic; Euroclear; Thomson Reuters; Xtrakter Ltd; BIS. Graph 3

Financial borrowers were most affected by the market tensions in the context of the European sovereign debt crisis. They repaid a net $11 billion, the second lowest quarterly value since 2000 (Graph 3, right-hand panel). Financial institutions headquartered in Europe in particular had difficulties placing new debt as investors demanded higher credit risk compensation.[5] Their net redemptions of $36 billion stand in stark contrast to strong issuance during the first half of the year, when they had taken advantage of the benign market conditions and raised a total of $266 billion through the sales of international debt securities. These aggregates, however, mask a wide dispersion across European countries (Graph 4, left-hand panel). Financial institutions headquartered in the United Kingdom, France and Italy saw the highest net repayments, with net redemptions of $24 billion, $18 billion and $17 billion, respectively, in the period from July to September. By contrast, financial institutions of German, Dutch and Austrian nationality raised $47 billion, $3 billion and $3 billion, respectively.

Issuance by financials affected by difficult market conditions

Issuance by financial institutions of non-European nationality was also fairly weak over the third quarter of 2011. Financial borrowers from Asia-Pacific repaid a net $5 billion. Net issuance of $18 billion by US financials represented a pickup compared to the last two quarters, but fell well short of the levels seen in the past.

[5] Benchmark credit risk indices for debt issued by European financials reflected the difficult market conditions. The Markit iTraxx index for CDS spreads of European financials, for instance, reached 280 basis points at the end of September, a 125 basis point increase from the end of June.

Box 2: Evaluating the potential impact of deleveraging by euro area banks on emerging market economies

Stefan Avdjiev

The latest financial developments in the euro area have given rise to concerns that, rather than raise new capital, euro area banks could deleverage by reducing their lending to emerging market economies. In this box, we use data from the BIS international banking statistics to quantify the degree to which various emerging market economies depend on banks headquartered in the euro area for foreign financing. In addition, we re-estimate the foreign bank credit withdrawal vulnerability measures discussed in Box 1 on pages 16–17 for a dataset encompassing exclusively euro area banks.

Not surprisingly, as of the end of June 2011, the fraction of total lending to non-banks attributable to euro area banking systems was highest in the neighbouring region of emerging Europe (Table A, first column). These banks accounted for approximately 42% of all credit to non-banks in the region. In addition, their claims on banks in that part of the world amounted to 5% of total credit to non-banks in the region. Euro area banks were also responsible for a significant share of total lending to non-banks in Latin America and the Caribbean (16%) and Africa and the Middle East (11%). By contrast, these banks were not nearly as important in Asia-Pacific, accounting for only 1% of all lending to non-banks in the region.

Estimates of the recapitalisation needs of various euro area banking systems released recently by the European Banking Authority indicate that the extent of the potential deleveraging is likely to vary significantly across banking systems. In order to account for that, we construct an index which measures emerging market economies' dependence on foreign bank lending that originates in euro area banking systems which will have to increase their capital ratios in the coming months (Table A, second column). For every emerging market economy, we calculate the index by weighting the lending share of each euro area banking system by its estimated capital shortfall scaled by its risk-weighted assets.

Once the near-term recapitalisation needs of euro area banking systems are taken into account, the contrast between developing Europe and the other three emerging market regions becomes even starker. More precisely, the index, which has a value of 41.8 for emerging Europe, suggests that the credit dependence of that part of the world on euro area banking systems that are currently experiencing capital shortfalls is more than four times greater than that of Latin America and the Caribbean, which is the second most dependent region according to the index (9.6). The values of the index for Africa and the Middle East and Asia-Pacific are much lower (4.8 and 0.5, respectively).

There are several factors that may mitigate the potential impact of euro area banks' deleveraging on emerging Europe. First, only a third of all euro area banks' lending to the region is accounted for by cross-border claims (third column of Table A). The rest is in the form of locally booked claims, which, as discussed in Box 1, tend to be much more stable. Second, the share of euro area banks' claims on emerging Europe with a maturity of less than one year (33%) is significantly lower than the respective shares in the other three emerging market regions (fourth column). Finally, banks located in the euro area hold only about a tenth of their total international claims on emerging Europe in the form of tradable debt instruments (fifth column). As a result, it would be relatively difficult for them to quickly and costlessly dispose of most of their claims on the region.

Euro area banks and emerging market economies

End-Q2 2011

	Euro area banks' share of total credit[1]	Euro area banks' RN-weighted share of total credit[2]	Euro area banks' cross-border claims share[3]	Euro area banks' short-term claims share[4]	Euro area banks' debt securities share[5]
Emerging Europe	**47.3 (5.2)**	**41.8**	**33.5**	**33.1**	**10.3**
Poland	63.2 (5.3)	41.1	23.1	21.6	17.5
Russia	18.9 (3.4)	7.4	48.8	35.2	2.6
Turkey	20.6 (3.5)	36.1	37.0	46.3	5.7
Hungary	82.4 (9.0)	41.6	45.0	29.5	19.3
Romania	99.4 (8.2)	162.2	35.7	36.8	7.2
Latin America & Caribbean	**17.1 (1.5)**	**9.6**	**21.8**	**39.2**	**14.3**
Brazil	10.9 (1.1)	6.1	24.1	30.7	28.5
Mexico	35.9 (3.3)	20.4	17.4	30.9	7.0
Chile	43.5 (3.1)	25.6	18.7	50.4	1.8
Peru	44.4 (1.9)	27.0	16.3	64.3	5.0
Argentina	18.0 (0.7)	9.8	27.2	55.4	8.6
Emerging Asia-Pacific	**2.3 (0.9)**	**0.5**	**67.6**	**51.8**	**7.8**
China	0.9 (0.5)	0.2	67.1	61.7	1.2
Korea	5.7 (2.6)	1.2	71.6	53.1	24.7
India	4.1 (1.2)	0.8	60.7	55.8	4.7
Chinese Taipei	4.1 (0.9)	0.8	55.0	74.5	9.0
Indonesia	4.6 (0.9)	0.9	77.6	49.0	2.6
Africa & Middle East	**13.7 (2.8)**	**4.8**	**73.7**	**40.5**	**2.7**
United Arab Emirates	8.5 (1.9)	2.5	91.9	47.5	2.9
Saudi Arabia	15.9 (5.6)	3.4	93.8	68.2	–
Qatar	12.3 (1.8)	3.9	98.3	16.4	3.5
Liberia	55.7 (–)	80.2	99.9	14.3	2.2
South Africa	4.2 (1.9)	1.9	75.3	35.5	15.1

Colour coding:	[0–25]	[25–50]	[50–75]	[>75]

[1] Euro area banks' foreign claims on all sectors as a share of total credit to non-banks, in per cent. The numbers in parentheses indicate euro area banks' foreign claims on banks as a percentage of total credit to non-banks. [2] Euro area banks' foreign claims on all sectors as a share of total credit to non-banks, weighted by the ratio of the recapitalisation needs (RN) of each BIS reporting euro area banking system to its risk-weighted assets, as identified by the EBA in October 2011. For each country, the index is normalised so that it would be equal to the unweighted percentage reported in column 1 if all BIS reporting euro area banking systems had equal amounts of foreign claims on the respective country. [3] Euro area banks' cross-border claims as a share of their foreign claims, in per cent. [4] Euro area banks' international claims with a remaining maturity of up to one year as a share of their international claims, in per cent. [5] Euro area-located banks' debt securities as a share of their cross-border claims, in per cent.

Sources: European Banking Authority (EBA); IMF; BIS consolidated banking statistics (immediate borrower and ultimate risk basis); BIS locational banking statistics by residence.

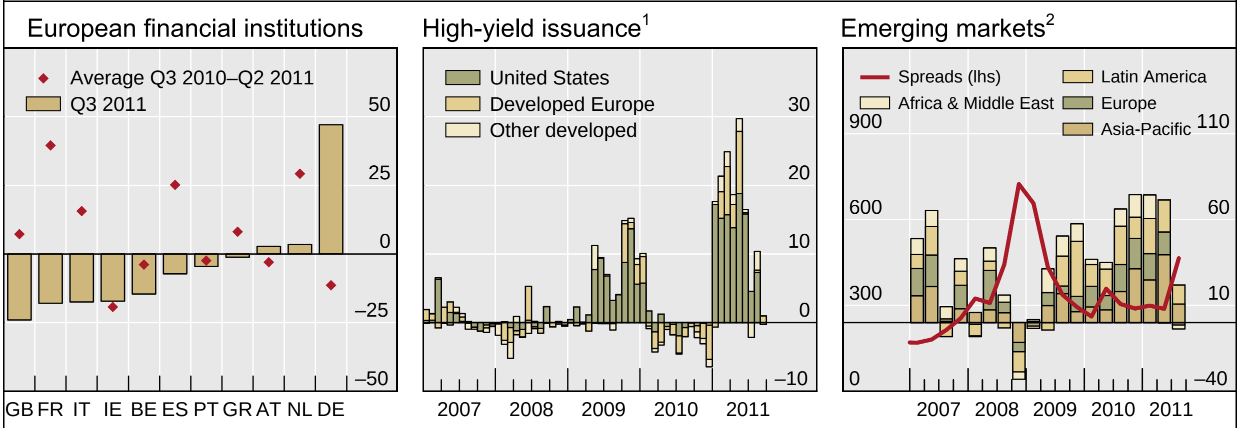
Table A

Lower issuance by corporates, especially in the high-yield segment

Net issuance by the non-financial corporate sector was also much weaker than in previous quarters (Graph 3, right-hand panel). At $70 billion, it was the lowest in three years. High volatility and increased overall risk aversion in financial markets squelched issuance of junk bonds in particular. Issuance in

International debt securities issuance

Net issuance by nationality of issuer, in billions of US dollars



AT = Austria; BE = Belgium; DE = Germany; ES = Spain; FR = France; GB = United Kingdom; GR = Greece; IE = Ireland; IT = Italy; NL = Netherlands; PT = Portugal.

[1] Issuance by non-financial corporations. [2] Spreads are based on Quarterly JPMorgan EMBI Global Composite index, in basis points.

Sources: Dealogic; Euroclear; Thomson Reuters; Xtrakter Ltd; BIS. Graph 4

the high-yield segment had reached record highs in the first half of the year, but activity slumped over the summer and ground to a halt in September (Graph 4, centre panel).

Weaker emerging market borrowing

Emerging market borrowing, which had been robust over the past two years, showed a marked decline in the third quarter of 2011 in the face of wider spreads (Graph 4, right-hand panel). The decline in issuance was mostly due to lower activity by borrowers from Asia-Pacific, whose net issues ($11 billion) were just about half of the average quarterly amount raised during the past year. Chinese borrowers raised a mere $6 billion compared to $25 billion in the second quarter. Borrowers from emerging European economies also curtailed their funding via international debt securities, repaying $1 billion in net terms. This contrasts with an average of $14 billion of net issues per quarter over the past year. In particular, Russian borrowers redeemed a net $3 billion in the third quarter. Borrowers from Latin American and Caribbean economies were still net raisers of funds via international debt securities, to the tune of $11 billion. Mexican borrowers sold international debt securities worth $6 billion net of repayments, whereas Brazilian net borrowing declined from $13 billion in the second quarter to $2 billion in the third quarter.

Over-the-counter derivatives in the first half of 2011[6]

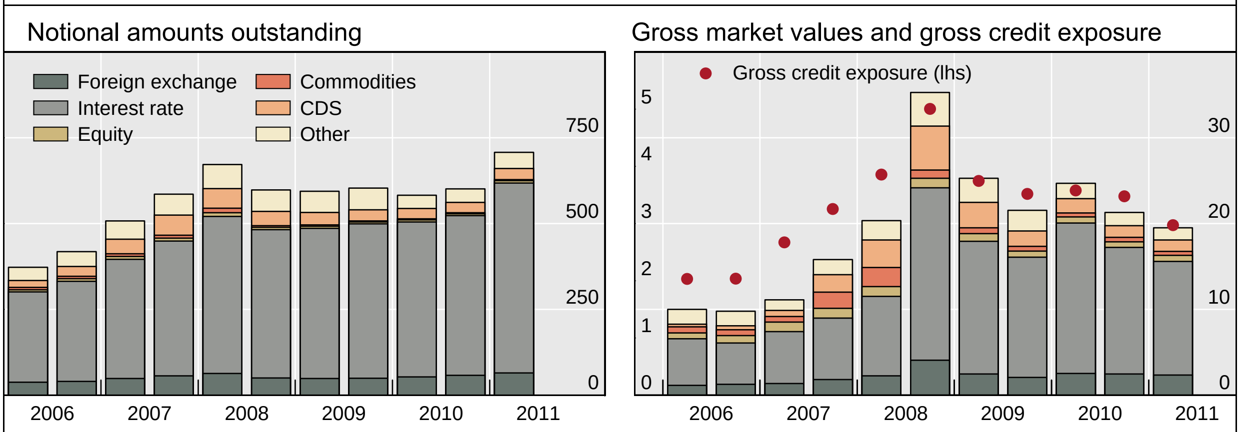
Rebound in notional amounts outstanding …

For the first time since the financial crisis, positions in over-the-counter (OTC) derivatives went up significantly in the *first half of 2011*. Notional amounts outstanding of contracts in all risk categories rose by 18% to $708 trillion at the end of June, well above the $673 trillion peak in mid-2008 (Graph 5, left-hand

[6] Queries concerning the over-the-counter derivatives statistics should be addressed to Christian Upper.

Global OTC derivatives

By data type and market risk category, in trillions of US dollars



Sources: Central banks of the G10 countries and Switzerland; BIS. Graph 5

panel). By contrast, gross market values of these contracts fell by 8%, owing mainly to a 10% reduction in the market value of interest rate contracts (Graph 5, right-hand panel). Since interest rates remained roughly unchanged over the period since the previous survey, this suggests that a significant number of contracts with large mark to market values have either expired or been terminated. Gross credit exposure dropped by 15% to $3.0 trillion, the lowest since the end of 2007.

… reflecting higher volumes of interest rate derivatives

Most of the increase in the total amounts outstanding is due to larger (gross) positions on interest rate risk. Notional amounts outstanding of interest rate contracts increased by 19% to $554 trillion. The expansion was evenly split across currencies.[7] Maturities shortened: the amounts outstanding of contracts with remaining maturities of more than five years fell by 6% to $130 trillion, whereas those with maturities of one year or less went up by more than 30% to $247 trillion.

Increased volumes of short-term FX contracts

Higher volumes of shorter-maturity contracts also lifted outstanding notional amounts outstanding in FX derivatives. Positions in contracts with maturities of one year or less rose by a quarter, while those with maturities of over five years halved. As a consequence, total amounts outstanding increased by 12% to $65 trillion.

CDS positions increase for the first time since the financial crisis

Notional amounts outstanding in the credit default swap (CDS) market increased moderately, reversing the post-crisis downward trend. That said, at $32 trillion at the end of June 2011, notional amounts outstanding of CDS remained well below the peak of $58 trillion at the end of 2007. Multi-name contracts drove the increase, with positions going up by 22% to $14 trillion. Amounts outstanding of single-name CDS remained stable at $18 trillion.

The share of centrally cleared CDS contracts increased slightly. 17% of all CDS by reporting dealers involved a central counterparty (CCP), up from 15% six months before. This means that approximately 9% of all trades were

[7] The 63% increase in interest rate derivatives denominated in Canadian dollars was partly due to an expansion in the reporting population. The impact of this increase in coverage on total notional amounts outstanding across currencies and risk categories is well below 1%.

cleared centrally, since a single contract between two CCP members is replaced by separate contracts between the CCP and each of the counterparties.[8] Positions of reporting dealers with non-financial customers shrank by 23% to only $238 billion, following a 63% decline in the second half of 2010. Non-financial customers now hold less than 1% of all CDS, compared with a peak of 5% at the end of December 2009. The amount of risk transfer between reporting dealers and the different types of counterparties is discussed in greater detail in the special feature on pages 85–89 of this issue.

Larger OTC positions in equity and commodity derivatives

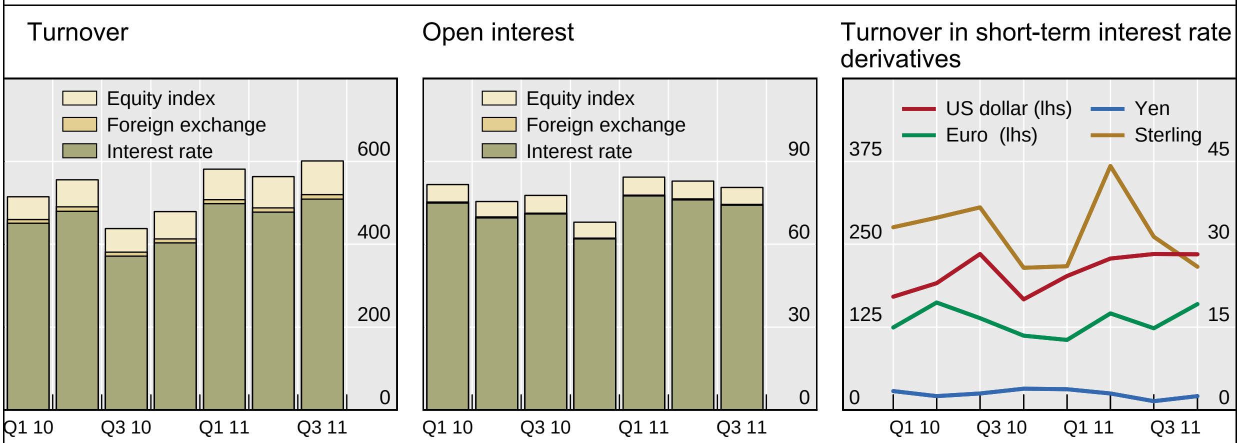
Positions in equity and commodity derivatives also increased significantly. Notional amounts outstanding of equity-linked contracts increased by 21%. Positions in equity-linked options were up by 26%, while those in forwards and swaps increased by 11%. Amounts outstanding of commodity contracts grew by 9%, with contracts on gold up 18% and options on precious metals and other commodities up 19%.

Exchange-traded derivatives in the third quarter of 2011[9]

Higher turnover but lower open interest in listed futures and options

Activity on the international derivatives exchanges rebounded in the third quarter of 2011. Turnover measured by notional amounts increased by 7% to $603 trillion between July and September, with very little difference across the types of underlying risk (Graph 6, left-hand panel). The increase in turnover more than offset the 3% decline recorded in the second quarter. Open positions continued to contract, falling by 3% to $81 trillion at the end of September, with a particularly large decline in foreign exchange (Graph 6, centre panel).

Activity on the international derivatives exchanges[1]



[1] Notional amounts, in trillions of US dollars.

Sources: FOW TRADEdata; Futures Industry Association; BIS calculations. Graph 6

[8] See N Vause, "Central clearing and OTC derivatives statistics", *BIS Quarterly Review*, June 2011, p 26.

[9] Queries concerning the exchange-traded derivatives statistics should be directed to Christian Upper.

Investors taking positions on changes in the medium-term outlook for monetary policy in the euro area and Japan lifted activity in the interest rate segment of the international derivatives exchanges. Turnover in futures and options on interest rates in all currencies increased by 7% to $510 trillion. A sizeable part of the increase was driven by higher turnover in contracts on short-term euro (+30%) and yen (+60%) money market rates (Graph 6, right-hand panel). While the near-term outlook for policy rates in these two currencies remained stable during the period under review, investors began to price in significantly lower rates than before over a one-year horizon. In the euro area, traders mainly demanded options on short-term euro money market rates (70%), whereas trading activity in the corresponding futures contract rose roughly in line with the entire market (+7%). By contrast, with little option trading in short-term yen rates, the entire increase in activity was concentrated in the futures contract.

Revised monetary policy expectations lift activity in euro and yen interest rate contracts

Activity in futures and options on stock indices rose as equity prices fell in most markets in the third quarter of 2011. Turnover increased by 7% to $81 trillion between July and September, the highest on record (Graph 7, left-hand panel). The number of contracts traded, which is independent of valuation effects, went up by 12% over the same period. Trading volumes increased in all major markets apart from Korea, where turnover in won-denominated equity index contracts fell by 20% in dollar terms and 12% in terms of the number of contracts.

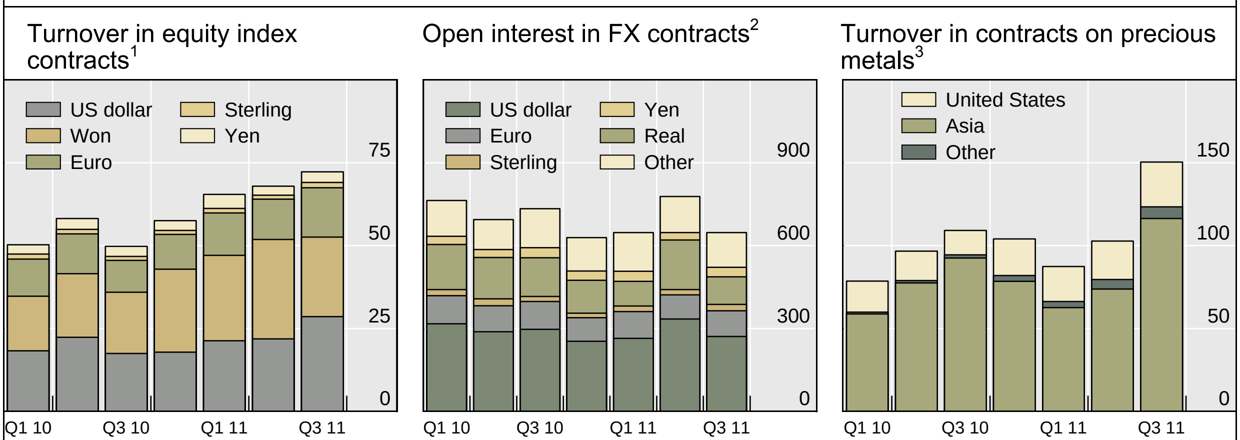
Higher activity in stock index contracts as equity prices tumble

Heavier trading in currency futures lifted turnover in exchange-traded FX derivatives. Turnover in FX futures increased by 9% to $10.6 trillion, whereas options turnover remained stable at $0.7 trillion.

Open interest in FX contracts plummeted after the Brazilian government introduced a 1% transaction tax on certain FX derivatives. Open positions in contracts traded on Brazilian exchanges fell by 44% (turnover: –6%). The market for futures and options on the Brazilian real is unusually large relative to the OTC market. This makes the real the second most important currency on the international derivatives exchanges in terms of open interest, behind the

Brazilian transaction tax depresses positions in FX contracts

Equity, FX and commodity derivatives



[1] Notional amounts, in trillions of US dollars. [2] Notional amounts, in billions of US dollars. [3] Number of contracts, in millions.

Sources: FOW TRADEdata; Futures Industry Association; BIS calculations. Graph 7

US dollar but before the euro (Graph 7, centre panel). As a consequence, the drop in open interest on the Brazilian exchanges fed into a global reduction in open interest in FX products of 17%, despite a 6% increase in positions on all other exchanges.

The introduction of the Brazilian transaction tax triggered a surge in turnover in the real contract listed on the Chicago Mercantile Exchange (68%). That said, at $5.5 *billion* between July and September 2011, turnover in the Chicago-traded real contracts remains a fraction of that taking place onshore in Brazil ($1.5 *trillion*) over the same period. Moreover, open interest in the CME's real contract fell by 16% in the third quarter, which suggests that the transaction tax did not result in any significant push of positions offshore.

Asian trading boosts turnover in contracts on precious metals

High demand for precious metals in Asia drove up turnover in the corresponding derivatives during the emerging market sell-off in August and September. Over the quarter as a whole, turnover measured by the number of contracts traded (notional amounts are not available) increased by 46% (Graph 7, right-hand panel). In Asia, where contract size tends to be smaller (ie involving less of the underlying commodity), trading increased by 58%.

Turnover in other commodities also increased, despite falling commodity prices. Trading in contracts on non-precious metals, agricultural commodities and energy increased by 11%, 5% and 2%, respectively.